# GOVERNMENT OF KARNATAKA


## DEPARTMENT OF SCHOOL EDUCATION (PRE UNIVERSITY)

## REVISED QUESTION BANK (2024-25)

## SUBJECT: COMPUTER SCIENCE

## FIRST YEAR PUC

# Computer Science Question Bank Committee - 2024-25

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# CHAPTER 1
# COMPUTER SYSTEM

**Multiple Choice Questions**

1. **What does CPU stand for?**
   a) Central Processing Unit
   b) Central Programming Unit
   c) Computer Personal Unit
   d) Centralized Processing Unit
2. **Which memory is known for its high speed and is placed between the CPU and primary memory?**
   a) Cache Memory
   b) Secondary Memory
   c) RAM
   d) ROM
3. **What is the primary role of the memory controller?**
   a) To manage data flow into and out of the main memory
   b) To control the CPU speed
   c) To regulate power supply to the computer
   d) To manage external storage devices
4. **Which device is considered the first computing device?**
   a) Abacus
   b) Pascaline
   c) Analytical Engine
   d) EDVAC
5. **Who is known as the 'father of the computer' for his concept of the Analytical Engine?**
   a) Charles Babbage
   b) Blaise Pascal
   c) Alan Turing
   d) John Von Neumann
6. **What significant technology replaced vacuum tubes in computers?**
   a) Transistors
   b) Integrated Circuits
   c) Microprocessors
   d) Punch Cards
7. **Which type of memory is volatile and used for temporary storage?**
   a) RAM
   b) ROM
   c) HDD
   d) SSD
8. **Which of the following is a type of secondary memory?**
   a) Hard Disk Drive (HDD)
   b) Cache Memory
   c) Registers
   d) Processor
9. **What is the key characteristic of secondary memory?**
   **a)** Non-volatile
   b) High speed
   c) Small storage capacity
   d) Expensive
10. **What is a bus in computer terminology?**
    a) A physical wire used for data transfer
    b) A type of software
    c) A storage device
    d) A type of processor

11. **Which bus is used to transfer data between different components of a computer?**
    a) Data Bus
    b) Address Bus
    c) Control Bus
    d) System Bus
12. **Which bus is used to specify memory addresses?**
    a) Address Bus
    b) Data Bus
    c) Control Bus
    d) System Bus
13. **What is a microprocessor?**
    a) A CPU on a single microchip
    b) A type of secondary memory
    c) An input device
    d) A high-speed cache memory
14. **Which generation of microprocessors introduced the use of integrated circuits (ICs)?**
    a) First Generation
    b) Second Generation
    c) Third Generation
    d) Fourth Generation
15. **Which of the following microprocessors belongs to the fifth generation?**
    a) Intel 8080
    b) Motorola 6800
    c) Intel 80386
    d) Pentium
16. **What type of software provides core functionality to a computer system?**
    a) System Software
    b) Application Software
    c) Utility Software
    d) Open-Source Software
17. **Which software category includes programs like word processors and spreadsheets?**
    a) General Purpose Software
    b) Customised Software
    c) System Software
    d) Embedded Software
18. **Which of the following is an example of Free and Open-Source Software (FOSS)?**
    a) Adobe Photoshop
    b) Microsoft Word
    c) Mozilla Firefox
    d) CorelDRAW
19. **What is the primary function of an operating system?**
    a) To manage computer hardware and software resources
    b) To develop new software
    c) To provide internet security
    d) To create graphics
20. **Which of the following is not an operating system?**
    a) Windows
    b) Linux
    c) Android
    d) Photoshop
21. **What is multitasking in operating systems?**
    a) Running multiple applications simultaneously
    b) Enhancing graphics performance
    c) Installing new software
    d) None of the above

22. **What was the primary function of the Analytical Engine?**
    a) Perform arithmetic calculations  b) Store data on punched cards
    c) Control industrial machines  d) None of the above
23. **Which device is used for data transfer between a USB port and a hard disk?**
    a) Bus  b) Processor
    c) Memory controller  d) Cache
24. **Which component manages the flow of data in and out of the computer's main memory?**
    **a)** Memory controller  b) CPU
    c) Cache  d) Bus
25. **Which generation of microprocessors had a word size of 32 bits?**
    a) Fourth Generation  b) First Generation
    c) Second Generation  d) Third Generation
26. **What is an example of customised software?**
    a) School management software  b) Web browser
    c) Media player  d) Word processor
27. **Which software can a computer not function without?**
    a) System Software  b) Application Software
    c) Utility Software  d) None of the above
28. **Who invented the tabulating machine?**
    **a)** Herman Hollerith  b) Charles Babbage
    c) Blaise Pascal  d) Alan Turing
29. **What does ROM stand for?**
    a) Read Only Memory  b) Random Access Memory
    c) Run-time Operating Memory  d) Remote Operations Manager
30. **What is the primary function of application software?**
    a) To perform tasks specific to the user's needs  b) To manage hardware resources
    c) To provide core system functionality  d) To enhance security
31. **Which operating system is known for its open-source nature?**
    a) Linux  b) Windos
    c) macOS  d) iOS
32. **Which type of memory is used for permanent storage of data and instructions?**
    a) Secondary Memory  b) Cache Memory
    c) Primary Memory  d) Virtual Memory
33. **What is the function of the control bus in a computer system?**
    **a)** Communicate control signals between different components
    b) Transfer data between memory and CPU
    c) Specify memory addresses
    d) None of the above

34. **Which generation of microprocessors introduced multicore processors?**
a) Fifth Generation b) First Generation
c) Third Generation d) Second Generation

35. **What type of software is used to develop new software applications?**
a) System Software b) Application Software
c) Utility Software d) Programming Software

36. **Who is credited with inventing the first mechanical computer?**
a) Charles Babbage b) Blaise Pascal
c) Alan Turing d) John Von Neumann

37. **Which of the following is an example of embedded software?**
**a)** Software in a washing machine b) Office suite
c) Web browser d) Media player

38. **What is the primary purpose of an operating system's kernel?**
**a)** Manage system resources and hardware b) Provide graphical user interface
c) Facilitate user authentication d) Manage network connections

39. **What kind of software is an antivirus program?**
a) Utility Software b) System Software
c) Application Software d) Development Software

40. **Which of the following is an example of first-generation computers?**
a) ENIAC b) UNIVAC
c) IBM 701 d) Apple II

41. **What is the primary characteristic of volatile memory?**
a) Data is lost when power is turned off b) Data is permanently stored
c) It is very slow d) It is used for long-term storage

42. **Which bus system component is used to specify memory addresses?**
**a)** Address Bus b) Data Bus
c) Control Bus d) System Bus

43. **Which of the following is a characteristic of fourth-generation computers?**
**a)** Use of microprocessors b) Use of vacuum tubes
c) Use of transistors d) Use of integrated **circuits**

44. **Which type of software is used for managing computer hardware and software resources?**
a) System Software b) Application Software
c) Utility Software d) Programming Software

45. **What is the main function of cache memory?**
a) To store frequently accessed data and instructions
b) To store data permanently
c) To execute arithmetic operations
d) To control peripheral devices

46. **What is the role of an operating system in a computer?**
    a) Manage hardware resources and provide common services for application software
    b) Develop new software
    c) Protect the computer from viruses
    d) Design graphics
47. **Which of the following is a non-volatile memory?**
    a) ROM b) RAM
    c) Cache Memory d) Register
48. **What does GUI stand for In computer terminology?**
    a) Graphical User Interface b) General User Interface
    c) Graphical Unified Interface d) General Unified Interface
49. **Which component is referred to as the 'brain' of the computer?**
    a) CPU b) RAM
    c) Hard Disk d) Motherboard
50. **Which type of software typically includes operating systems, device drivers, and utilities?**
    a) System Software b) Application Software
    c) Customized Software d) General Purpose Software
51. **Assertion (A):** The system software is a set of programs which takes care of all the activities of a computer system.
    **Reason (R):** The system software is designed by the manufacturers in low level languages toserve as an interface between the user and the computer.
    a) Both A and R are true, and R is the correct explanation for A
    b) Both A and R are true, but R is not the correct explanation for A
    c) A is True but R is False
    d) A is false but R is True

52. **Assertion(A):** An operating system is a system software that manages various resources andthe overall operations of a computer system.
    **Reason(R):** An operating system can be classified into two categories: single-ser and multi-useroperating system.
    a) Both A and R are true and R is the correct explanation for A
    b) Both A and R are true but R is not the correct explanation for A
    c) A is True but R is False
    d) A is false but R is True
53. **Assertion(A):** An operating system is a system software that manages various resources andthe overall operations of a computer system.
    **Reason(R):** An operating system coordinates different hardware and software components of acomputer system. It also helps in the smooth functioning of various peripherals.

a) Both A and R are true and R is the correct explanation for A
b) Both A and R are true but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

54. **Assertion(A):** Compiler and interpreter are the two important language translators used in computer systems.
**Reason(R):** The compiler is the software that accepts the entire program in high level languageand converts into its equivalent machine language at once whereas, the interpreter converts the instructions into its equivalent machine language line by line.
a) Both A and R are true and R is the correct explanation for A
b) Both A and R are true but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

55. **Assertion(A):** An application software is designed to run the computer system smoothly andeffectively.
**Reason(R):** An application software is a set of programs to fulfil the specific needs of the user. The Microsoft Office package includes some well-known application software such as MS-Word, MS-Excel, MS-Power Point, MS-Access to perform specific tasks.
a) Both A and R are true, and R is the correct explanation for A
b) Both A and R are true, but R is not the correct explanation for A
c) A is True but R is False
**d)** A is false but R is True

56. **Assertion (A):** A part of main memory is non-volatile.
**Reason (R) :** ROM contains pre-written instructions, which are retained even after power is off.
a) Both (A) and (R) are correct and R is the correct explanation of (A).
b) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
c) (A) is True but (R) is False.
d) (A) is False but (R) is True.

57. **Assertion (A):** The primary memory is volatile as all its contents get erased as soon as the power goes off.
**Reason (R):** The cache memory is also a primary memory.
a) Both (A) and (R) are correct and R is the correct explanation of (A).
b) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
c) (A) is True but (R) is False.
d) (A) is False but (R) is True.

58. **Assertion (A):** Primary memory has a larger storage capacity than secondary memory.
**Reason (R):** Secondary memory is designed to store large amounts of data permanently.
a) Both (A) and (R) are correct and R is the correct explanation of (A).
b) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
c) (A) is True but (R) is False.
d) (A) is False but (R) is True.

59. **Assertion (A):** Secondary memory is generally slower than primary memory.
**Reason (R):** Primary memory is designed for quick access to data needed by the CPU.
a) Both (A) and (R) are correct and R is the correct explanation of (A).
b) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
c) (A) is True but (R) is False.
d) (A) is False but (R) is True.

60. **Assertion (A):** System software is designed to manage and control computer hardware.
**Reason (R):** System software provides a platform for running application software.
a) Both (A) and (R) are correct and R is the correct explanation of (A).
b) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
c) (A) is True but (R) is False.
d) (A) is False but (R) is True.

61. **Assertion (A):** Operating systems provide an interface for users to interact with the computer hardware.
**Reason (R):** Operating systems are a type of application software.
a) Both (A) and (R) are correct and R is the correct explanation of (A).
b) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
c) (A) is True but (R) is False.
d) (A) is False but (R) is True.

62. **Assertion (A):** Application software can run independently of system software.
**Reason (R):** Application software requires system software to function properly.
a) Both (A) and (R) are correct and R is the correct explanation of (A).
b) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
c) (A) is True but (R) is False.
d) (A) is False but (R) is True.

63. **Assertion (A):** Application software can be updated more frequently than system software.
**Reason (R):** System software updates are typically larger and more complex.
a) Both (A) and (R) are correct and R is the correct explanation of (A).
b) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
c) (A) is True but (R) is False. d) (A) is False but (R) is True.

64. **Assertion (A):** Operating systems do not require regular updates.
**Reason (R):** Updates are essential for improving security, fixing bugs, and adding new features.
a) Both (A) and (R) are correct and R is the correct explanation of (A).
b) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
c) (A) is True but (R) is False.
d) (A) is False but (R) is True.

65. **Assertion (A):** Graphical User Interfaces (GUIs) are supported by modern operating systems.
**Reason (R):** GUIs do not provide a user-friendly way to interact with the operating system.
a) Both (A) and (R) are correct and R is the correct explanation of (A).
b) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
c) (A) is True but (R) is False.
d) (A) is False but (R) is True.

**2 Marks Questions**

1. What is the main difference between a microcontroller and a microprocessor?
2. Why do smart home appliances have a microcontroller instead of a microprocessor embedded in them?
3. Mention two types of data you deal with while browsing the Internet.
4. What is a nibble in computer memory?
5. Define primary memory in a computer system.
6. What are the two types of primary memory?
7. Name any two input devices used to enter data into a computer system.
8. Identify the category (system, application, programming tool) of the software 'Compiler'.
9. Name the two primary services of the software required to make a computer functional.
10. What is the primary role of the system bus?
11. Differentiate between RAM and ROM.
12. What is secondary memory used for?
13. What are the main components of a computer system?
14. What is an operating system's role in device management?
15. Name any two system software installed on your computer.
16. What does the term 'bit' represent in computer memory?
17. Why is the execution time of machine code less than that of source code?
18. Name any two secondary storage devices available at your school or home.
19. Define 'memory controller' in a computer system.
20. What is the significance of a computer's clock speed?

**3 Marks Questions**

1. Categorize the following data as structured, semi-structured, and unstructured: Newspaper, Cricket Match Score, HTML Page, Patient records in a hospital.
2. Explain the need for RAM in a computer system.
3. What is the difference between proprietary software and freeware software? Name two software for each type.
4. Describe the components of a computer system's block diagram.
5. How does the computer understand a program written in high-level language?
6. Mention any two device drivers installed on your computer and their functions.
7. Explain the term 'system bus' and its components.
8. How does the operating system manage different I/O devices?
9. What is the need for secondary memory in a computer system?
10. List the types of software required for a computer to function and explain their primary services.
11. How does a microprocessor differ from a microcontroller?
12. What are the advantages of using a GUI-based operating system over a command line interface?
13. Describe the role of memory management in an operating system.
14. How does a file management system protect data in secondary memory?
15. Explain the difference between input and output devices with examples.
16. What is the function of the memory controller in a computer system?
17. Describe the significance of binary numbers in computer memory.
18. Explain the process of data transfer between components through the system bus.
19. What are the characteristics of primary memory?
20. Discuss the evolution of personal computing devices from desktops to wearable gadgets.

**5 Marks Questions**

1. Draw and explain the block diagram of a computer system, detailing the functionality of each component.
2. Describe the primary roles of the operating system in resource management, including memory, file, and device management.
3. Compare and contrast the functionalities of RAM and ROM in a computer system.
4. Discuss the importance of secondary memory and list various types of secondary storage devices.
5. Explain the process by which a computer converts high-level language code into machine code, including the roles of compilers and interpreters.
6. What are the key differences between proprietary software and freeware software? Provide examples of each and discuss their benefits and drawbacks.

7. Illustrate the data transfer process between CPU, primary memory, and secondary storage through the system bus. Describe each step in detail.
8. Discuss the significance of the system bus in a computer system, including the functions of the data bus and address bus.
9. Explain how the operating system manages different I/O devices, including the role of device drivers and security measures implemented by the OS.
10. Describe the evolution of computer memory from primary to secondary memory, including the different types and their respective roles in data storage and processing.
11. How do microprocessors and microcontrollers differ in terms of architecture and application? Provide examples of their usage in different devices.
12. Analyze the role of the memory management system in an operating system and its impact on the performance of a computer system.
13. What is the significance of the clock speed in a microprocessor, and how does it affect the performance of a computer system?
14. Describe the concept of structured, semi-structured, and unstructured data with examples and their relevance in data management systems.
15. Explain the importance of using both system software and application software in a computer. Provide examples and discuss their roles in enhancing computer functionality.

# CHAPTER 2
# ENCODING SCHEMES ANDNUMBER SYSTEM

**Multiple Choice Questions**

1. **What is the base value of the binary number system?**
   a) 2 b) 8
   c) 10 d) 16
2. **Which encoding scheme is used to represent characters of almost all languages of the world?**
   **a**) ASCII b) ISCII
   c) UTF-8 d) UNICODE
3. **How many bits are used in the ASCII encoding scheme?**
   a) 7 bits b) 8 bits
   c) 16 bits d) 32 bits
4. **What is the hexadecimal equivalent of the binary number (1010 1100 . 0101 1100)$_2$?**
   **a**) Ac.5C b) B4.3E
   c) A2.C5 d) D8.7F
5. **Which standard en coding scheme was developed in India during the mid-1980s?**
   **a**) ASCII b) ISCII
   c) UNICODE d) UTF-8
6. **What is the binary representation of the ASCII code for the character 'A'?**
   a) 1000001 b) 1010100
   c) 1100001 d) 1110001
7. **How many different characters can be encoded using 7-bit ASCII code?**
   a) 64 b) 128
   c) 256 d) 512
8. **Which number system is used to simplify binary coded representation by grouping 3 bits?**
   a) Binary b) Decimal
   c) Octal d) Hexadecimal
9. **What is the binary equivalent of the decimal number 122?**
   a) 1111100 b) 1111001
   c) 1111010 d) 1110110
10. **What is the primary advantage of using hexadecimal notation?**
    a) Easier to remember than binary b) Uses fewer bits than binary
    c) Both A and B d) None of the above
11. **What is the base value of the octal number system?**
    a) 2 b) 8
    c) 10 d) 16

12. **What is the decimal equivalent of the octal number $(514)_8$?**
    a) 336 b) 328
    c) 340 d) 342
13. **Which encoding scheme is known for representing text in Indian languages?**
    a) ASCII b) ISCII
    c) UNICODE d) UTF-8
14. **How many bits are in a byte?**
    a) 4 b) 8
    c) 16 d) 32
15. **What does UTF-8 stand for?**
    a) Unicode Transformation Format 8 bit b) Unicode Text Format 8 bit
    c) Uniform Text Format 8 bit d) Universal Text Format 8 bit
16. **Which encoding scheme retains all 128 ASCII codes and uses the rest for additional characters?**
    a) ASCII b) ISCII
    c) UNICODE d) UTF-8
17. **What is the hexadecimal value for the binary number (11111111,00000000,00000000)?**
    a) (FF,00,00) b) (F0,0F,0F)
    c) (00,FF,00) d) (FF,FF,00**)**
18. **What is the binary equivalent of the ASCII value for the character 'D'?**
    a) 1000100 b) 1010001
    c) 1100001 d) 1110100
19. **What is the hexadecimal representation of the memory address 1100000011110001?**
    a) C0F1 b) D1F2
    c) C2E1 d) B0A1
20. **How many bits are required for representing each color in RGB color coding?**
    a) 8 bits b) 16 bits
    c) 24 bits d) 32 bits
21. **Which encoding scheme is a superset of ASCII?**
    a) UTF-8 b) ISCII
    c) UNICODE d) EBCDIC
22. **What is the full form of ASCII?**
    a) American Standard Code for Information Interchange
    b) American System Code for Information Interchange
    c) American Standard Code for Internet Interchange
    d) American System Code for Internet Interchange
23. **What is the base value of the decimal number system?**
    a) 2 b) 8
    c) 10 d) 16

24. **Which encoding scheme provides a unique number for every character, irrespective of the device oroperating system?**
    a) ASCII
    b) ISCII
    c) UNICODE
    d) UTF-8
25. **What is the decimal equivalent of the hexadecimal number (4D9)16?**
    a) 1234
    b) 1241
    c) 1249
    d) 1257
26. **Which number system uses base 16?**
    a) Binary
    b) Decimal
    c) Octal
    d) Hexadecimal
27. **What is the octal equivalent of the binary number (10101100.01011)2?**
    a) 254.26
    b) 245.36
    c) 234.25
    d) 255.46
29. **Which encoding scheme is used for compact representation of color codes?**
    a) ASCII
    b) ISCII
    c) UNICODE
    d) Hexadecimal
30. **What is the decimal equivalent of the binary number (1010111)2?**
    a) 85
    b) 87
    c) 89
    d) 91
31. **How many characters can be represented using an 8-bit encoding scheme?**
    a) 128
    b) 256
    c) 512
    d) 1024
32. **What is the full form of ISCII?**
    a) Indian Script Code for Information Interchange
    b) Indian System Code for Information Interchange
    c) Indian Standard Code for Internet Interchange
    d) Indian System Code for Internet Interchange

33. **What is the base value of the hexadecimal number system?**
    a) 2
    b) 8
    c) 10
    d) 16
34. **Which encoding scheme is used to represent more characters beyond the basic ASCII set?**
    a) UTF-8
    b) ISCII
    c) UNICODE
    d) EBCDIC
35. **What is the binary equivalent of the hexadecimal number (3A7)16?**
    a) 1101100
    b) 1100111
    c) 1010101
    d) 1110111
36. **What is the octal equivalent of the decimal number $(76)_{10}$?**
    a) 104
    b) 112
    c) 114
    d) 116

37. **How many different characters can be represented using 8-bit encoding?**
    a) 128 b) 256
    c) 512 d) 1024
38. **What is the full form of UNICODE?**
    a) Universal Code for Information Interchange
    b) Uniform Code for Information Interchange
    c) Unified Code for Information Interchange
    d) None of the above
39. **Which number system is used for efficient representation of IP addresses?**
    a) Binary b) Decimal
    c) Octal d) Hexadecimal
40. **What is the base value of the binary number system?**
    a) 2 b) 8
    c) 10 d) 16
41. **What is the binary equivalent of the decimal number $(65)_{10}$?**
    a) 1000001 b) 1000010
    c) 1100101 d) 1100110
42. **What is the decimal equivalent of the octal number (23)8?**
    a) 18 b) 19
    c) 20 d) 21
43. **Which encoding scheme can represent over a million characters?**
    a) ASCII b) ISCII
    c) UNICODE d) UTF-8
44. **What is the binary equivalent of the ASCII value for the character 'C'?**
    a) 1000011 b) 1000100
    c) 1000111 d) 1001000
45. **What is the hexadecimal representation of the binary number $(110110101011)_2$?**
    a) DAB b) DBA
    c) DBB d) DAA
46. **How many bits are used in a UNICODE encoding scheme?**
    a) 8 bits b) 16 bits
    c) 24 bits d) 32 bits
47. **Which number system is commonly used in computer programming?**
    a) Binary b) Decimal
    c) Octal d) Hexadecimal
48. **What is the binary equivalent of the hexadecimal number (2F)16?**
    a) 101111 b) 110010
    c) 111100 d) 110111
49. **What is the octal equivalent of the binary number (1101011)2?**
    a) 153 b) 154
    c) 155 d) 156

50. **What is the binary representation of the ASCII code for the character 'B'?**
    a) 1000001 b) 1000010
    c) 1000011 d) 1000100

51. **Assertion** (A): An operating system is a system software.
    **Reason** (R) : The software that controls internal computer operations is called system software.
    a) Both A and R are true, and R is the correct explanation for A
    b) Both A and R are true, but R is not the correct explanation for A
    c) A is True but R is False
    d) A is false but R is True

52. **Assertion** (A): An operating system is an application software.

    **Reason** (R) : The software that controls internal computer operations, is called system s/w
    a) Both A and R are true, and R is the correct explanation for A
    b) Both A and R are true, but R is not the correct explanation for A
    c) A is True but R is False
    d) A is false but R is True

53. **Assertion**: The binary number 10101010 can be written as AA in hexadecimal.
    **Reason**: The hexadecimal number system uses 16 symbols, from 0 to 9 and A to F, torepresent Numbers.
    a) Both A and R are true, and R is the correct explanation for A
    b) Both A and R are true, but R is not the correct explanation for A
    c)A is True but R is False
    d) A is false but R is True

54. **Assertion**: The octal number system has a base value of 8.
    **Reason**: The octal number system uses 8 digits, from 0 to 7, to form numbers.
    a) Both A and R are true, and R is the correct explanation for A
    b) Both A and R are true, but R is not the correct explanation for A
    c) A is True but R is False
    d)A is false but R is True

55. **Assertion**: ASCII can represent characters from all writing systems around the world.
    **Reason**: ASCII is a widely used character encoding scheme in computing.
    a) Both A and R are true, and R is the correct explanation for A
    b) Both A and R are true, but R is not the correct explanation for A
    c) A is True but R is False
    d)A is false but R is True

56. **Assertion:** ISCII is primarily used to encode characters from non-Indian languages.
**Reason:** ISCII includes additional characters for Indian scripts.
a) Both A and R are true, and R is the correct explanation for A
b) Both A and R are true, but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

57. **Assertion**: UTF-8 can represent all characters in the Unicode standard.
**Reason:** UTF-8 uses variable-length encoding.
a) Both A and R are true, and R is the correct explanation for A
b) Both A and R are true, but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

58. **Assertion (A):** Text file stores information in the ASCII or Unicode format.
**Reasoning (R):** In a text file, there is no delimiter for a line.
a) Both A and R are true, and R is the correct explanation for A
b) Both A and R are true, but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

59. **Assertion (A):** A binary number is a string of zeros and ones only.
**Reason (R):** The base in a binary system is 2
a) Both A and R are true, and R is the correct explanation for A
b) Both A and R are true, but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

60. **Assertion (A):** The binary number system is more efficient for human readability than the decimal number system.
**Reasoning (R):** The binary system uses only two digits 0 and 1.
a) Both A and R are true, and R is the correct explanation for A
b) Both A and R are true, but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

61. **Assertion (A):** The hexadecimal number system is base 16.
**Reasoning (R):** The hexadecimal system uses the digits 0-9 and the letters A-F**.**
a) Both A and R are true, and R is the correct explanation for A
b) Both A and R are true, but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

62. **Assertion (A):** The binary number 1010 is equal to the decimal number 10.
**Reasoning (R):** In binary, each digit represents a power of 2.
a) Both A and R are true, and R is the correct explanation for A
b) Both A and R are true, but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

**Fill in the Blanks**

1. The Decimal number system is composed of …… symbols.
2. The Binary number system is composed of ……. symbols.
3. The Octal number system is composed of …… symbols.
4. The Hexadecimal number system is composed of ……. symbols.
5. The illegal digits of octal number system are ……..
6. Hexadecimal number system recognizes symbols ……..
7. Each octal number is replaced with ……. octal to binary conversion.
8. Each Hexadecimal number is replaced with ……. Hex to binary conversion.
9. ASCII is a …… code while extended ASCII is a *8* bit code.
10. The ……. encoding scheme can represent all symbols/characters of most languages.
11. The …… encoding scheme represents Indian Languages' characters on computers.
12. UTF8 can take up to …….. to represent a symbol.
13. UTF32 takes exactly …….. represent a symbol.
14. Unicode value of a symbol is called code ……..

**2-Mark Questions**

1. What is encoding?
2. Explain the significance of the code value 65 for the key "A."
3. Define ASCII.
4. How many bits does ASCII use to represent characters?
5. How is the ASCII value of the key 'A' represented in binary?
6. What is ISCII?
7. How many bits does ISCII use to represent characters?
8. Why was the Unicode standard developed?
9. What is the range of values for the Unicode encoding scheme?
10. Explain the term "cipher."
11. What is the binary equivalent of the decimal number 65?
12. How is the character 'अ' represented in hexadecimal?
13. Name any two Unicode encoding schemes.
14. What is the radix of a number system?
15. How does the computer interpret keys pressed on a keyboard?

16. What is the decimal value of the ASCII code for the character 'D'?
17. How many characters can a 7-bit ASCII code represent?
18. What is the hexadecimal value for the Unicode character 'अ'?
19. Explain the importance of standard encoding schemes.
20. What is the main limitation of the ASCII encoding scheme?

**3-Mark Questions**

1. Describe the process of encoding a key pressed on a keyboard.
2. Explain how the word 'DATA' is encoded using ASCII and converted to binary.
3. Discuss the significance of ASCII in the early 1960s.
4. How does ISCII facilitate the use of Indian languages on computers?
5. Compare ASCII and ISCII in terms of character representation.
6. Explain the concept of Unicode and its importance.
7. How is the Unicode standard different from ASCII and ISCII?
8. What are the main features of the Unicode standard?
9. Describe the process of converting a decimal number to binary.
10. What are the different number systems mentioned in the document?
11. How does Unicode support multiple languages?
12. Explain the concept of a number system with examples.
13. Discuss the advantages of using Unicode over other encoding schemes.
14. How is the binary value of a character obtained from its ASCII code?
15. What are the common issues with non-standard encoding schemes?
16. Explain the significance of the hexadecimal number system in encoding.
17. Describe how special symbols are encoded using ASCII.
18. How does Unicode handle characters from different languages?
19. What is the role of encoding schemes in computer communication?
20. Explain the term 'radix' with reference to number systems.

**5-Mark Questions**

1. Discuss the development and evolution of the ASCII encoding scheme.
2. Explain the encoding process of the word 'DATA' using ASCII and its binary conversion in detail.
3. Describe the ISCII encoding scheme and its impact on Indian language computing.
4. Compare and contrast ASCII, ISCII, and Unicode encoding schemes.
5. Explain the Unicode standard, its development, and its global impact on computing.
6. Discuss the process of converting numbers between different number systems.
7. Explain the significance of encoding schemes in the context of global communication.
8. Describe the challenges and solutions provided by Unicode in handling multiple languages.

9. Explain the importance of encoding schemes in data representation and communication.
10. Discuss the role of encoding schemes in the development of computer technology.
11. Explain the process of encoding and decoding data in computer systems.
12. Describe the different types of number systems and their applications in computing.
13. Discuss the advantages and disadvantages of ASCII, ISCII, and Unicode.
14. Explain the role of encoding schemes in data security and encryption.
15. Describe the future trends and developments in encoding schemes and number systems.

# CHAPTER 3
# EMERGING TRENDS

**Multiple Choice Questions**

1. **What is Artificial Intelligence (AI)?**
   a) A form of computer software
   b) Simulation of human intelligence by machines
   c) A type of robot
   d) A programming language
2. **Which of the following is an application of AI?**
   a) Internet Browsing
   b) Traffic Management Systems
   c) E-mail Services
   d) Social Media Tagging
3. **What does Machine Learning allow computers to do?**
   a) Work without any human input
   b) Learn from data using statistical techniques
   c) Operate systems automatically
   d) Perform calculations quickly
4. **What is Natural Language Processing (NLP) used for?**
   a) Interpreting computer languages
   b) Translating text to speech and vice versa
   c) Managing databases
   d) Enhancing video graphics
5. **Which is an example of immersive experience technology?**
   a) Database Management
   b) Augmented Reality (AR)
   c) Internet Browsing
   d) Word Processing
6. **What does VR stand for?**
   a) Virtual Robot
   b) Visual Reality
   c) Virtual Reality
   d) Visual Robot
7. **Which technology superimposes computer-generated information on the real world?**
   a) Virtual Reality
   b) Natural Language Processing
   c) Machine Learning
   d) Augmented Reality
8. **Which of the following is a use of robots?**
   a) Editing photos
   b) Sending emails
   c) Industrial automation
   d) Playing video games

9. **What is Big Data characterized by?**
    a) Low Volume
    b) High Complexity
    c) Simple Structure
    d) Low Variety
10. **Which characteristic of Big Data represents the rate of data generation?**
    a) Volume
    b) Velocity
    c) Veracity
    d) Value
11. What does the Veracity characteristic of Big Data refer to?
    a) Data consistency and trustworthiness
    b) Data volume
    c) Data speed
    d) Data variety
12. What does IoT stand for?
    a) Internet of Transactions
    b) Internet of Technology
    c) Internet of Things
    d) Internet of Tools
13. Which technology allows devices to communicate over the internet?
    a) Big Data
    b) Virtual Reality
    c) Artificial Intelligence
    d) Internet of Things
14. What is a primary component of a robot?
    a) Virtual Reality Headset
    b) Sensors
    c) Machine Learning Algorithms
    d) Augmented Reality Tools
15. **Which of the following is NOT a subsystem of AI?**
    a) Natural Language Processing
    b) Machine Learning
    c) Data Analytics
    d) Internet of Things
16. **What type of AI system can translate texts between languages?**
    a) Natural Language Processing
    b) Machine Learning
    c) Data Analytics
    d) Augmented Reality

17. **Which immersive experience allows interaction with a computer-generated environment?**
    a) Augmented Reality
    b) Virtual Reality
    c) Machine Learning
    d) Internet of Things
18. **What is a humanoid robot?**
    a) A robot that looks like a human
    b) A robot designed for space missions
    c) A robot used in industrial tasks
    d) A robot that flies autonomously
19. **Which application area is NOT typically associated with drones?**
    a) Filming and photography
    b) Text editing
    c) Search and rescue
    d) Agriculture
20. **What does the 'Volume' characteristic in Big Data refer to?**
    a) Data accuracy
    b) Data size
    c) Data speed
    d) Data variety
21. **What kind of data does Big Data involve?**
    a) Only structured data
    b) Only unstructured data
    c) Both structured and unstructured data
    d) Only text data
22. **What is the goal of AI?**
    a) To replace all human jobs
    b) To simulate human intelligence in machines
    c) To create faster computers
    d) To manage large datasets
23. **What are AI-powered personal assistants?**
    a) Virtual machines
    b) Data analytics tools
    c) Digital personal assistants like Siri and Alexa
    d) Database management systems
24. **What is a primary challenge in handling Big Data?**
    a) Editing photos
    b) High computation speed
    c) Data storage and processing
    d) Simple calculations

25. **What does the ‘Value’ characteristic of Big Data imply?**
    a) Data size
    b) Data accuracy
    c) Business value of hidden patterns
    d) Data variety
26. **Which of the following is a feature of Natural Language Processing?**
    a) Predictive typing in search engines
    b) Automated video editing
    c) Real-time data processing
    d) Database management
27. **What does the term ‘immersive experiences’ refer to?**
    a) Simple user interactions
    b) High-speed data processing
    c) Experiences that simulate real-world interactions
    d) Data storage solutions
28. **Which technology can help in creating 3D computer-generated situations?**
    a) Augmented Reality
    b) Big Data
    c) Virtual Reality
    d) Internet of Things
29. **Which component is essential for a robot to interact with its environment?**
    a) Database
    b) Sensor
    c) VR headset
    d) Software
30. **What is the primary function of Data Analytics?**
    a) To store large volumes of data
    b) To examine data sets to draw conclusions
    c) To create virtual environments
    d) To operate
31. Which field involves adding digital elements to the physical world?
    a) Virtual Reality
    b) Natural Language Processing
    c) Augmented Reality
    d) Robotics
32. **What does the ‘Variety’ characteristic in Big Data indicate?**
    a) Speed of data generation
    b) Different types of data
    c) Data size
    d) Data accuracy

33. **Which of the following is NOT a use of AI?**
    a) Social media tagging
    b) Voice assistants
    c) Email drafting
    d) Traffic management
34. **What does an AI system use to make decisions?**
    a) User input
    b) Pre-programmed instructions
    c) Knowledge base
    d) Random selection
35. **What is the focus of Machine Learning?**
    a) Operating systems
    b) Learning from data using algorithms
    c) Data storage solutions
    d) Hardware development
36. **Which technology is used in automated customer service systems?**
    a) Augmented Reality
    b) Big Data
    c) Natural Language Processing
    d) Robotics
37. **What kind of reality does VR simulate?**
    a) Physical world only
    b) Computer-generated three-dimensional world
    c) Digital and physical world combined
    d) Physical sensations
38. **Which AI subsystem is concerned with interaction using human languages?**
    a) Machine Learning
    b) Data Analytics
    c) Natural Language Processing
    d) Virtual Reality
39. **What does the term ‘robot’ refer to?**
    a) Any machine with a computer
    b) A machine capable of carrying out tasks automatically
    c) A type of personal assistant
    d) A data processing tool
40. **Which characteristic of Big Data deals with data authenticity?**
    a) Variety
    b) Volume
    c) Velocity
    d) Veracity

41. **Which field is concerned with the design and operation of robots?**
    a) Data Analytics
    b) Natural Language Processing
    c) Robotics
    d) Virtual Reality
42. **Which of the following is NOT an example of immersive experiences?**
    a) Watching 3D movies
    b) Virtual Reality games
    c) Text editing software
    d) Flight simulators
43. **What does the 'Velocity' characteristic of Big Data represent?**
    a) Size of data
    b) Trustworthiness of data
    c) Rate of data generation
    d) Value of data
44. **Which technology is used to enhance physical world experiences with digital information?**
    a) Machine Learning
    b) Augmented Reality
    c) Virtual Reality
    d) Robotics
45. **What type of data is analyzed using Data Analytics?**
    a) Only structured data
    b) Both structured and unstructured data
    c) Only unstructured data
    d) Data with low complexity
46. **What is the primary goal of Natural Language Processing?**
    a) To create large databases
    b) To process and interpret human language
    c) To design VR environments
    d) To store Big Data
47. **What is the advantage of usingrobots in industries?**
    a) Slower production times
    b) Increased accuracy and efficiency
    c) More human intervention
    d) Higher costs
48. **Which technology can transform industries by making them more efficient?**
    a) Robotics
    b) Text editing
    c) Simple calculations
    d) E-mail services

49. What does a Virtual Reality system require?
    a) Standard computer screen
    b) Specialized VR headset
    c) Simple speakers
    d) Basic keyboard
50. **Which is NOT a component of the Internet of Things?**
    a) Sensors
    b) Actuators
    c) Database management
    d) Connectivity
51. **Assertion (A):** Artificial intelligence makes machine to work with minimum or zero human intervention.
    **Reasoning(R)**: Artificial intelligence endeavours to simulate the natural intelligence of human beings into machine.
    a) Both A and R is true and R is correct explanation.
    b) Both A and R is true and R is not correct explanation.
    c) A is true and R is false.
    d) A is false and R is true.
52. **Assertion (A):** Machine learning requires good quality and sufficient data to train and test the algorithm.
    **Reasoning(R):** For correct classification, good quality data which is free from noise and sufficient data is required for training and testing of algorithm.
    a) Both A and R is true and R is correct explanation.
    b) Both A and R is true and R is not correct explanation.
    C) A is true and R is false.
    d) A is false and R is true.
53. **Assertion (A):** Natural language processing deals with interaction between human and computer system using common frequently spoken languages like Hindi ,English etc..
    **Reasoning(R):** Spell-check feature is an implementation of N L P .
    a) Both A and R is true and R is correct explanation.
    b) Both A and R is true and R is not correct explanation.
    c) A is true and R is false.
    d) A is false and R is true.
54. **Assertion (A)**: Immersive experiences allow the user to visualize, feel and react by stimulating their senses.
    **Reasoning(R):** immersive experiences have been used in the field of medicine and communication.
    a) Both A and R is true and R is correct explanation.
    b) Both A and R is true and R is not correct explanation.
    c) A is true and R is false.

d) A is false and R is true.

55. **Assertion (A)**: Machine learning comprises algorithm that use data to learn on their own and make prediction.
**Reasoning(R):** Machine leaning models are first trained using training data and tested using testing data after successive training give results with accuracy.
a) Both A and R is true and R is correct explanation.
b) Both A and R is true and R is not correct explanation.
c) A is true and R is false.
d) A is false and R is true.

56. **Assertion (A):** It is difficult to store huge data using cloud computing.
**Reasoning(R)**: Storage of data is cost effective and time saving in cloud computing.
a) Both A and R is true and R is correct explanation.
b) Both A and R is true and R is not correct explanation.
c) A is true and R is false.
d) A is false and R is true.

57. **Assertion (A):** IoT based school bus tracking and monitoring system can be used to ensure the safety of children.
**Reasoning(R):** IoT based bus tracking and monitoring school devices uses GPS and Google earth.
a) Both A and R is true and R is correct explanation.
b) Both A and R is true and R is not correct explanation.
c) A is true and R is false.
d) A is false and R is true.

58. **Assertion (A):** Big data is a term used to represent a collection of data set of huge volume and complexity.
**Reasoning(R):** Big data comprises structured data or unstructured data.
a) Both A and R is true and R is correct explanation.
b) Both A and R is true and R is not correct explanation.
c) A is true and R is false.
d) A is false and R is true.

59. **Assertion (A)**Machine Learning is a subsystem of AI.
**Reason (R)** In machine learning computers have the ability to learn from data using statistical techniques, without being explicitly programmed by a human being.
a) A is true and R is correct explanation
b) A is false and R is incorrect explanation
c) A is true and R is incorrect explanation
d) A is false and R is correct explanation

60. **Assertion (A)**NLP is not a subfield of AI.
**Reason** (R)NLP enables computers to understand and process human language. It can perform text to speech and speech to text conversion.
    a) A is true and R is correct explanation
    b) A is false and R is correct explanation
    c) A is true and R is incorrect explanation
    d) A is false and R is incorrect explanation
61. **Assertion (A)**A robot is basically a machine capable of carrying out one or more tasks automatically with accuracy and precision.
**Reason (R)**Robots were purely conceptualised for doing repetitive industrial tasks.
    a) A is true and R is correct explanation
    b) A is false and R is incorrect explanation
    c) A is true and R is incorrect explanation
    d) A is false and R is correct explanation
62. **Assertion (A)** IoT is a network of devices that have an embedded hardware and software to communicate with other devices on the same network.
**Reason (R)**Smart phones and smart watches are not a part of IoT.
    a) A is true and R is True
    b) A is false and R is true
    c) A is false and R is true
    d) A is true and R is false

**2 Marks Questions**

1. Define the term "Emerging Trends."
2. What are intelligent digital personal assistants powered by?
3. What is the primary goal of Artificial Intelligence?
4. Explain the term "knowledge base" in AI.
5. What is Machine Learning?
6. Give an example of Natural Language Processing (NLP).
7. What characterizes Big Data?
8. What is the "Internet of Things" (IoT)?
9. What are microcontrollers used for in IoT?
10. Explain the concept of "Web of Things" (WoT).
11. What is an accelerometer?
12. What role does a gyroscope play in mobile devices?
13. Name two types of robots.
14. What is the primary use of sensors in robots?
15. Define the term "veracity" in Big Data.
16. What is the significance of the "value" characteristic in Big Data?
17. How does data analytics help in business decisions?

18. What is the relationship between Big Data and business value?
19. What is the role of sensors in the Internet of Things?
20. How can IoT improve everyday household tasks?

**3 Marks Questions**

1. Describe the importance of emerging trends in technology.
2. Explain how AI is integrated into digital personal assistants like Siri or Alexa.
3. Discuss the process of creating a knowledge base for AI systems.
4. How does Machine Learning differ from traditional programming?
5. Illustrate with an example how NLP is used in everyday applications.
6. What challenges are associated with Big Data?
7. How does the Internet of Things enhance device connectivity?
8. Discuss the concept of smart homes enabled by IoT.
9. Explain the advantages of the Web of Things over traditional IoT.
10. Describe how accelerometers and gyroscopes work together in smartphones.
11. Compare and contrast different types of robots.
12. Discuss the significance of sensors in modern robotics.
13. Explain the importance of veracity in processing Big Data.
14. How can hidden patterns in Big Data be valuable for businesses?
15. What are the main benefits of data analytics in scientific research?
16. Describe the impact of Big Data on data storage and processing techniques.
17. How do microcontrollers contribute to the functionality of IoT devices?
18. Discuss the potential uses of IoT in disaster management.
19. Explain how IoT can transform traditional industries.
20. Describe the role of AI in enhancing the capabilities of IoT.

**5 Marks Questions**

1. Discuss the evolution and significance of emerging trends in the digital economy.
2. How does Artificial Intelligence simulate human cognitive functions? Provide examples.
3. Describe the process and significance of training and testing models in Machine Learning.
4. Explain the various applications of Natural Language Processing in different fields.
5. Analyze the characteristics of Big Data and their implications on data processing.
6. Discuss the infrastructure and components necessary for the Internet of Things.
7. How does the Web of Things create a unified interface for IoT devices?
8. Explain the role and importance of sensors in IoT and robotics.
9. Compare the characteristics of different types of robots and their applications.

10. Discuss the challenges and solutions in handling the veracity and value of Big Data.
11. How can data analytics transform decision-making processes in businesses and research?
12. Explain the relationship between Big Data, AI, and IoT in modern technology.
13. Discuss the potential future developments and challenges in IoT and smart technologies.
14. Analyze the role of AI and Machine Learning in enhancing IoT capabilities.
15. How can emerging trends like AI, Big Data, and IoT shape the future of digital societies?

# CHAPTER 4
# INTRODUCTION TO PROBLEMSOLVING

## Multiple Choice Questions

1. **What is the first step in problem-solving as per the textbook?**
   a) Testing the solution
   b) Coding the algorithm
   c) Analyzing the problem
   d) Debugging the program
2. **What is an algorithm?**
   a) A set of exact steps to solve a problem
   b) A programming language
   c) A type of computer hardware
   d) A method of debugging
3. **What does the term "computerization" refer to?**
   a) The use of computers to develop software for automating tasks
   b) The physical components of a computer system
   c) The process of debugging a program
   d) The network connectivity of computers
4. **Which of the following is NOT a characteristic of a good algorithm?**
   a) Precision
   b) Uniqueness
   c) Infinite steps
   d) Finiteness
5. **What does the process of 'coding' involve?**
   a) Writing an algorithm
   b) Testing the program
   c) Converting the algorithm into a format understood by the computer
   d) Debugging the code
6. **What shape is used to represent a process in a flowchart?**
   a) Parallelogram
   b) Rectangle
   c) Diamond
   d) Circle
7. **In a flowchart, which symbol represents the start or end?**
   a) Diamond
   b) Rectangle
   c) Oval
   d) Parallelogram
8. **What is the purpose of developing an algorithm before writing code?**
   a) To debug the program
   b) To convert it into machine language
   c) To have a clear solution plan
   d) To test the program
9. **Which step comes immediately after developing an algorithm?**
   a) Debugging
   b) Testing
   c) Coding
   d) Analyzing the problem
10. **What does GIGO stand for?**
    a) Garbage In, Garbage Out
    b) Good Input, Good Output
    c) Great Input, Great Output
    d) Generated Input, Generated Output

11. **What does ‘finiteness’ in an algorithm mean?**
    a) The algorithm stops after a finite number of steps
    b) The algorithm has infinite steps
    c) The algorithm has unique steps
    d) The algorithm processes data infinitely
12. **Which of the following is an essential skill for a computer science student?**
    a) Problem-solving
    b) Debugging
    c) Coding
    d) All of the above
13. **What is the output of an algorithm?**
    a) Input data
    b) A set of instructions
    c) The result of the process
    d) A debugging report
14. **What does the parallelogram symbol in a flowchart represent?**
    a) Process
    b) Decision
    c) Input/Output
    d) Start/End
15. **Which of the following steps is NOT part of the problem-solving process mentioned in the textbook?**
    a) Analyzing the problem
    b) Developing an algorithm
    c) Compiling the code
    d) Testing and debugging
16. **What should be done after finalizing the algorithm?**
    a) Debugging
    b) Testing
    c) Coding
    d) Analyzing the problem
17. **Why is it important to textbook the coding procedures?**
    a) To make the code run faster
    b) To understand the logic at a later stage
    c) To avoid writing an algorithm
    d) To reduce the size of the program
18. **What is the role of testing in the problem-solving process?**
    a) To analyze the problem
    b) To write the algorithm
    c) To check if the program meets user requirements
    d) To convert the algorithm into code
19. **Which of the following is a key component of analyzing a problem?**
    a) Writing the program code
    b) Listing the principal components of the problem
    c) Testing the solution
    d) Debugging the program
20. **What is the primary purpose of using an algorithm?**
    a) To debug the program
    b) To test the program
    c) To increase reliability, accuracy, and efficiency
    d) To compile the program

21. **What does the diamond shape in a flowchart represent?**
    a) Process
    b) Decision
    c) Input/Output
    d) Start/End
22. **Which programming language can be used to write a program after developing an algorithm?**
    a) Only Python
    b) Any high-level language
    c) Only Java
    d) Only C++
23. **What must be done if the program generates incorrect output?**
    a) Analyze the problem
    b) Develop a new algorithm
    c) Check for logical errors
    d) Ignore the output
24. **Why is a roadmap important for a programmer?**
    a) To debug the program
    b) To clearly visualize the instructions to be written
    c) To reduce the size of the program
    d) To increase the speed of the program
25. **What is the function of a 'terminator' symbol in a flowchart?**
    a) To represent a decision point
    b) To indicate the start or end of the process
    c) To show data input/output
    d) To represent a process or action
26. **What should be done after coding the algorithm?**
    a) Analyzing the problem
    b) Testing and debugging
    c) Developing the algorithm
    d) Writing the problem statement
27. **Why is precision important in an algorithm?**
    a) To reduce the number of steps
    b) To ensure the steps are clearly stated and defined
    c) To make the algorithm run faster
    d) To avoid using high-level language
28. **Which step in problem-solving involves identifying the logical steps to reach a solution?**
    a) Analyzing the problem
    b) Developing the algorithm
    c) Coding
    d) Testing and debugging
29. **Which shape in a flowchart represents input or output data?**
    a) Oval
    b) Rectangle
    c) Parallelogram
    d) Diamond
30. **Why is uniqueness important in an algorithm?**
    a) To ensure each step is uniquely defined
    b) To make the algorithm run faster
    c) To reduce the number of steps
    d) To avoid using high-level language

31. **What is the primary objective of problem-solving in computer science?**
    a) To debug the program
    b) To automate tasks efficiently
    c) To reduce the size of the program
    d) To increase the speed of the program
32. **In a flowchart, what is used to represent a decision?**
    a) Oval
    b) Rectangle
    c) Diamond
    d) Parallelogram
33. **What should be the next step if an algorithm is not producing the correct output?**
    a) Ignoring the error
    b) Rewriting the problem statement
    c) Revising the algorithm to check for logical errors
    d) Converting it into a flowchart
34. **Why is it necessary to document the coding process?**
    a) To write more complex code
    b) To ensure the code is understandable and maintainable
    c) To reduce the size of the code
    d) To avoid using high-level language
35. **What role does testing play in the problem-solving process?**
    a) To identify any logical errors in the algorithm
    b) To write the final algorithm
    c) To analyze the problem statement
    d) To convert the algorithm into code
36. **What is the purpose of a flowchart?**
    a) To represent an algorithm visually
    b) To write the code
    c) To debug the program
    d) To test the solution
37. **Which of the following is NOT a step in the problem-solving process?**
    a) Analyzing the problem
    b) Writing the program
    c) Testing and debugging
    d) Developing the algorithm
38. **What is 'finiteness' in the context of an algorithm?**
    a) The algorithm must have a finite number of steps
    b) The algorithm must run indefinitely
    c) The algorithm should have unique steps
    d) The algorithm must have infinite steps
39. **Why is it necessary to debug a program?**
    a) To increase the size of the code
    b) To ensure the program runs without errors
    c) To write the algorithm
    d) To develop the problem statement

40. **What does a rectangle represent in a flowchart?**
    a) Decision
    b) Input/Output
    c) Start/End
    d) Process
41. **Which step involves checking if a program meets user requirements?**
    a) Analyzing the problem
    b) Developing the algorithm
    c) Coding
    d) Testing
42. **What is the outcome of an algorithm?**
    a) Analyzing the problem
    b) Writing the program
    c) Producing a result
    d) Debugging the program
43. **What is the significance of 'precision' in an algorithm?**
    a) To reduce the number of steps
    b) To ensure each step is clearly defined
    c) To make the algorithm faster
    d) To avoid using high-level language
44. **Why is it important to develop an algorithm before coding?**
    a) To reduce the size of the program
    b) To have a clear solution plan
    c) To debug the code
    d) To increase the speed of the program
45. **What is the role of testing in programming?**
    a) To analyze the problem
    b) To write the code
    c) To identify and fix errors
    d) To develop the algorithm
46. **What shape represents the start or end in a flowchart?**
    a) Rectangle
    b) Parallelogram
    c) Oval
    d) Diamond
47. **Which of the following best describes 'uniqueness' in an algorithm?**
    a) Each step is distinct and clearly defined
    b) The algorithm has infinite steps
    c) The algorithm runs indefinitely
    d) The algorithm is written in a high-level language
48. **What should be done if a program produces unexpected results?**
    a) Ignore the results
    b) Re-analyze the problem
    c) Debug and test the program
    d) Write a new algorithm
49. **What does the term 'coding' refer to in problem-solving?**
    a) Writing the problem statement
    b) Converting the algorithm into a programming language
    c) Testing the program
    d) Analyzing the problem
50. **Why is 'debugging' an essential part of problem-solving in programming?**
    a) To write the algorithm
    b) To fix errors in the code
    c) To reduce the size of the program
    d) To develop the problem statement

51. **Assertion** (A) A flow chart is type of diagram that represents the algorithm graphicallyusing the boxes.
**Reason** (R) an algorithm where all the steps are executed in one after the other
a) Both A and R are true and R is the correct explanation for A
b) Both A and R are true but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

52. **Assertion** (A):A flowchart is a type of diagram that represents a workflow or process
**Reason** (R) :A flowchart can also be defined as a diagrammatic representation of an algorithm
a) Both A and R are true and R is the correct explanation for A
b) Both A and R are true but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

53. **Assertion** (A):An **algorithm** is a procedure used for solving a problem or performing acomputation.
**Reason** (R) :Algorithm may have infinite number of instructions.
a) Both A and R are true and R is the correct explanation for A
b) Both A and R are true but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

54. **Assertion** (A):Pseudocode requires strict programming language syntax
**Reason** (R) :Pseudocode summarizes a program's flow
a) Both A and R are true and R is the correct explanation for A
b) Both A and R are true but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

55. **Assertion** (A): The if Then flowchart statement is a two-way system that executes two blocks of statements
**Reason** (R) :if the condition inside the if block is true, the program executes all the statements within that if block.
a) Both A and R are true and R is the correct explanation for A
b) Both A and R are true but R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

56. **Assertion (A)**Algorithm is a step by step procedure designed to perform an operation which will lead to the desired result.
**Reason (R)**An algorithm gives solutions in infinite number of steps. It does not receive any input and produces some output.
a) A is true and R is correct explanation
b) A is false and R is incorrect explanation
c) A is true and R is incorrect explanation
d) A is false and R is correct explanation

57. **Assertion (A)**A flowchart is not a visual representation of an algorithm.
**Reason (R)**Flowchart is made up of boxes, diamonds and other shapes, connected by arrows.
a) A is true and R is correct explanation
b) A is false and R is incorrect explanation
c) A is true and R is incorrect explanation
d) A is false and R is correct explanation

58. **Assertion (A)**Pseudocode is considered as a non-formal language that helps programmers to write algorithm.
**Reason (R)**A pseudocode of a program helps in representing the basic functionality of the intended program..
a) A is true and R is correct explanation
b) A is false and R is incorrect explanation
c) A is true and R is incorrect explanation
d) A is false and R is correct explanation

59. **Assertion (A)**A program written in machine language is called source code.
**Reason (R)**We need to translate the source code into object code using a compiler or an interpreter.
a) A is true and R is True
b) A is false and R is true
c) A is false and R is true
d) A is true and R is false

2 **Marks Questions**

1. Define an algorithm.
2. What is pseudocode?
3. Explain the term "flowchart."
4. What are conditionals in programming?
5. What is the purpose of a flowchart?
6. Describe the term "sequence" in the context of algorithms.
7. What does iterative mean in algorithm design?
8. Why is it important to verify an algorithm?
9. What is a loop in programming?
10. What is the significance of decision making in algorithms?
11. Write pseudocode to add two numbers.
12. Define "space complexity" in algorithm analysis.
13. Define "time complexity" in algorithm analysis.
14. What are the components of a flowchart?
15. Explain the difference between pseudocode and a flowchart.
16. What is an Armstrong number?
17. Describe the term "branching" in algorithms.
18. What is a single-digit number algorithm?
19. Explain the term "aggregate marks."
20. What is the role of an algorithm in problem-solving?

**3 Marks Questions**

1. Write an algorithm to find the greatest of two numbers.
2. Explain the importance of pseudocode before actual coding.
3. Describe the process of writing a flowchart for a given algorithm.
4. How can you improve an algorithm that fails for certain inputs?
5. Write pseudocode for calculating the area and perimeter of a rectangle.
6. Explain the importance of conditionals with an example.
7. How do you calculate the percentage of marks in three subjects?
8. Describe the algorithm for checking whether a number is within a specific range.
9. Explain how to handle time addition in pseudocode when minutes exceed 60.
10. Discuss the significance of decision-making algorithms with a real-life example.
11. What steps should be taken if an algorithm has multiple approaches?
12. Explain the importance of verifying an algorithm with an example.
13. Describe the pseudocode to classify numbers as "Single Digit," "Double Digit," or "Big."
14. Write an algorithm to calculate the water bill based on consumption.
15. What improvements can be made to an algorithm that only accepts positive integers up to 100?

16. Explain the algorithm for determining the winner in a coin-flipping game.
17. Write the pseudocode to print all multiples of 5 between 10 and 25.
18. How do you write an algorithm to read the marks of three subjects and calculate the aggregate?
19. What is the significance of iterative steps in an algorithm?
20. Describe the process of designing an algorithm to add hours and minutes.

**5 Marks Questions**

**1**. Write a detailed algorithm to determine the winner in a coin-flipping game.
2. Explain the importance of flowcharts in problem-solving with a detailed example.
3. Describe the algorithm for adding hours and minutes, including the necessary conditionals.
4. Write the pseudocode and draw the flowchart for calculating the area and perimeter of a rectangle.
5. Explain the importance of verifying algorithms with multiple examples.
6. Discuss the different approaches to solving a problem using algorithms.
7. Write a detailed algorithm to classify numbers as "Single Digit," "Double Digit," or "Big."
8. Describe the steps involved in writing an algorithm for the total water bill calculation.
9. Explain the process of improving an algorithm that fails for certain inputs with a detailed example.
10. Write a detailed pseudocode to calculate the factorial of a number.
11. Describe the process of writing an algorithm that accepts only positive integers up to 100.
12. Explain the steps involved in designing an algorithm for a coin-flipping game with detailed conditionals.
13. Write a detailed algorithm to print all multiples of 5 between 10 and 25.
14. Describe the process of writing an algorithm to read the marks of three subjects and calculate the percentage.
15. Explain the significance of iterative and branching steps in algorithm design with examples
16. Explain the various steps involved in problem solving.
17. Explain the Characteristics of a good algorithm.

# CHAPTER 5
# GETTING STARTED WITHPYTHON

## Multiple Choice Questions

1. **Is Python case sensitive when dealing with identifiers?**
   a) yes b) no
   c)machine dependent d) none of the mentioned
2. **What is a program in computer science?**
   a) A set of machine language instructions
   b) A collection of hardware components
   c) An ordered set of instructions to be executed by a computer
   d) A high-level language
3. **Which of the following is invalid?**
   a) _a = 1 b) __a = 1
   c)__str__ = 1 d) none of the mentioned
4. **Which language is called machine language?**
   a) Python b) C++
   c) Assembly d) 0s and 1s
5. **What is source code?**
   a) Machine language code b) High-level language code
   c) Assembly language code d) Hardware description
6. **Which of the following uses an interpreter?**
   a) C++ b) Assembly
   c) Python d) Machine language
7. **Which quote is attributed to Donald Knuth in the textbook?**
   a) “Programming is fun.” b) “Computer programming is an art.”
   c) “Machines are powerful.” d) “High-level languages are easy.”
8. **Which of the following is NOT a feature of Python?**
   a) High-level language b) Case-sensitive
   c) Platform-dependent d) Rich library of predefined functions
9. **What is the symbol for the Python prompt in interactive mode?**
   a) $ b) %
   c) & d) >>>
10. **What is the extension of Python source code files?**
    a) .java b) .py
    c) .exe d) .txt

11. **Which mode in Python allows the execution of individual statements instantaneously?**
    a) Script mode
    b) Interactive mode
    c) Batch mode
    d) Compiled mode
12. **Which of the following is a Python keyword?**
    a) print
    b) import
    c) function
    d) main
13. **Which of the following is a valid identifier in Python?**
    a) 123abc
    b) abc123
    c) a!bc
    d) None of these
14. **What is a variable in Python?**
    a) A reserved word
    b) A function
    c) An object uniquely identified by a name
    d) A type of operator
15. **Which symbol is used for comments in Python?**
    a) //
    b) #
    c) @
    d) &
16. **In Python, everything is treated as ……**
    a) Variable
    b) Function
    c) Object
    d) Keyword
17. **Which function returns the identity of an object in Python?**
    a) id()
    b) identity()
    c) object_id()
    d) get_id()
18. **What are the two execution modes in Python?**
    a) Compiled and Interpreted
    b) Interactive and Script
    c) Synchronous and Asynchronous
    d) Batch and Real-time
19. **Which of the following is NOT a feature of Python?**
    a) Free and open source
    b) Case-sensitive
    c) Platform-independent
    d) Requires a compiler
20. **Which of the following is NOT a keyword in Python?**
    a) while
    b) assert
    c) print
    d) pass
21. **What is the output of the following Python code: ‘print(“Hello, World!”)‘?**
    a) Hello, World!
    b) “Hello, World!”
    c) print(“Hello, World!”)
    d) Syntax Error
22. **Which of the following statements is true about Python?**
    a) Python is a low-level language.
    b) Python is case-sensitive.
    c) Python cannot be used for web development.
    d) All these.

23. **What is the correct syntax for a single-line comment in Python?**
    a) // This is a comment
    b) /* This is a comment */
    c) # This is a comment
    d) < This is a comment >
24. **Which of the following is NOT a Python data type?**
    a) Integer
    b) String
    c) Boolean
    d) Character
25. **How do you create a variable in Python?**
    a) Using the var keyword
    b) By simply assigning a value to it
    c) Using the let keyword
    d) By declaring it first
26. **Which of the following is used for indentation in Python?**
    a) Curly braces
    b) Parentheses
    c) Tabs or spaces
    d) Semicolons
27. **What will be the output of the following code: ‘print(2 + 3 * 4)‘?**
    a) 20
    b) 14
    c) 24
    d) 12
28. **Which Python function is used to get input from the user?**
    a) input()
    b) read()
    c) scanf()
    d) get_input()
29. **What does the following Python code do:**
    **‘name = input(“Enter your name:”)‘?**
    a) Prints “Enter your name:”
    b) Assigns the string “Enter your name:” to the variable name
    c) Prompts the user to enter their name and stores it in the variable name
    d) Generates a syntax error
30. **Which of the following is an invalid variable name in Python?**
    a) var1
    b) _var
    c) 1var
    d) var_1
31. **What is the output of the following code: ‘print(10 / 3)‘?**
    a) 3.33333
    b) 3
    c) 3.0
    d) 10
32. **Which of the following is NOT an arithmetic operator in Python?**
    a) +
    b) -
    c) *
    d) &&
33. **What is the correct way to create a string in Python?**
    a) string s = “Hello”
    b) s = ‘Hello’
    c) s = Hello
    d) string s = ‘Hello’
34. **Which of the following methods can be used to convert a string to a list in Python?**
    **a)** list()
    b) split()
    c) convert()
    d) str()

35. **Which of the following is NOT a valid Python data type?**
    a) List
    b) Tuple
    c) Dictionary
    d) Array
36. **What is the output of the following code: ‘print(“Hello” + ” ” + “World”)‘?**
    a) Hello World
    b) HelloWorld
    c) “Hello World”
    d) Hello + World
37. **Which operator is used for exponentiation in Python?**
    a) ^
    b) **
    c) exp()
    d) pow()
38. **Which of the following is a mutable data type in Python?**
    a) String
    b) Tuple
    c) List
    d) Integer
39. **What is the output of the following code: ‘print(2**3)‘?**
    a) 5
    b) 6
    c) 8
    d) 9
40. **Which function is used to read input from the user in Python 3.x?**
    a) input()
    b) raw_input()
    c) scan()
    d) read**()**
41. **Which of the following statements will create a tuple in Python?**
    a) t = [1, 2, 3]
    b) t = {1, 2, 3}
    c) t = (1, 2, 3)
    d) t = 1, 2, 3
42. **What is the output of the following code: ‘print(type([]))‘?**
    a) <class ‘tuple’>
    b) <class ‘list’>
    c) <class ‘set’>
    d) <class ‘dict’>
43. **Which of the following operators is used for string concatenation in Python?**
    a) +
    b) &
    c) .
    d) concat()
44. **What is the correct way to declare a variable in Python?**
    a) var x = 5
    b) x := 5
    c) int x = 5
    d) x = 5
45. **What will be the output of the following code: ‘print(10 % 3)‘?**
    a) 1
    b) 3
    c) 10
    d) 0.3
46. **Which method is used to remove an item from a list in Python by its value?**
    a) remove()
    b) pop()
    c) delete()
    d) discard()
47. **What is the output of the following code: ‘print(5 == 5)‘?**
    a) True
    b) False
    c) Syntax Error
    d) 5

48. **Which method can be used to convert a list into a tuple in Python?**
    a) tuple()  b) list_to_tuple()
    c) to_tuple()  d) convert()
49. **Which of the following is used to define a block of code in Python?**
    a) Indentation  b) Curly braces
    c) Parentheses  d) Square brackets
50. **Which function is used to get the type of an object in Python?**
    a) type()  b) isinstance()
    c) id()  d) obj_type()

51. **Assertion** (A): Python is an interpreted language,
    **Reason**(R) : Python programs are executed by an interpreter.
    (a) A is true and R is correct explanation
    (b) A is false and R is incorrect explanation
    (c) A is true and R is incorrect explanation
    (d) A is false and R is correct explanation
52. **Assertion** (A): Python is portable and platform dependent,
    **Reason**(R) : Python programs can run on various operating systems and hardware platforms.
    (a) A is true and R is correct explanation
    (b) A is false and R is incorrect explanation
    (c) A is true and R is incorrect explanation
    (d) A is false and R is correct explanation
53. **Assertion** (A): In python, Interactive mode allows execution of individual statement instantaneously.
    **Reason**(R) : This mode can be used to execute source code file.
    (a) A is true and R is correct explanation
    (b) A is false and R is incorrect explanation
    (c) A is true and R is incorrect explanation
    (d) A is false and R is correct explanation
54. **Assertion** (A): Variables whose values can be changed after they are created and assigned are called mutable.
    **Reason**(R) : It is preferred to use lists when we need a simple iterable collection of data that may go for frequent modifications.
    (a) A is true and R is correct explanation
    (b) A is false and R is incorrect explanation
    (c) A is true and R is incorrect explanation
    (d) A is false and R is correct explanation

55. **Assertion** (A) : A dictionary is a mapping of keys to values
**Reason**(R) : A dictionary can be created by using curly braces and colon-separated pairs of keys and values.
(a) A is true and R is correct explanation
(b) A is false and R is incorrect explanation
(c) A is true and R is incorrect explanation
(d) A is false and R is correct explanation

56. **Assertion** (A): Evaluation of the expression is based on precedence of operators.
**Reason**(R) : Lower precedence operator is evaluated before the Higher precedence operator.
(a) A is true and R is correct explanation
(b) A is false and R is incorrect explanation
(c) A is true and R is incorrect explanation
(d) A is false and R is correct explanation

**Fill in the Blanks**

1. A **……..** is a reserved word carrying special meaning and purpose.
2. **……** are the user defined names for different parts of a program.
3. **……..** are the fixed values.
4. **……..** are the symbols that trigger some computation or action.
5. An **……** is a legal combination of symbols that represents a value.
6. Non-executable, additional lines added to a program, are known as **……..**.
7. In Python, the comments begin with **……..**character.
8. Python is a **……..** sensitive language.
9. The **……..** function prints the value of a variable/expression.
10. The **……..** function gets the input from the user.
11. The input( ) function returns the read value as of **……..** type.
12. To convert an input( )'s value in integer type, **……..** function is used.
13. To convert an input( )'s value in floating-point type, **……..** function is used.
14. Boolean data type is internally treated as **……..** data type.
15. Two forms of floating-point numbers are: **……** form and **……..** notation.
16. Python's floating-point numbers have precision of **……** digits.
17. Three mutable types of Python are **……..**, **……..** and **……..**.
18. The floor division of two integers yields a result of **……..** type.
19. The division of two integers yields a result of **……** type.
20. The **……..** sequence type cannot store duplicate values.
21. The **……..** datatype is like lists but is not mutable.
22. The **……** of an object gives the memory location of the object.
23. To check if two objects reference the same memory address, **……..** operator is used.

24. To use function fabs( ), **……** module should be imported.
25. To generate a random floating number in the range 0 to 100, **……..** function is used.
26. To generate a random integer in a range, ……. *or* ……. function is used.
27. To generate a random number in a sequence of values where two values have a difference a step value, ……. function is used.
28. To use mean() function, **…….** module is to be imported.

**2-Mark Questions**

1. Describe any two features of Python.
2. What are the different working modes in Python?
3. How are interactive mode and script mode different in Python?
4. What is the difference between keywords and identifiers?
5. How can you create a single-line string literal in Python?
6. What are delimiters in Python?
7. What are Boolean literals in Python? Give examples.
8. Why is the input() function used?
9. What is the difference between division operator and floor division operator?
10. Find the error in the following code and rewrite the corrected code.

a. a = 'Thank you! for visiting us! /Wishing you safe journey!'

b. a = input("enter value)

11. What is the difference between assignment operator and equality operator?
12. What is mapping data type? Explain with an example.
13. What is a programming language?
14. Define a program.
15. What is machine language?
16. What is the difference between high-level language and machine language?
17. Name any two high-level programming languages.
18. What is source code?
19. What is the role of a compiler?
20. What is the role of an interpreter?
21. Define Python as a high-level language.
22. What does it mean that Python is an interpreted language?
23. How does Python handle case sensitivity?
24. Mention any two features of Python.
25. What is the extension of a Python script file?
26. Explain the interactive mode in Python.
27. What is script mode in Python?
28. What are Python keywords?
29. Define identifiers in Python.
30. What are variables in Python?
31. How are comments added in Python?

32. What is an object in Python?
33. What is implicit conversion?
34. What is explicit conversion?

**3-Marks Questions**

1. Explain the process of program execution in Python using an interpreter.
2. What is the significance of the Python prompt `>>>`?
3. How can Python programs be executed in script mode?
4. Describe the use of indentation in Python.
5. How is Python useful in web development?
6. Explain the concept of 'interactive mode' with an example.
7. Python is a free and open-source language. What do you understand by this feature of Python? Explain.
8. What are the applications of the Python language?
9. What are literals? How many types of literals are allowed in Python?
10. What are tokens? How many tokens are there in Python?
11. What are operators? How many different types of operators are available in Python?
12. Find the error(s) in the following Python statement:

a. x-=23+(a*2)
b. print("Turn number:"+3)
c. 1+1=1*1SyntaxError: cannot assign to operator

13. Describe the steps to run a Python program in script mode.
14. What are the rules for naming an identifier in Python?
15. Explain with an example how variables are declared in Python.
16. How does Python handle data types?
17. Describe the purpose of comments in a Python program.
18. Explain the significance of the `id()` function in Python.
19. Differentiate between `None` and `False` in Python keywords.
20. What is meant by 'Python is platform-independent'?
21. Describe how Python uses indentation for blocks and nested blocks.
22. Explain the term 'portable' in the context of Python.
23. What are Python libraries and why are they important?
24. Describe how to download and install Python.
25. How does Python handle errors during execution?
26. What is meant by 'Python is free and open source'?

**5-MarksQuestions**

1. What is Lvalue and Rvalue in Python? Explain with a suitable example.
2. What are comments in Python? How many ways are there to add comments in a
3. Discuss the differences between a compiler and an interpreter.
4. Explain the process of writing and executing a Python program from installation to running a script.

5. Discuss the various features of Python that make it a preferred language for beginners.
6. Explain the concept of 'everything is an object' in Python with examples.
7. Describe in detail the steps involved in writing a Python program in script mode and running it.
8. Explain the different data types available in Python with examples.
9. Discuss the significance of Python in the context of modern programming and software development.
10. Explain the use of comments in Python with examples and describe their importance.
11. Describe the rules for naming identifiers in Python and explain why these rules are important.
12. Explain the concept of high-level and low-level programming languages and their differences.
13. Discuss the use of Python in web development and provide examples of popular web services built with Python.
14. What are the various ways to declare numeric literals?
15. What are Python literals and variables?
16. Write a program that inputs two value and display the swapped value.
17. Predict the output of the following:

a.
```
x,y = 3,5
x, y, x = x + 1, y + 2, x + 5
print(x,y)
```

b.
```
a = 1
a+ = 3
print(a)
```

c.
```
name = "Uday"
print('Hello' + name)
```

d.
```
a = 2
print(a>20)
```

e.
```
x, y = 8, 10
print('x = ',x,'y = ',y)
x, y = y, x
print('new x = ',x,'new y = ',y)
```

18. Which of the following variable names are invalid? Justify.
    i. try
    ii. 123-password
    iii. abc@123
    iv. toTAL_1
    v. for

19. Write the type of the following tokens:
    i. for
    ii. True
    iii. =
    iv. None
    v. \n
20. Explain how Python handles memory management and the concept of object IDs.
21. Describe the process of debugging in Python and common techniques used.
22. Explain with examples the different types of operators available in Python.
23. Discuss the role of Python in education and why it is a good choice for learning programming.
24. Explain various types of Errors.

# CHAPTER 6
# FLOW OF CONTROL

**Multiple Choice Questions**

1. **What is the order of execution of statements in a program called?**
   a) Execution flow b) Control flow
   c)Flow of control Program sequence
2. **Which control structures does Python support for flow of control?**
   a) Sequence and iteration b) Selection and iteration
   c)Selection and repetition d) Sequence and selection
3. **How does Python group statements into a single block of code?**
   a) Curly brackets b) Parentheses
   c)Indentation d) Semicolon
4. **What is used to implement decision-making in Python?**
   a) for loop b) if..else statement
   c)while loop d) switch statement
5. **What does the break statement do in a loop?**
   a) Skips an iteration b) Repeats the current iteration
   c)Exits the loop d) Restarts the loop
6. **What is the purpose of the continue statement?**
   a) Exits the loop b) Skips the current iteration
   c)Restarts the loop d) Ends the program
7. **What is a loop inside another loop called?**
   a) Recursive loop b) Nested loop
   c)Inner loop d) Infinite loop
8. **Which of the following is a correct example of a nested loop in Python?**
   a) ‘for i in range(3): for j in range(2): print(j)‘
   b) ‘for i in range(3) { for j in range(2) { print(j) } }‘
   c) ‘for (i in range(3)) (for j in range(2)) (print(j))‘
   d) ‘for i in range(3): { for j in range(2): { print(j) } }‘
9. **What happens if indentation is incorrect in a Python program?**
   a) Program runs with warnings b) Program skips the indented block
   c)Syntax error d) Indentation error
10. **How can a block of code be created in Python?**
    a) Using curly brackets ‘{}‘ b) Using indentation
    c)Using parentheses ‘()‘ d) Using square brackets ‘[]‘

11. **What is the output of the following code snippet? Python Code:**

```
num1 = 5
num2 = 6
if num1 > num2:
print("first number is larger")
print("Bye")
else:
print("second number is larger")
print("Bye Bye")
```

a) Syntax error
b) 'first number is larger Bye'
c)'second number is larger Bye Bye'
d) 'Bye Bye'

12. **What will be the output of the following code?**

**Python Code:**

```
for i in range(1, 6):
if i == 3:
    continue
    print(i)
```

a) 1 2 3 4 5
b) 1 2 4 5
c) 1 2 4 5 6
d) 2 4 6

13. **Which statement is used to skip the rest of the code inside a loop for the current iteration only?**

a) break
b) pass
c)skip
d) continue

14. **What type of loop is used in the following code?**

**Python Code:**

```
while True:
print("Infinite loop")
```

a) for loop
b) finite loop
c)infinite loop
d) nested loop

15. **Which of the following is the correct syntax for an if..else statement in Python?**

a) 'if condition: statements else: statements'
b) 'if condition { statements } else { statements }'
c) 'if (condition): statements; else: statements;'
d) 'if condition: { statements } else: { statements }'

18. **Which of the following programs will print the sum of all positive numbers entered by the user until a negative number is entered?**

a)Python Code:

```
sum = 0
while True:
    num = int(input("Enter a number:"))
```

```
if num < 0:
    break
    sum += num print("Sum:", sum)
```

b)Python Code:

```
sum = 0 while True:
num = int(input("Enter a number:"))
if num < 0:
    continue sum += num
    print("Sum:", sum)
```

c)Python Code:

```
sum = 0
num = int(input("Enter a number:"))
while num >= 0:
    sum += num
    num = int(input("Enter a number:"))
print("Sum:", sum)
```

d) Python Code:

```
sum = 0
while num >= 0:
    num = int(input("Enter a number:"))
  if num < 0:
    break
    sum += num print("Sum:", sum)
```

19. **In a nested loop, how many times will the inner loop execute if the outer loop runs 3 times, and theinner loop runs 2 times each iteration?**

a) 3 b) 6

c)2 d) 5

20. **How is a block of code indicated in Python?**

a) By using curly brackets b) By using parentheses

c)By using indentation d) By using semicolons

21. **What type of error will you get if the indentation is not consistent in Python?**

a) Logical error

b) Syntax error

c) Runtime error

d) Semantic error

22. **What will be the output of the following code?**

**Python Code:**

```
for i in range(5):
```

```
if i == 2:
    continue
    print(i)
```

a) 0 1 2 3 4 b) 1 2 3 4 5

c) 0 1 3 4 d) 0 1 3 4 5

24. **How can the flow of control be altered in a program?**

a) Using operators b) Using control structures

c)Using functions d) Using variables

23. **What does the else part of an if statement represent?**

a) Code that runs if the condition is false

b) Code that runs if the condition is true

c) A secondary condition

d) An error handling block

24. **What does the following code do?**

**Python Code:**

```
x = 5
y = 10
if x < y:
  print("x is less than y")
else:
  print("x is not less than y")
```

**a)** Prints "x is not less than y" b) Prints "x is less than y"

c)Prints nothing d) Syntax error

25. **What is the purpose of an infinite loop?**

a) To iterate a fixed number of times

b) To loop until a condition is met

c) To keep running without termination

d) To generate an error

26. **Which of the following is true about the break statement in a loop?**

a) It skips to the next iteration

b) It stops the current iteration and continues with the next

c) It stops the loop entirely

d) It only works with for loops

27. **What is the output of the following code?**

**Python Code:**

```
for i in range(4):
      print(i)
      if i == 2:
         break
```

a) 0 1 2 3 b) 0 1 2

c) 0 1 3 d) 0 1

28. **How does the continue statement affect a loop's execution?**
    a) Terminates the loop
    b) Skips the rest of the code inside the loop for the current iteration
    c) Repeats the current iteration
    d) Exits the loop and continues with the next iteration
29. **What is the difference between a for loop and a while loop?**
    a) For loop is used for definite iteration, while loop is used for indefinite iteration
    b) For loop has a fixed number of iterations, while loop runs indefinitely
    c) For loop is used for selection, while loop is used for repetition
    d) There is no difference
30. **What will be the output of the following code snippet?**

```
Python Code:
count = 0
while count < 5:
        count += 1
        print(count)
```

    a) 0 1 2 3 4 5 b) 1 2 3 4 5
    c) 0 1 2 3 4 d) 1 2 3 4
31. **How many times will the loop run in the following code?**

```
Python Code:
for i in range(3):
        for j in range(2):
           print(i, j)
```

    a) 3 times b) 6 times
    c)2 times d) 5 times
32. **Which statement is used to exit a loop in Python?**
    a) exit b) break
    c)continue d) stop
33. **What will be the output of the following code?**

```
Python Code:
i = 0
while i < 4:
      i += 1
      print(i)
      if i == 2:
        continue
```

    a) 1 2 3 4 b) 1 2 4
    c) 1 2 3 4 5 d) 1 2 2 3 4

34. **What is the purpose of a nested loop?**
    a) To create infinite loops
    b) To break out of a loop
    c) To perform repeated operations on each element of a sequence
    d) To skip iterations in a loop
35. **Which statement correctly describes the functionality of break and continue in Python?**
    a) break terminates the loop, continue skips the current iteration
    b) break skips the current iteration, continue terminates the loop
    c) break and continue both terminate the loop
    d) break and continue both skip the current iteration
36. **What is the output of the following code?**
    **Python Code:**

```
for i in range(3):
 for j in range(2):
   if j == 1:
break
print(i, j)
```

    a) 0 0 0 1 1 0 1 1 2 0 2 1
    b) 0 0 1 0 2 0
    c) 0 0 0 1 1 0 2 0 2 1
    d) 0 0 1 0 1 1 2 0 2 1
37. **Which of the following is a correct syntax for a while loop in Python?**
    a) ‘while condition: { statements }‘
    b) ‘while (condition) { statements }‘
    c)‘while condition: statements‘
    d) ‘while (condition): statements‘
38. What **happens when the break statement is executed inside a nested loop?**
    a) Exits all loops
    b) Exits the inner loop only
    c) Continues with the next iteration of the inner loop
    d) Restarts the inner loop
39. **Which of the following is the correct syntax for a for loop in Python?**
    a) ‘for (i in range(5)): print(i)‘
    b) ‘for i in range(5): print(i)‘
    c)‘for i in range(5) { print(i) }‘
    d) ‘for (i in range**(5))** { print(i) }‘
40. **How can you create a block of code in Python?**
    a) Using curly brackets
    b) Using indentation
    c) Using parentheses
    d) Using semicolons

41. **What is the output of the following code?**

**Python Code:**

```
count = 0
while count < 3:
    print(count)
    count += 1
```

a) 0 1 2 3 b) 1 2 3

c) 0 1 2 d) 0 1

42**. Which of the following statements will break out of a loop?**

a) Exit b) continue

c)stop d)break

42. **What is the purpose of the continue statement in a loop?**

a) To terminate the loop

b) To skip the rest of the code inside the loop for the current iteration

c) To exit the loop and continue with the next iteration

d) To repeat the current iteration

43. **What will be the output of the following code?**

**Python Code:**

```
for i in range(3):
 for j in range(2):
if j == 1:
  break
  print(i, j)
print("Out of nested loop")
```

a) 0 0 1 0 2 0 Out of nested loop

b) 0 0 0 1 1 0 2 0 2 1 Out of nested loop

c) 0 0 1 0 2 0 Out of nested loop

d) 0 0 1 0 1 1 2 0 2 1 Out of nested loop

44. **What is the output of the following code?**

**Python Code:**

```
for i in range(5):
 if i == 3:
    break
 print(i)
 else:
  print("Completed")
```

a) 0 1 2 Completed b) 0 1 2

c) 0 1 2 3 4 Completed d) 0 1 2 3 Completed

45. **What is the output of the following code snippet?**

**Python Code:**

```
for i in range(2):
for j in range(2):
    print(i, j)
```

a) 0 0 1 0 b) 0 0 1 1

c) 0 0 0 1 1 0 1 1 d) 0 0 1 0 1 1

46. **Which of the following is true about the for loop?**

a) It runs indefinitely b) It is used for definite iteration

c)It is used for selection d) It is used for decision-making

47. **What will be the output of the following code?**

**Python Code:**

```
for i in range(3):
    if i == 1:
        break
        print(i)
    else:
        print("Loop completed")
```

a) 0 1 Loop completed b) 0 Loop completed

c)0 1 d) 0

48. **How do you implement a nested loop in Python?**

a) By placing one loop inside another loop

b) By placing one function inside another function

c) By using indentation

d) By using a break statement

49. **Assertion** (A): The flow of control can be implemented using control structures.

**Reason**(R) : In python, selection and repetition structures are used .

a) A is true and R is correct explanation

b) A is false and R is incorrect explanation

c) A is true and R is incorrect explanation

d) A is false and R is correct explanation

50. **Assertion** (A): Python uses indentation for block as well as for nested block structures.

**Reason**(R) : The statements within a block are put inside curly brackets.

a) A is true and R is correct explanation

b) A is false and R is incorrect explanation

c) A is true and R is incorrect explanation

d) A is false and R is correct explanation

51. **Assertion** (A): Repeated execution of a statement/set of statements is possible using selection constructs.
**Reason**(R) : In python, ‘while’ and ‘for’ are looping constructs.
a) A is true and R is correct explanation
b) A is false and R is incorrect explanation
c) A is true and R is incorrect explanation
d) A is false and R is correct explanation

52. **Assertion** (A): Python provides break and continue statements.

**Reason**(R) : Not to give more flexibility to control the flow of execution of a program.
a) A is true and R is correct explanation
b) A is false and R is incorrect explanation
c) A is true and R is incorrect explanation
d) A is false and R is correct explanation

53. **Assertion** (A): Python impose restrictions on how many loops can be nested inside a loop.
**Reason**(R) : Any type of loop (for/while) may be nested within another loop (for/while).
a) A is true and R is correct explanation
b) A is false and R is incorrect explanation
c) A is true and R is incorrect explanation
d) A is false and R is correct explanation

54 **Assertion** : The "range()" function in Python generates a sequence of numbers.
**Reason**: It is used to define functions in Python.
a) A is true and R is correct explanation
b) A is false and R is incorrect explanation
c) A is true and R is incorrect explanation
d) A is false and R is correct explanation

55 **Assertion** : The "break" statement is used to exit a loop prematurely.
**Reason**: It is used to skip the current iteration of a loop.
a) A is true and R is correct explanation
b) A is false and R is incorrect explanation
c) A is true and R is incorrect explanation
d) A is false and R is correct explanation

56. **Assertion** : Nested loops have no practical use in programming.
**Reason**: Nested loops can be used for iterating through multi-dimensional data structures.
a) A is true and R is correct explanation
b) A is false and R is incorrect explanation
c) A is true and R is incorrect explanation
d) A is false and R is correct explanation

57. **Assertion** : Flowcharts are a graphical representation of code that can only be understoodby programmers.
**Reason**: Flowcharts are a visual tool that can help non-programmers understand algorithms.
a) A is true and R is correct explanation
b) A is false and R is incorrect explanation
c) A is true and R is incorrect explanation
d) A is false and R is correct explanation

58 **Assertion** : The "while" loop is more flexible than the "for" loop in Python.
**Reason**: The "while" loop can only be used for numeric operations.
a) A is true and R is correct explanation
b) A is false and R is incorrect explanation
c) A is true and R is incorrect explanation
d) A is false and R is correct explanation

**Fill in the Blanks**

1. The …… statement forms the selection construct in Python.
2. The …… statement is a do-nothing statement in Python.
3. The …….. and …….. statements form the repetition construct in Python.
4. Three constructs that govern the flow of control are …… and …… ……..
5. In Python, …….. defines a block of statements.
6. An …… statement has less number of conditional checks than two successive ifs.
7. The …….. operator tests if a given value is contained in a sequence or not.
8. The two membership operators are …… and ……..
9. An iteration refers to one repetition of a ……..
10. The …….. loop iterates over a sequence.
11. The …… loop tests a condition before executing the body-of-the-loop.
12. The …….. clause can occur with an if as well as with loops.
13. The …….. block of a loop gets executed when a loop ends normally.

14. The else block of a loop will not get executed if a …… statement has terminated the loop.
15. The …… statement terminates the execution of the whole loop.
16. The …….. statement terminates only a single iteration of the loop.
17. The break and continue statements, together are called …… statements.
18. In a nested loop, a break statement inside the inner loop, will terminate the …… loop only.

**2-MarksQuestions**

1. Explain how a simple calculator program can be implemented in Python.
2. What is the difference between break and continue statements?
3. What is the purpose of the empty statement? How can you write an empty statement in Python?
4. What is the flow of control in programming?
5. Explain the concept of sequence in Python.
6. Define selection structure in Python.
7. How is indentation used in Python?
8. What is the syntax of an `if` statement in Python?
9. Give an example of an `if..else` statement in Python.
10. What does the `elif` statement do in Python?
11. How does Python handle nested `if` statements?
12. What is the purpose of the `break` statement in loops?
13. Explain the use of the `continue` statement in loops.
14. How do you implement repetition structures in Python?
15. What are the two types of control structures supported by Python?
16. Describe a scenario where a selection structure would be used.
17. What will be the output of the following code: `num1 = 5; num2 = 3; print(num1 - num2)`?
18. What is the importance of the `if` condition in an `if..else` structure?
19. What is an infinite loop? Explain with the help of an example.
20. What are the jump statements in Python? How many types of jump statements are there?
21. Why is the while loop called an entry-controlled loop? Justify your answer by giving a suitable example.
22. What is the role of a flowchart in programming?
23. How does Python ensure code is properly indented?
24. What is the output of the following code: `print("Hello, World!")`?
25. How do you read input from the user in Python?
26. Write the difference between the ‘else’ and ‘elif’ statements.
27. What are nested loops?
28. Write the syntax for a nested block of ‘if-else’ inside another ‘if-else’ block.

**3 Marks Questions**

1. Write a Python program to find the positive difference between two numbers.
2. Describe the role of control structures in Python programming.
3. How does indentation affect the execution of a Python program?
4. Explain the concept of nested `if` statements with an example.
5. What are the key differences between `if`, `if..else`, and `if..elif` statements?
6. How does the `elif` statement improve code readability?
7. Write a Python program to check if a number is positive, negative, or zero.
8. Describe the use of logical operators in selection structures.
9. How can you handle multiple conditions in Python using `elif`?
10. What is the significance of the `else` block in an `if..else` statement?
11. Explain the concept of loops in Python with an example.
12. How does the `break` statement alter the flow of a loop?
13. What is the difference between `break` and `continue` statements?
14. Write a Python program to print the first ten natural numbers using a loop.
15. How can a flowchart help in designing a Python program?
16. Describe the process of creating a simple calculator in Python.
17. Explain the role of the `input()` function in Python.
18. How can you ensure a program outputs only positive differences between two numbers?
19. Write a Python program to check if a user is eligible to vote.
20. How does Python handle syntax errors related to indentation.
21. Write a program that takes the name and age of the user as input and displays a message whether the user is eligible to apply for a driving license or not. (the eligible age is 18 years).
22. Write a function to print the table of a given number. The number has to be entered by the user.
23. Write a program that prints minimum and maximum of five numbers entered by the user.
24. Write a program to check if the year entered by the user is a leap year or not

**5 Marks Questions**

1. Write a Python program to create a simple calculator that performs basic arithmetic operations.
2. Explain in detail the concept of flow of control with examples.
3. How can you implement a nested loop structure in Python? Provide an example.
4. Describe the importance of control structures in managing the flow of a Python program.
5. Write a detailed explanation of the different types of selection structures in Python.

6. How does Python handle multiple conditions using `if..elif..else`? Provide a code example.
7. Explain the process of creating a program that prints the positive difference between two numbers, with a flowchart.
8. Describe the use of loops in Python with examples of `for` and `while` loops.
9. Write a Python program to print all prime numbers between 1 and 50.
10. How does the `break` statement work within nested loops? Provide a code example.
11. Explain the role of indentation in Python with multiple examples.
12. Write a Python program that uses `if..else` statements to categorize the input number as positive, negative, or zero.
13. Describe how a flowchart can aid in writing complex Python programs.
14. Provide a detailed explanation of the `continue` statement and its applications with examples.
15. Write a Python program to simulate a basic login system, validating user input for username and password.
16. Write a program to generate the sequence: –5, 10, –15, 20, –25….. upto n, where n is an integer input by the user.
17. Write a program to find the sum of 1+ 1/8 + 1/27.....$1/n^3$, where n is the number input by the user.
18. Write a program to print the following patterns:

| i) | ii) |
|---|---|
| 1 2 3 4 5<br>1 2 3 4<br>1 2 3<br>1 2<br>1 | *<br>* *<br>* * *<br>* * * *<br>* * * * * |

# CHAPTER 7
# FUNCTIONS

**Multiple Choice Questions**

1. **What is the process of dividing a computer program into separate independent blocks of code known as?**
   a) Function programming
   b) Modular programming
   c) Structured programming
   d) Object-oriented programming
2. **What is the purpose of functions in programming?**
   a) To make the code longer
   b) To reduce readability
   c) To achieve modularity and reusability
   d) To increase complexity
3. **Which of the following statements is true about functions?**
   a) Functions can be called only once
   b) Functions cannot have parameters
   c) Functions can be called repeatedly
   d) Functions must always return a value
4. **What is the syntax to define a function in Python?**
   a) def function_name:
   b) function function_name():
   c) def function_name():
   d) function function_name:
5. **What does the 'return' statement do in a function?**
   a) Ends the function execution and optionally passes back an expression to the caller
   b) Outputs a value to the console
   c) Starts the function execution
   d) Defines a new function
6. **What is the term for a value passed to a function during the function call?**
   a) Parameter
   b) Argument
   c) Return value
   d) All these
7. **What is a user-defined function?**
   a) A function provided by Python standard library
   b) A function defined by the programmer
   c) A function that cannot be reused
   d) A function without parameters
8. **In the function definition 'def add(a, b):', what are 'a' and 'b'?**
   a) Arguments
   b) Return values
   c) Parameters
   d) Variables

9. **Which keyword is used to create a function in Python?**
   a) Func b) define
   c)function d) def
10. **What is the output of the following code?**
    **Python Code:**
    **def greet(name):**
        return "Hello, " + name
    **print(greet(“Alice”))**
    a) Hello, b) Hello, greet
    c)Hello, Alice d) greet(Alice)
11. **How do you call a function named ‘my_function‘ in Python?**
    a) call my_function() b) my_function()
    c)def my_function() d) execute my_function()
12. **What will be the output of the following code?**
    **Python Code:**
    **def add(a, b):**
        return a + b
    **result = add(3, 5)**
    **print(result)**
    a) 8 b) 3
    c)5 d) add
13. **What is an advantage of using functions in a program?**
    a) Decreases readability b) Increases code length
    c)Increases reusability d) Makes debugging difficult
14. **What is the output of the following code?Python Code:**
    **def multiply(a, b):**
      return a * b
    **print(multiply(2, 4))**
    a) 2 b) 4
    c)6 d) 8
15. **Which of the following is not a characteristic of a function?**
    a) It can be reused b) It must return a value
    c)It can take arguments d) It helps in modularity
16. **What is the main advantage of breaking a program into smaller functions?**
    a) To make the program slower
    b) To increase code repetition
    c) To make the program more organized and manageable
    d) To make the code more complex

17. **What is the keyword used to return a value from a function in Python?**
    a) Send
    b) yield
    c)return
    d) give
18. **What is the output of the following code?**
    **Python Code:**
    **def subtract(a, b):**
      return a b
    **print(subtract(10, 3))**
    a) 7
    b) 3
    c)10
    d) -7
19. **Which of the following best describes a function?**
    a) A block of code that performs a specific task
    b) A loop structure
    c) A conditional statement
    d) A data type
20. **How do you define a function with no parameters?**
    a) def function_name[]:
    b) def function_name():
    c) function_name():
    d) function_name[]:
21. **What will be the output of the following code?**
    **Python Code:**
    **def divide(a, b):**
      return a / b
    **print(divide(10, 2))**
    a**)** 5.0
    b) 5
    c)2
    d) d) 0.5
22. **What is a function call?**
    a) Declaring a function
    b) Executing a function
    c) Returning a value from a function
    d) Passing parameters to a function
23. **Which of the following is an invalid function name in Python?**
    a) my_function
    b) _function
    c)function1
    d) 1function
24. **What is the output of the following code?Python Code:**
    **def say_hello():**
      print("Hello, World!")
    **say_hello()**
    a) Hello, World!
    b) say_hello
    c)print
    d) Hello

25. **What is the main purpose of the ‘def‘ keyword in Python?**
    a) To define a variable
    b) To define a function
    c)To create a loop
    d) To import a module
26. **Which of the following functions is used to find the length of a list in Python?**
    a) length()
    b) len()
    c)size()
    d) count()
27. **What will be the output of the following code?Python Code:**

```
def square(x):
  return x \* x
print(square(3))
```

    a) 3
    b) 6
    c) 9
    d) 12
28. **What is a parameter in the context of functions?**
    a) A loop counter
    b) A variable defined inside a loop
    c) A value that a function return
    d) A variable used in the function definition
29. **Which of the following is an example of a function with a return value?**
    a) def greet(): print(“Hello!”)
    b) def greet(): return “Hello!”
    c)def greet(): pass
    d) def greet(): break
30. **What will be the output of the following code?Python Code:**

```
def concat(str1, str2):
  return str1 + str2
print(concat(“Hello,”, “World!”))
```

    a) Hello
    b) World
    c)Hello, World!
    d) concat
31. **How do you pass multiple arguments to a function in Python?**
    a) def function_name(arg1 arg2):
    b) def function_name(arg1, arg2):
    c) function_name(arg1; arg2)
    d) def function_name[arg1, arg2]:
32. **What will be the output of the following code?Python Code:**

```
def power(base, exp):
  return base**exp
print(power(2, 3))
```

    a) 6
    b) 8
    c) 9
    d) 12
33. **What is the main purpose of using functions in programming?**
    a) To decrease execution time
    b) To reduce the need for loops
    c) To organize code and promote reusability
    d) To complicate the program

34. **What will be the output of the following code? Python Code:**

```
def add_five(x):
  return x + 5
print(add_five(10))
```

a) 10 b) 15
c) 5 d) 20

35. **What is the keyword used to define a function in Python?**

a) function b) define
c) def d) func

36. **What will be the output of the following code? Python Code:**

```
def greet():
  return "Hello!"
print(greet())
```

a) Greet b) “Hello!”
c) Hello! d) None

37. **How do you specify default values for parameters in a function?**

a) def function_name(param=value):
b) def function_name(param==value):
c) function_name(param=value):
d) function_name(param==value):

38. **What is the output of the following code?**

**Python Code:**

```
def increment(n):
    n += 1
    return n
print(increment(7))
```

a) 6 b) 7
c) 8 d) 9

39. **Which statement is true regarding a function with multiple return statements?**

a) Only the first return statement will be executed
b) All return statements will be executed
c) The function will return multiple values
d) Only the last return statement will be executed

40. **What will be the output of the following code?**

**Python Code:**

```
def double(x):
  return x \* 2
result = double(4)
print(result)
```

a) 2 b) 4
c) 6 d) 8

41. **Which of the following is a correct way to document a function in Python?**
    a) Using comments (#)
    b) Using triple-quoted strings (“““ “““)
    c) Using single-quoted strings (’ ’)
    d) Using parentheses ()
42. **What will be the output of the following code?**
    **Python Code:**

```
def subtract(a, b):
    return a b
print(subtract(15, 5))
```

    a) 10 b) 20
    c) 15 d) 5
43. **What is the term used for a function defined inside another function?**
    a) Nested function b) Inner function
    c) Sub function d) Lambda function

44. **What will be the output of the following code?**
    **Python Code:**

```
def sum_numbers(a, b):
    return a + b
result = sum_numbers(3, 4)
print(result)
```

    a) 3 b) 4
    c) 7 d) 10
45. **What is the output of the following code?**
    **Python Code:**

```
def identity(x):
    return x
print(identity(“Python”))
```

    a) Python b) identity
    c) “Python” d) print
46. **How do you ensure a function has a variable number of arguments in Python?**
    a) Using an asterisk (*) before the parameter name
    b) Using double asterisks ( ) before the parameter name
    c) Using an ampersand (&) before the parameter name
    d) Using a hash (#) before the parameter name

47. **What will be the output of the following code?**

**Python Code:**

```
def repeat_string(s, n):
    return s \* n
print(repeat_string("Hi", 3))
```

a) Hi
b) HiHiHi
c) Hi3
d) repeat_string

48. **Which of the following is not a valid Python function?**

a) def my_func():
b) def my-func():
c) def my_func1():
b) def _myfunc():

49. **What is the primary purpose of a lambda function in Python?**

a) To create a complex function
b) To define a function with a long body
c) To create small anonymous functions
d) To define a class method

50. **What will be the output of the following code?**

**Python Code:**

```
def add(a, b=5):
  return a + b
print(add(3))
```

a) 3
b) 5
c) 8
d) 15

**51.** **Assertion** (A): A function is a group of instructions that perform a specific task when invoked.

**Reason**(R): Function cannot be called repeatedly from different parts of the program.

a. A is true, R is false
b. A is false, R is true
c. A is true, R is true
d. A is false, R is true

**52.** **Assertion** (A): A value passed to a function when it's called is called argument.

**Reason**(R): Argument is a value passed to the function during the function call which is received in corresponding parameters defined in function header.

a. A is true, R is false
b. A is false, R is true
c. A is true, R is true
d. A is false, R is true

**53.** **Assertion** (A): A variable that has global scope is known as a global variable.
**Reason**(R): A global variable in Python is defined outside of a function or block and can be accessed in any subsequent functions.

a. A is true, R is false
b. A is false, R is true
c. A is true, R is true
d. A is false, R is true

**54.** **Assertion** (A): Abs(x) built in function returns absolute value of x.
**Reason**(R): x should be integer number only.

a. A is true, R is false
b. A is false, R is true
c. A is true, R is true
d. A is false, R is true

**55.** **Assertion** (A): Statistics module provide functions for calculating statistics of numeric data.
**Reason**(R): Statistics mean(x) return arithmetic mean.

a. A is true, R is false
b. A is false, R is true
c. A is true, R is true
d. A is false, R is true

## FILL IN THE BLANKS

1. The process of dividing a computer program into separate independent blocks of code is known as _____.
2. A function can be defined as a named group of instructions that accomplish a specific task when itis_____.
3. A function definition begins with the keyword__.
4. The function header always ends with a___.
5. The default value assigned to a parameter in a function definition is known as a____.
6. A function defined to achieve some tasks as per the programmer's requirement is called a_____function.

## 2 Marks Questions

1. Define a user-defined function in Python.
2. What are the benefits of using functions in a program?
3. Explain the concept of a global variable with an example.
4. Explain the concept of a local variable with an example.

5. How do you call a function in Python?
6. What is the syntax for defining a user-defined function in Python?
7. What is an argument in the context of functions?
8. What is a parameter in the context of functions?
9. What is the difference between a built-in function and a user-defined function?
10. Explain the term "scope of a variable".
11. What does the `global` keyword do in Python?
12. What is the significance of the return statement in a function?
13. Describe how you can import a specific function from a module.
14. What happens if a global variable and a local variable have the same name within a function?
15. Explain the purpose of the `import` statement in Python.
16. What is the Python Standard Library?
17. How does Python handle multiple imports of the same module?
18. What is the role of indentation in Python function definitions?
19. How can you handle an error if a user enters an invalid input in the traffic light program?
20. What message is displayed if the traffic light color entered is "RED" in the traffic light program?

**3 Marks Questions**

1. Explain the advantages of using functions in a program with examples.
2. Write a short program to demonstrate the use of a global variable.
3. Write a short program to demonstrate the use of a local variable.
4. Explain with an example how a function can return multiple values in Python.
5. Describe the process of creating a user-defined function with parameters.
6. Write a function that calculates the sum of the first `n` natural numbers.
7. What is the purpose of the `return` statement in a Python function? Give an example.
8. Explain the difference between positional and keyword arguments with examples.
9. How do you handle default values in function parameters? Provide an example.
10. Write a short program to demonstrate the use of the `global` keyword.
11. Describe the flow of execution in a Python program with multiple function calls.
12. Explain the concept of module in Python and how it helps in program development.
13. Write a short program to demonstrate the use of the Python Standard Library.
14. How can you reuse functions from another program or module? Explain with an example.
15. Write a function to simulate a traffic light system and explain its components.
16. Explain the importance of the `def` keyword in Python.
17. Describe how function headers and function calls work in Python.

18. Write a short program that includes both user-defined functions and built-in functions.
19. Explain the significance of the colon (`:`) at the end of a function header in Python.

**5 Marks Questions**

1. Write a Python program that demonstrates the use of both global and local variables within multiple functions.
2. Discuss in detail the advantages of using functions in programming. Use examples to support your explanation.
3. Write a Python function to calculate the factorial of a number.
4. Describe in detail the process of creating, calling, and executing a user-defined function in Python.
5. Write a Python program that simulates a traffic light system using functions. Include appropriate user input handling and output messages.
6. Explain the concept of scope in Python with detailed examples,
7. Write a comprehensive program that uses functions to perform mathematical operations (addition, subtraction, multiplication, division) and demonstrates passing arguments and returning values.
8. Discuss the role and benefits of the Python Standard Library in program development.
9. Provide examples of commonly used modules and functions.
10. Explain the different types of function arguments in Python (positional, keyword, default, variable-length) with examples.
11. Write a detailed program that demonstrates the use of modules in Python. Show how to import modules, use functions from them, and handle namespace conflicts.
12. Discuss the importance of modularity and reusability in programming. Use Python functions and modules to illustrate your points.
13. Write a comprehensive guide on how to create and use user-defined functions in Python, including examples, best practices, and common pitfalls to avoid.

# CHAPTER 8
# STRINGS

## Multiple Choice Questions

### Introduction to Strings and String Operations

1. **What is the output of ‘str1[::-1]‘ if ‘str1 = ‘Hello World!’‘?**
   a) ‘Hello World¡ b) ‘World Hello¡
   c) ‘!dlroW olleH‘ d) ‘!Hello World‘
2. **What is the result of ‘str1[1:5]‘ if ‘str1 = ‘Hello World!’‘?**
   a) ‘Hell‘ b) ‘ello‘
   c) ‘World‘ d) ‘o Wor‘
3. **Which of the following methods returns the string with the first letter of every word in uppercase andthe rest in lowercase?**
   a) ‘lower()‘ b) ‘upper()‘
   c) ‘title()‘ d) ‘capitalize()‘
4. **Which function would you use to find the length of a string ‘str1‘?**
   a) ‘len()‘ b) ‘length()‘
   c) ‘size()‘ d) ‘count()‘
5. **In Python, what will be the output of ‘str1[6:]‘ if ‘str1 = ‘Hello World!’‘?**
   a) ‘Hello‘ b) ‘World‘
   c) ‘World¡ d) ‘o World¡
6. **What does the slice operation ‘str1[n:m:k]‘ do?**
   **a**) Extracts every k-th character from the string starting from n to m-1
   b) Extracts every k-th character from the string starting from m to n-1
   c) Extracts every k-th character from the string starting from n to m
   d) Extracts every k-th character from the string starting from m to n

7. **What will be the output of the following code?**
   **‘str1 = ‘Hello World!’**
   **print(str1[-1])‘**
   a) ‘H‘ b) ‘¡
   c) ‘d‘ d) ‘o‘
8. **If ‘str1 = ‘Hello World!’‘, what will be the result of ‘str1[2+4]‘?**
   a) ‘H‘ b) ‘o‘
   c) ‘W‘ d) ‘e‘
9. **Which method returns the string in reverse order?**
   a) ‘reverse()‘ b) ‘[::-1]‘
   c) ‘reversed()‘ d) ‘flip()‘
10. **What is the output of ‘str1[7:2]‘ if ‘str1 = ‘Hello World!’‘?**
    a) ‘Hello‘ b) ‘World‘
    c) ‘o Wor‘ d) ‘”‘

11. **What will the following code print? ‘str1 = ‘hello WORLD!’ print(str1.title())‘**
    a) ‘Hello World¡ b) ‘Hello world¡
    c) ‘HELLO WORLD¡ d) ‘hello WORLD¡
12. **Which of the following is not a valid string method?**
    a) ‘isalpha()‘ b) ‘isdigit()‘
    c) ‘isalnum()‘ d) ‘isnumber()‘
13. **What does the built-in function ‘len()‘ return when applied to a string?**
    **a**) The number of words in the string
    b) The number of characters in the string
    c) The number of vowels in the string
    d) The number of spaces in the string
14. Which **method would you use to convert all characters of a string to lowercase?**
    a) ‘lower()‘ b) ‘upper()‘
    c) ‘capitalize()‘ d) ‘title()‘
15. **If ‘str1 = ‘Hello World!’‘,** what **will ‘str1.split()‘ return?**
    a) ‘[‘H’, ‘e’, ‘l’, ‘l’, ‘o’, ’ ‘, ’W’, ‘o’, ‘r’, ‘l’, ‘d’, ‘!’]‘
    b) ‘[‘Hello’, ‘World!’]‘
    c) ‘[‘Hello World!’]‘
    d) ‘[‘Helloworld’]‘

16. **What will the following code print?**
    **‘str1 = ‘Hello World!’**
    **print(str1.replace(‘World’, ‘Everyone’))‘**
    **a**) ‘Hello Everyone¡ b) ‘Hello World¡
    c) ‘Hello‘ d) ‘Everyone‘
17. **What does the ‘strip()‘ method do?**
    a) Removes all characters from the string
    b) Removes spaces from the beginning and end of the string
    c) Removes a specified character from the string
    d) Removes all vowels from the string
18. **Which method would you use to check if a string starts with a specific substring?**
    a) ‘startswith()‘ b) ‘endswith()‘
    c) ‘start()‘ d) ‘begin()‘
19. **Which function would you use to convert a string to an integer?**
    a) ‘str()‘ b) ‘int()‘
    c) ‘float()‘ d) ‘chr()‘
20. **What will ‘str1.index(‘W’)‘ return if ‘str1 = ‘Hello World!’‘?**
    a) ‘5‘ b) ‘6‘
    c) ‘7‘ d) ‘8‘

21. **How can you iterate over each character in a string using a ‘for‘ loop?**

a) ‘for ch in str1:‘

b) ‘for each ch in str1:‘

c) ‘for str1 in ch:‘

d) ‘for each in str1:‘

22. **What will the following code output?**

**‘str1 = ‘Hello World!’**

**for ch in str1:**

**print(ch, end=”)‘**

a) ‘H e l l o W o r l d ¡

b) ‘Helloworld‘

c) ‘Hello World¡

d) ‘Helloworld¡

23. **Which of the following is true about string immutability in Python?**

a) Strings can be modified after creation

b) Strings cannot be modified after creation

c) Only the first character of a string can be modified

d) Only the last character of a string can be modified

24. **Which method would you use to join elements of a list into a string?**

a) ‘concat()‘ b) ‘append()‘

c) ‘join()‘ d) ‘combine()‘

25. **What will the following code output?**

**‘str1 = ‘Hello’ str2 = ‘World’**

**print(str1 + str2)‘**

a) ‘Hello World‘

b) ‘HelloWorld‘

c) ‘WorldHello‘

d) ‘Hello World¡

26. **Which method would you use to find if a string contains only digits?**

a) ‘isdigit()‘ b) ‘isalpha()‘

c) ‘isalnum()‘ d) ‘isdigit()‘

27. **What will the following code print?**

**‘str1 = ‘Hello World!’ print(str1.count(‘o’))‘**

a) ‘1‘ b) ‘2‘

c) ‘3‘ d) ‘0‘

28. **What is the output of ‘str1.find(‘o’)‘ if ‘str1 = ‘Hello World!’‘?**

a) ‘4‘ b) ‘5‘

c) ‘7‘ d) ‘6‘

29. **Which of the following methods will return the position of the first occurrence of a substring?**
    a) ‘find()‘ b) ‘index()‘
    c) ‘count()‘ d) ‘search()‘
30. **What will the following code print?**
    **‘str1 = ‘Hello World!’**
    **print(str1.upper())‘**
    a) ‘HELLO WORLD¡ b) ‘hello world¡
    c) ‘Hello World¡ d) ‘hello world‘
31. **Which method can be used to replace parts of a string with another string?**
    a) ‘change()‘ b) ‘replace()‘
    c) ‘swap()‘ d) ‘substitute()‘
32. **What is the result of ‘str1.split(‘,’)‘ if ‘str1 = ‘apple,banana,grape’‘?**
    a) ‘[‘apple banana grape’]‘ b) ‘[‘apple’, ‘banana’, ‘grape’]‘
    c) ‘[‘apple’, ‘banana grape’]‘ d) ‘[‘applebanana’, ‘grape’]‘
33. **How can you concatenate strings in Python?**
    a) Using the ‘+‘ operator b) Using the ‘concat()‘ method
    c) Using the ‘append()‘ method d) Using the ‘join()‘ method
34. **What does the ‘format()‘ method do in Python strings?**
    a) It converts strings to uppercase
    b) It formats the string by replacing placeholders with values
    c) It splits the string into a list
    d) It joins a list into a string
35. **Which of the following methods checks if all characters in a string are alphanumeric?**
    a) ‘isalpha()‘ b) ‘isdigit()‘
    c) ‘isalnum()‘ d) ‘isnum()‘
36. **What will the following code print?**
    **‘str1 = ‘Hello World!’ print(str1.swapcase())‘**
    a) ‘hello world¡
    b) ‘HELLO WORLD¡
    c) ‘hELLO wORLD¡
    d) ‘Hello World¡
37. **Which method would you use to pad a string with zeros on the left?**
    a) ‘zfill()‘
    b) ‘lpad()‘
    c) ‘rpad()‘
    d) ‘pad()‘

38. **What will ‘str1.rfind(‘l’)‘ return if ‘str1 = ‘Hello World!’‘?**

a) ‘2‘ b) ‘3‘

c) ‘9‘ d) ‘10‘

39. **What does the ‘partition()‘ method do?**

a) Splits the string into parts

b) Returns a tuple with three parts: the part before the separator, the separator itself, and the part after the separator

c) Joins parts of a string into one

d) Converts the string into a list

40. **What is the result of ‘str1.isupper()‘ if ‘str1 = ‘HELLO WORLD!’‘?**

a) ‘True‘ b) ‘False‘

c) ‘None‘ d) ‘Error‘

41. **Which method returns ‘True‘ if a string contains only whitespace characters?**

a) ‘isspace()‘ b) ‘isblank()‘

c) ‘iswhitespace()‘ d) ‘isempty()‘

42. **What will the following code print?**

**‘str1 = ‘Hello World!’**

**print(str1.center(20, ‘*’))‘**

a) ‘Hello World¡ b) ‘ Hello World! ‘

c) ‘ *Hello World! *‘ d) ‘ Hello World! ‘

**43. Which method can be used to check if all characters in the string are lowercase?**

a) ‘islower()‘ b) ‘isupper()‘

c) ‘isalpha()‘ d) ‘islowercase()‘

**44. Which method removes characters from both ends of a string?**

a) ‘strip()‘ b) ‘trim()‘

c) ‘cut()‘ d) ‘delete()‘

**45. Assertion** (A): A string is a sequence of characters enclosed in single, double or triple quotes.

**Reason**(R): A string may be specified by placing the characters within double quotes only.

a. A is true, R is false b. A is false, R is true

c. A is true, R is true d. A is false, R is true

**46. Assertion** (A): Indexing is a technique used to access each character in a string.

**Reason**(R): The index ranges from o to n-1, where n is the string length.

a. A is true, R is false b. A is false, R is true

c. A is true, R is true d. A is false, R is true

**47.** **Assertion** (A): String is immutable data type.
**Reason**(R): The contents of string can be altered after creation.

a. A is true, R is false
b. A is false, R is true
c. A is true, R is true
d. A is false, R is true

**48.** **Assertion** (A): Traversing just means to add new character in a string.
**Reason**(R): Two methods of traversing a string are using for loop and while loop.

a. A is true, R is false
b. A is false, R is true
c. A is true, R is true
d. A is false, R is true

**49.** **Assertion** (A): Retrieving a position of a string is called slicing.
**Reason**(R): Python uses a slicing method to access part of a string or substring.

a. A is true, R is false
b. A is false, R is true
c. A is true, R is true
d. A is false, R is true

**50.** **Assertion (A)**: In Python, each character of the string is assigned two-way indices.
**Reason (R)**: Strings are the sequences of characters where their indices start with 1 in the forward direction and with -1 in the backward direction.

a) Both A and R are true
b) Both A and R are true
c) A is True but R is False
d) A is false but R is True

**51.** **Assertion (A)**: The list is a mutable collection of data in Python.
**Reason (R)**: It means that any change or alternation in data, is maintained in the same place. The updated collection will use the same address for its storage.

a) Both A and R are true
b) Both A and R are true
c) A is True but R is False
d) A is false but R is True

## 2-Mark Questions

1. What function in Python returns the length of a string?
2. Describe what happens when a string index is a float value.
3. How can you access the last character of a string using negative indexing?
4. Explain the immutability of strings in Python.
5. How do you concatenate two strings in Python? Provide an example.
6. What does the `len()` function do in Python?
7. Provide an example of string slicing in Python.
8. How does the `title()` method transform a string?
9. What does the `*` operator do when applied to strings?
10. How can you reverse a string in Python using slicing?
11. What is the output of `str1[0:10:2]` if `str1 = 'Hello World!'`?
12. How does the membership operator `in` work with strings?
13. Describe the use of the `not in` operator with an example.
14. Explain string slicing with the third index specifying step size. Provide an example.
15. What does the `print()` function do in Python?

16. How do you traverse a string using a `for` loop?
17. How do you traverse a string using a `while` loop?
18. Provide an example of string repetition in Python.
19. What error occurs if you try to change a character in a string using indexing?
20. How does the `+` operator function when used with strings?

**3-Mark Questions**

1. Explain the difference between positive and negative indexing in strings. Provide examples for each.
2. What is the output of the following code and why: `str1 = 'Hello World!'; str1[0:5] + str1[-6:]`?
3. Describe the use of the `len()` function with a string. What does it return?
4. How does the slice operation `str1[n:m:k]` work? Provide an example.
5. Explain the immutability of strings with an example. What error is produced when trying to modify a string?
6. What are the membership operators in Python? Explain with examples.
7. How can you use a `while` loop to traverse a string? Provide code and explain the output.
8. Describe the `title()` method and give an example of its use. What is its output?
9. Explain the concept of string slicing. How would you extract a substring from a string?
10. What are built-in functions in Python? Provide examples of three built-in functions used with strings.
11. How can you concatenate strings using the `+` operator? Provide an example with two strings.
12. What does the `*` operator do with strings? Provide examples of its use.
13. How does Python handle strings as sequences of characters? What operations can be performed on them?
14. Provide an example of using the `in` operator with strings. What does it check?
15. What is the output of `str1[::-1]` if `str1 = 'Hello World!'`? Explain the slicing used.
16. Describe the process of traversing a string using a `for` loop. Provide an example.
17. How does negative indexing work in string slicing? Provide an example.
18. What are the advantages of using built-in functions in Python? Provide examples of two such functions.
19. How can you repeat a string multiple times in Python? Provide code examples.
20. Explain the use of the `len()` function with an example. What does it return when applied to a string?

**5-Mark Questions**

1. Explain the concept of string immutability in Python. Why is it important? Provide examples and describe the errors that occur when trying to change a string.
2. Describe string concatenation, repetition, and membership operations in Python with examples for each. How do these operations differ from each other?
3. What are string slicing and traversal? Explain with examples of how to use slicing to extract substrings and how to traverse strings using loops.
4. How does Python handle negative indexing in strings? Provide detailed examples and explain the outputs.
5. Discuss the built-in functions available for string manipulation in Python. Provide examples and explain how they are used to perform common operations on strings.
6. Describe the process of traversing a string using both `for` and `while` loops. Provide code examples and explain the output of each method.
7. Explain the slice operation `str1[n:m:k]` in detail. How does it differ from simple slicing? Provide examples and describe the outputs.
8. What is the significance of the `len()` function in string manipulation? How is it used in various string operations? Provide detailed examples.
9. Describe the concept of string immutability with respect to memory management and efficiency in Python. Provide examples and discuss the implications of immutability.
10. How can you use the `+`, `*`, and `in` operators with strings in Python? Provide comprehensive examples and explain the results of each operation.
11. Discuss the various methods for accessing and manipulating string data in Python. Provide examples for indexing, slicing, and built-in methods. Explain the outputs and any errors that may occur.
12. Explain the use of built-in string methods like `title()`, `len()`, and `print()`. How do these methods simplify string operations in Python? Provide examples and describe their outputs.
13. Describe the different ways to slice a string in Python. How can slicing be used to manipulate and extract parts of a string? Provide detailed examples.
14. How do you handle string traversal in Python? Explain the differences between using `for` loops and `while` loops. Provide examples and describe their outputs.
15. What are the common string operations available in Python? Describe concatenation, repetition, membership, and slicing with examples for each. How do these operations enhance string manipulation?

# CHAPTER 9
# LIST

**Multiple Choice Questions**

**1. Which of the following is a valid way to create a list in Python?**

a) [2, 4, 6, 8, 10, 12] b) {2, 4, 6, 8, 10, 12}
c) (2, 4, 6, 8, 10, 12) "2, 4, 6, 8, 10, 12"

**2. Lists in Python are:**

a) Mutable b) Immutable
c) Static d) Dynamic

**3. What will be the output of the following code?**

**Python Code:**

```
list1 = [2, 4, 6, 8, 10, 12]
print(list1[3])
```

a) 8 b) 4
c) 6 d) 10

**4. How are elements of a list separated?**

a) Comma b) Semicolon
c) Colon d) Space

**5. Which data types can a list contain?**

a) Mixed data types b) Only integers
c) Only strings d) Only floats

**6. What does the `+` operator do when applied to two lists?**

a) Concatenates them b) Multiplies them
c) Subtracts one from the other d) Divides one by the other

**7. What will be the output of the following code?**

**Python Code:**

```
list1 = [1, 2, 3]
list2 = [4, 5, 6]
print(list1 + list2)
```

a) [1, 2, 3, 4, 5, 6] b) [5, 7, 9]
c) [1, 2, 3, 6, 5, 4] d) [4, 5, 6, 1, 2, 3]

**8. Which operator is used for list repetition?**

a) * b) -
c) + d) /

**9. What will be the output of the following code?**

**Python Code:**

```
list1 = ['Hello']
print(list1 * 3)
```

a) ['Hello', 'Hello', 'Hello'] b) ['Hello', 'Hello']
c) ['HelloHelloHello'] d) ['Hello' * 3]

**10. Which of the following checks if an element is in a list?**

a) in b) out

c) exists d) includes

**11. What will be the output of the following code?**

**Python Code:**

```
list1 = ['Red', 'Green', 'Blue', 'Yellow']
print(list1[1:3])
```

a) ['Green', 'Blue'] b) ['Red', 'Green']

c) ['Green', 'Yellow'] d) ['Blue', 'Yellow']

**12. How do you access the last element of a list?**

a) list1[1] b) list1[0]

c) list1[len(list1)] d) list1[0]

**13. What does the slicing operation list1[2:5] return?**

Python Code:

```
list1 = ['Red', 'Green', 'Blue', 'Yellow', 'Black']
```

a) ['Blue', 'Yellow', 'Black'] b) ['Green', 'Blue', 'Yellow']

c) ['Red', 'Green', 'Blue'] d) ['Blue', 'Yellow']

**14. What will be the output of the following code?**

**Python Code:**

```
list1 = ['Red', 'Green', 'Blue', 'Yellow']
print(list1[::2])
```

a) ['Red', 'Blue'] b) ['Red', 'Yellow']

c) ['Green', 'Yellow'] d) ['Blue', 'Yellow']

**15. What will be the output of the following code?**

**Python Code:**

```
list1 = ['Red', 'Green', 'Blue', 'Yellow']
print(list1[::1])
```

a) ['Yellow', 'Blue', 'Green', 'Red'] b) ['Red', 'Green', 'Blue', 'Yellow']

c) ['Yellow', 'Green', 'Red', 'Blue'] d) ['Blue', 'Red', 'Yellow', 'Green']

**16. What does the `append()` method do?**

a) Adds an element at the end of the list b) Removes an element from the list

c) Inserts an element at a specified position d) Extends the list with another list

**17. What will be the output of the following code?**

**Python Code:**

```
list1 = [1, 2, 3]
list1.append(4)
print(list1)
```

a) [1, 2, 3, 4 b) [4, 1, 2, 3]

c) [1, 2, 3] d) [1, 2, 3, 4, 5]

**18. What does the `extend()` method do?**

a) Extends the list with another list
b) Adds an element at the end of the list
c) Removes an element from the list
d) Inserts an element at a specified position

**19. What will be the output of the following code?**

**Python Code:**

```
list1 = [1, 2, 3]
list2 = [4, 5]
list1.extend(list2)
print(list1)
```

a) [1, 2, 3, 4, 5]
b) [1, 2, 3]
c) [4, 5, 1, 2, 3]
d) [1, 2, 3, 4, 5, 6]

**20. What does the `insert()` method do?**

a) Inserts an element at a specified position
b) Adds an element at the end of the list
c) Removes an element from the list
d) Extends the list with another list

**21. Which loop is used to traverse through a list in Python?**

a) for loop
b) while loop
c) do while loop
d) both for and while loop

**22. What will be the output of the following code?**

**Python Code:**

```
list1 = ['Red', 'Green', 'Blue']
for item in list1:
  print(item)
```

a) Red\nGreen\nBlue
b) Red Green Blue
c) ['Red', 'Green', 'Blue']
d) Red\nBlue\nGreen

**23. How can you access each element of a list using its index?**

a) Using range() and len()
b) Using only len()
c) Using only range()
d) Using a direct for loop

**24. What will be the output of the following code?**

**Python Code:**

```
list1 = ['Red', 'Green', 'Blue']
for i in range(len(list1)):
print(list1[i])
```

a) Red\nGreen\nBlue
b) Red
c) ['Red', 'Green', 'Blue']
d) Red\nBlue\nGreen

**25. How does a while loop traverse through a list?**

a) By using an index counter
b) Directly accessing elements
c) Using the range function
d) Using list comprehensions

**26. What does the `remove()` method do?**

a) Removes the first occurrence of a specified value
b) Removes all occurrences of a specified value
c) Removes an element at a specified position
d) Removes the last element of the list

**27. What will be the output of the following code?**

**Python Code**

```
list1 = [1, 2, 3, 4, 3]
list1.remove(3)
print(list1)
```

a) [1, 2, 4, 3]
b) [1, 2, 3, 4, 3]
c) [1, 2, 3, 4]
**d)** [1, 2, 4]

**28. What does the `pop()` method do?**

a) Removes and returns the last element
b) Removes and returns the first element
c) Removes and returns an element at a specified position
d) Removes and returns all elements

**29. What will be the output of the following code?**

**Python Code:**

```
list1 = [1, 2, 3, 4]
print(list1.pop())
```

a) 4
b) 1
c) 2
d) 3

**30. What does the `clear()` method do?**

a) Removes all elements from the list
b) Removes the first element from the list
c) Removes the last element from the list
d) Removes a specified element from the list

**31. What does the `len()` function return?**

a) The number of elements in the list
b) The length of the longest element
c) The length of the shortest element
d) The sum of all elements

**32. What does the `sum()` function return when applied to a list of numbers?**

a) The sum of all elements
b) The product of all elements
c) The average of all elements
d) The maximum value of all elements

**33. How do you find the maximum value in a list?**

a) Using the max() function
b) Using the min() function
c) Using the sum() function
d) Using the sorted() function

**34. What will be the output of the following code?**

**Python Code:**

```
list1 = [1, 2, 3, 4]
print(max(list1))
```

a) 4 b) 1

c) 2 d) 3

**35. How do you find the minimum value in a list?**

a) Using the min() function b) Using the max() function

c) Using the sum() function d) Using the sorted() function

**36. What will be the output of the following code?**

**Python Code:**

```
list1 = [1, 2, 3, 4]
print(min(list1))
```

a) 1 b) 4

c) 2 d) 3

**37. How do you sort a list in ascending order?**

a) Using the sort() method b) Using the sorted() function

c) Using the reverse() method d) Using the append() method

**38. What will be the output of the following code?**

**Python Code:**

```
list1 = [4, 3, 2, 1]
list1.sort()
print(list1)
```

a) [1, 2, 3, 4] b) [4, 3, 2, 1]

c) [4, 1, 2, 3] d) [1, 4, 3, 2]

**39. How do you sort a list in descending order?**

a) Using the sort() method with reverse=True

b) Using the sorted() function

c) Using the reverse() method

d) Using the append() method

**40. What will be the output of the following code?**

**Python Code:**

```
list1 = [1, 2, 3, 4]
list1.sort(reverse=True)
print(list1)
```

a) [4, 3, 2, 1] b) [1, 2, 3, 4]

c) [4, 1, 2, 3] d) [1, 4, 3, 2]

**46. How can you create a 2D list in Python?**

a) Using nested lists b) Using a single list

c) Using tuples d) Using dictionaries

**47. What will be the output of the following code?**

**Python Code:**

```
list1 = [[1, 2], [3, 4], [5, 6]]
print(list1[1][1])
```

a) 4 b) 3

c) 2 d) 5

**48. How do you access the first element of the second list in a nested list?**

a) list1[1][0] b) list1[0][1]

c) list1[1][1] list1[0][0]

**49. What will be the output of the following code?**

**Python Code:**

```
list1 = [[1, 2, 3], [4, 5, 6], [7, 8, 9]]
print(list1[2])
```

a) [7, 8, 9] b) [1, 2, 3]

c) [4, 5, 6] d) [9, 8, 7]

**50. How do you flatten a 2D list using list comprehension?**

a) [item for sublist in list1 for item in sublist]

b) [sublist for sublist in list1 for item in sublist]

c) [item for sublist in list1]

d) [sublist for item in list1]

**51.** **Assertion** (A): A function is a group of instructions that perform a specific task when invoked.

**Reason**(R): Function cannot be called repeatedly from different parts of the program.

a) A is true, R is false

b) A is false, R is true

c) A is true, R is true

d) A is false, R is true

**52.** **Assertion** (A): A value passed to a function when it's called is called argument.

**Reason**(R): Argument is a value passed to the function during the function call which is received in corresponding parameters defined in function header.

a) A is true, R is false

b) A is false, R is true

c) A is true, R is true

d) A is false, R is true

**53.** **Assertion** (A): A variable that has global scope is known as a global variable.
**Reason**(R): A global variable in Python is defined outside of a function or block and can be accessed in any subsequent functions.

a) A is true, R is false
b) A is false, R is true
c) A is true, R is true
d) A is false, R is true

**54.** **Assertion** (A): Abs(x) built in function returns absolute value of x.
**Reason**(R): x should be integer number only.

a) A is true, R is false
b) A is false, R is true
c) A is true, R is true
d) A is false, R is true

**55.** **Assertion** (A): Statistics module provide functions for calculating statistics of numeric data.
**Reason**(R): Statistics mean(x) return arithmetic mean.

a) A is true, R is false
b) A is false, R is true
c) A is true, R is true
d) A is false, R is true

## FILL IN THE BLANKS

1. The data type list is an ordered sequence which is__.
2. Elements of a list are enclosed in___.
3. List indices in Python start from___.
4. In Python, lists can have elements of different_.
5. A list within another list is called a___list.
6. The method used to get the length of a list is_.
7. The method to add an element to the end of a list is_.
8. The method to combine two lists is__.
9. The method to insert an element at a specific position in a list is_.
10. The operator used to concatenate two lists is_.
11. The operator used to repeat a list multiple time is_.
12. To check if an element is in a list, we use the_operator.
13. The slicing operation for lists uses__.
14. The method to reverse the order of elements in a list is___.
15. The method to sort the elements of a list in-place is_.
16. The function that returns a new list sorted in ascending order is__.
17. The method to remove the first occurrence of an element from a list is_.
18. The method to return and remove an element from a list by index is___.

19. The method to count the occurrences of an element in a list is___.
20. The method to find the index of the first occurrence of an element is___.
21. In Python, lists are_____, meaning their contents can be changed)
22. To traverse a list using a for loop, we can use the function.
23. The built-in function to create a list from a sequence is___.
24. The error raised when accessing an index out of range is__.
25. To access the last element of a list, we use the index.
26. The function to return the smallest element of a list is____.
27. The function to return the largest element of a list is.
28. The function to return the sum of elements in a list is_____.
29. To create a copy of a list, we can use the__method)
30. The statement to create a slice of a list from index 2 to 5 is.
31. The method used to clear all elements from a list is_.
32. The method to sort a list in descending order is.
33. The function to convert a string into a list of characters is_.
34. To concatenate list1 and list2 and assign the result to list3, we write___.
35. To repeat the list [‘Hello’] four times, we write.
36. To check if ‘Green’ is in list1, we write__.
37. The statement to access the third element of list1 is_.
38. The method to add multiple elements from another list is_
39. To find the length of a list list1, we write_.
40. The statement to access elements from index 2 to the end is_____.
41. To create a sublist from index -3 to -1, we write.
42. The method to sort a list of strings alphabetically is_.
43. The method to remove and return the last element of a list is____.
44. The function to convert a list of characters back into a string is__.
45. To find the index of the first occurrence of ‘Blue’ in list1, we write____.
46. To add ‘Black’ to the end of list1, we write_.
47. The method to remove the first occurrence of ‘Red’ from list1 is_.
48. The method to sort a list of numbers in ascending order is_.
49. To access every second element in list1, we use the slice__.
50. The method to create a list from a string ‘aeiou’ is__.
51. Lists are **……..** data types and thus their values can be changed.
52. To create an empty list, function **……..** can used.
53. The **……..** operator adds one list to the end another list.
48. The **……..**operator replicates a list.
49. To check if an element is in list, **……..** operator is used.
50. To delete a list slice from a list, **……..** is used
51. A **……..** list contains another list as its member.
52. The **……..**nction is used to insert element at a designated position in a list.

53. The **……..** function is used to delete element to remove an element from designated index in a list.
54. The **……..** function can append a list elements to a list.
55. The **……** function sorts a list and makes changes in the list.
56. The **……..** function sorts a list and returns another list.

**2 Marks Questions:**

1. What is a list in Python?
2. How are elements of a list separated and enclosed?
3. Give an example of a list containing mixed data types.
4. How do you access the first element of a list?
5. Explain with an example how to access the last element of a list.
6. What happens if you try to access an index that is out of range in a list?
7. Explain with an example how lists in Python are mutable.
8. What is list concatenation? Provide an example.
9. What error occurs when you try to concatenate a list with a string?
10. How can you replicate elements of a list?
11. What does the 'in' operator do in the context of lists?
12. What will the 'not in' operator return if the element is not present in the list?
13. What is slicing in lists? Provide an example.
14. How can you traverse a list using a for loop?
15. How can you traverse a list using a while loop?
16. What does the len() function do for lists?
17. How can you create an empty list using the list() function?
18. What does the append() method do in a list?
19. How can you insert an element at a specific index in a list?
20. What does the count() method return when used on a list?

**3 Marks Questions:**

1. Explain with examples how a list can contain elements of different data types.
2. How can you use list indices to access elements in a list? Provide examples.
3. Describe the error and its reason when an index is out of range in a list.
4. Illustrate with an example how lists in Python are mutable.
5. What is the result of concatenating two lists? Provide an example.
6. Explain with examples the result of concatenating a list with elements of different data types.
7. What is the result of replicating a list using the repetition operator? Provide an example.
8. How do the 'in' and 'not in' operators work in the context of lists? Provide examples.
9. Describe the process of slicing a list and provide examples.

10. How can you traverse a list using both a for loop and a while loop? Provide examples.
11. Explain with examples how to use the len() function with lists.
12. How can you create a list from a sequence using the list() function? Provide examples.
13. Describe the append() method and provide examples showing its usage.
14. What is the difference between the append() and extend() methods in lists? Provide examples.
15. How does the insert() method work in lists? Provide examples.
16. Explain with examples how the count() method works in lists.
17. Describe how the index() method works and provide examples.
18. How can you remove an element from a list using the remove() method? Provide an example.
19. What is the difference between the pop() and clear() methods in lists? Provide examples.
20. How can you sort a list using the sort() method? Provide an example.

**5 Marks Questions:**

1. Explain with detailed examples the various ways to access elements in a list using indices.
2. Describe with examples the mutability of lists and how it affects the contents of a list.
3. Provide a detailed explanation of list concatenation and the errors that may occur with examples.
4. Illustrate with examples how repetition and membership operators work with lists.
5. Describe the process of slicing a list with different step sizes and provide examples.
6. Explain how to traverse a list using both for and while loops with detailed examples.
7. Provide a detailed explanation of the various list methods and built-in functions with examples.
8. Describe how to use the append() and extend() methods in lists with detailed examples.
9. Explain the process of inserting elements at specific indices in a list with examples.
10. Provide a detailed explanation of the count() and index() methods in lists with examples.
11. Describe how to remove elements from a list using different methods with examples.
12. Explain with detailed examples the difference between the pop() and clear() methods in lists.
13. Illustrate with examples how to sort a list using the sort() method and explain the optional parameters.
14. Explain the concept of nested lists and provide examples of accessing elements in nested lists.

# CHAPTER 10
# TUPLES AND DICTIONARIES

**Multiple Choice Questions**

**1. What is a tuple in Python?**

a) An immutable ordered sequence of elements of different data types
b) A mutable ordered sequence of elements of different data types
c) An unordered collection of unique elements
d) A mutable **unordered collection of elements**

**2. How are elements of a tuple accessed?**

a) Using keys
b) Using indexing and slicing
c) Using loops only
d) Using a function

**3. What will be the output of the following code?**

**Python Code:**

```
tuple1 = (2, 4, 6, 8, 10)
print(tuple1[3])
```

a) 6 b) 8
c) 4 d) 10

**4. What is the result of trying to change an element in a tuple?**

a) It changes successfully b) It raises a TypeError
c) It raises a ValueError d) It raises an IndexError

**5. How can you create a tuple with a single element?**

a) ‘(element,)‘ b) ‘(element)‘
c) ‘[element]‘ d) ‘{element}‘

**6. What is the correct way to create an empty tuple?**

a) ‘tuple = []‘ b) ‘tuple = {}‘
c) ‘tuple = ()‘ d) ‘tuple = set()‘

**7. Which method is used to concatenate two tuples?**

a) ‘+‘ b) ‘*‘
c) ‘append()‘ d) ‘extend()‘

**8. What will be the output of the following code?**

**Python Code:**

```
tuple1 = (1, 3, 5)
tuple2 = (2, 4, 6)
print(tuple1 + tuple2)
```

a) ‘(1, 3, 5, 2, 4, 6)‘ b) ‘(1, 2, 3, 4, 5, 6)‘
c) ‘[1, 3, 5, 2, 4, 6]‘ d) ‘[1, 2, 3, 4, 5, 6]‘

**9. What operator is used to repeat elements of a tuple?**

a) '+' b) '*'

c) '-'d) '/'

**10. How can you check if an element is present in a tuple?**

a) Using the 'in' operator b) Using the 'not in' operator

c) Using the 'find' method d) Using the 'contains' method

**11. What will be the output of the following code?**

**Python Code:**

```
tuple1 = ('Hello',) * 3
print(tuple1)
```

a) '('Hello', 'Hello', 'Hello')' b) '('Hello',)'

c) '['Hello', 'Hello', 'Hello']' d) '['Hello']'

**12. Which function returns the length of a tuple?**

a) 'len()' b) 'length()'

c) 'size()' d) 'count()'

**13. Which method returns the number of times an element appears in a tuple?**

a) 'index()' b) 'find()'

c) 'count()' d) 'len()'

**14. How do you create a tuple from a list?**

a) 'tuple = list[]' b) 'tuple(list)'

c) 'list(tuple)' d) 'tuple = list()'

**15. What is the result of the following operation?**

**Python Code:**

```
tuple1 = (1, 2, 3)
tuple2 = (4, 5, 6)
result = tuple1 * 2 + tuple2
print(result)
```

a) '(1, 2, 3, 1, 2, 3, 4, 5, 6)' b) '(1, 2, 3, 4, 5, 6)'

c) '(4, 5, 6, 1, 2, 3)' d) '(1, 2, 3, 4, 5, 6, 1, 2, 3)'

**16. What will be the output of the following slicing operation?**

**Python Code:**

```
tuple1 = (10, 20, 30, 40, 50, 60, 70, 80)
print(tuple1[2:5])
```

a) '(20, 30, 40)' b) '(30, 40, 50)'

c) '(30, 40, 50, 60)' d) '(40, 50, 60)'

**17. Which function returns a tuple?**

a) 'list()' b) 'set()'

c) 'dict()' d) 'tuple()'

**18. What will be the output of the following code?**

**Python Code:**

```
tuple1 = (1, 2, 3, 4, 5)
print(tuple1[-1])
```

a) ‘1‘ b) ‘2‘

c) ‘5‘ d) ‘4‘

**19. How can you iterate through a tuple?**

a) Using a for loop b) Using a while loop

c) Using the range() function d) All of the above

**20. What is the purpose of the ‘index()‘ method in tuples?**

a) To count occurrences of an element

b) To find the position of the first occurrence of an element

c) To add an element to the tuple

d) To remove an element from the tuple

**21. Which method returns the index of the first occurrence of an element in a tuple?**

a) ‘find()‘ b) ‘search()‘

c) ‘index()‘ d) ‘locate()‘

**22. How can you reverse a tuple?**

a) Using the ‘reversed()‘ function b) Using slicing with a step of -1

c) Using the ‘reverse()‘ method d) Using a for loop

**23. What is the result of the following slicing operation?**

**Python Code:**

```
tuple1 = (1, 2, 3, 4, 5, 6, 7, 8)
print(tuple1[::2])
```

a) ‘(1, 2, 3, 4)‘ b) ‘(1, 3, 5, 7)‘

c) ‘(2, 4, 6, 8)‘ d) ‘(1, 3, 5, 7, 9)‘

**24. Which operator is used to check if an element is not present in a tuple?**

a) ‘in‘ b) ‘not in‘

c) ‘is‘ d) ‘not is‘

**25. What will be the output of the following code?**

**Python Code:**

```
tuple1 = (‘Red’, ‘Green’, ‘Blue’)
print(‘Yellow’ in tuple1)
```

a) ‘True‘ b) ‘False‘

c) ‘Error‘ d) ‘None‘

**26. How do you create a tuple with the numbers 1 to 5?**

a) ‘tuple(range(1, 6))‘ b) ‘tuple(range(1, 5))‘

c) ‘(1, 2, 3, 4, 5)‘ d) ‘(1, 2, 3, 4, 5, 6)‘

**27. What is the output of the following code?**

**Python Code:**

```
tuple1 = (1, 2, (3, 4), 5)
print(tuple1[2])
```

a) '(3, 4)' b) '3'

c) '4' d) '5'

**28. What is the correct way to concatenate two tuples?**

a) 'tuple1.append(tuple2)' b) 'tuple1 + tuple2'

c) 'tuple1.extend(tuple2)' d) 'tuple1.union(tuple2)'

**29. What will be the output of the following code?**

**Python Code:**

```
tuple1 = ('a', 'b', 'c', 'd')
print(tuple1[:2])
```

a) '('a', 'b')' b) '('c', 'd')'

c) '('b', 'c')' d) '('a', 'b', 'c')'

**30. What is the output of the following code?**

**Python Code:**

```
tuple1 = ('x', 'y', 'z')
tuple2 = ('a', 'b')
tuple3 = tuple1 + tuple2
print(len(tuple3))
```

a) '2' b) '5'

c) '6' d) '7'

**31. What is a dictionary in Python?**

a) An ordered collection of elements

b) An unordered collection of key-value pairs

c) A mutable ordered sequence of elements

d) An immutable ordered sequence of elements

**32. How are elements in a dictionary accessed?**

a) Using indexing b) Using keys

c) Using loops d) Using functions

**33. Which of the following is the correct syntax for creating a dictionary?**

a) '{key1: value1, key2: value2}' b) '[key1: value1, key2: value2]'

c) '(key1: value1, key2: value2)' d) '{key1 = value1, key2 = value2}'

**34. What will be the output of the following code?**

**Python Code:**

```
dict1 = {'a': 1, 'b': 2, 'c': 3}
print(dict1['b'])
```

a) '1' b) '2'

c) '3' d) 'Error'

**35. How can you add an element to a dictionary?**

a) ‘dict1.append(key, value)‘ b) ‘dict1[key] = value‘

c) ‘dict1.add(key, value)‘ d) ‘dict1.insert(key, value**)‘**

**36. What will be the output of the following code?**

**Python Code:**

```
dict1 = {‘a’: 1, ‘b’: 2, ‘c’: 3}
dict1[‘d’] = 4
print(dict1)
```

a) ‘{‘a’: 1, ‘b’: 2, ‘c’: 3, ‘d’: 4}‘ b) ‘{‘a’: 1, ‘b’: 2, ‘c’: 3}‘

c) ‘{‘a’: 1, ‘b’: 2, ‘c’: 3, ‘d’: 3}‘ d) ‘{‘a’: 1, ‘b’: 2, ‘c’: 3, ‘d’: 5}‘

**37. How can you remove an element from a dictionary?**

a) ‘del dict1[key]‘ b) ‘dict1.remove(key)‘

c) ‘dict1.pop(key)‘ d) Both a and c

**38. What will be the output of the following code?**

**Python Code:**

```
dict1 = {‘a’: 1, ‘b’: 2, ‘c’: 3}
del dict1[‘b’]
print(dict1)
```

a) ‘{‘a’: 1, ‘b’: 2, ‘c’: 3}‘ b) ‘{‘a’: 1, ‘c’: 3}‘

c) ‘{‘b’: 2, ‘c’: 3}‘ d) ‘{‘a’: 1, ‘b’: 3, ‘c’: 3}‘

**39. How can you access all keys in a dictionary?**

a) ‘dict1.keys()‘ b) ‘dict1.values()‘

c) ‘dict1.items()‘ d) ‘dict1.getkeys()‘

**40. What will be the output of the following code?**

**Python Code:**

```
dict1 = {‘a’: 1, ‘b’: 2, ‘c’: 3}
keys = list(dict1.keys())
print(keys)
```

a) ‘[‘a’, ‘b’, ‘c’]‘ b) ‘[1, 2, 3]‘

c) ‘[‘a’, ‘c’]‘ d) ‘[‘1’, ‘2’, ‘3’]‘

**41. How can you access all values in a dictionary?**

a) ‘dict1.keys()‘ b) ‘dict1.values()‘

c) ‘dict1.items()‘ d) ‘dict1.getvalues()‘

**42. What will be the output of the following code?**

**Python Code:**

```
dict1 = {‘a’: 1, ‘b’: 2, ‘c’: 3}
values = list(dict1.values())
print(values)
```

a) ‘[‘a’, ‘b’, ‘c’]‘ b) ‘[1, 2, 3]‘

c) ‘[‘a’, ‘c’]‘ d) ‘[‘1’, ‘2’, ‘3’]‘

**43. How can you access all key-value pairs in a dictionary?**

a) ‘dict1.keys()‘ b) ‘dict1.values()‘

c) ‘dict1.items()‘ d) ‘dict1.getitems()‘

**44. What will be the output of the following code?**

**Python Code:**

```
dict1 = {‘a’: 1, ‘b’: 2, ‘c’: 3}
items = list(dict1.items())
print(items)
```

a) ‘[‘a’, ‘b’, ‘c’]‘ b) ‘[1, 2, 3]‘

c) ‘[[‘a’, 1], [‘b’, 2], [‘c’, 3]]‘ d) ‘[(‘a’, 1), (‘b’, 2), (‘c’, 3)]‘

**45. How can you check if a key exists in a dictionary?**

a) ‘key in dict1‘ b) ‘key not in dict1‘

c) ‘dict1.contains(key)‘ d) ‘dict1.has_key(key)‘

**46. What will be the output of the following code?**

**Python Code:**

```
dict1 = {‘a’: 1, ‘b’: 2, ‘c’: 3}
print(‘b’ in dict1)
```

a) ‘True‘ b) ‘False‘

c) ‘Error‘ d) ‘None‘

**47. How can you update a dictionary with another dictionary?**

a) ‘dict1.add(dict2)‘ b) ‘dict1.update(dict2)‘

c) ‘dict1.append(dict2)‘ d) ‘dict1.extend(dict2)‘

**48. What will be the output of the following code?**

**Python Code:**

```
dict1 = {‘a’: 1, ‘b’: 2}
dict2 = {‘b’: 3, ‘c’: 4}
dict1.update(dict2)
print(dict1)
```

a) ‘{‘a’: 1, ‘b’: 2, ‘c’: 4}‘ b) ‘{‘a’: 1, ‘b’: 3, ‘c’: 4}‘

c) ‘{‘a’: 1, ‘b’: 2, ‘b’: 3, ‘c’: 4}‘ d) ‘{‘a’: 1, ‘c’: 4}‘

**49.** **Assertion** (A) : A tuple is an ordered sequence of elements such as integer, float, string

**Reasoning** (R) : Like list and string, elements of a tuple can be accessed using index values, starting from 1.

(a) A is true and R is correct explanation

(b) A is false and R is incorrect explanation

(c) A is true and R is incorrect explanation

(d) A is false and R is correct explanation

**50.** **Assertion** (A) : Tuple is an immutable data type.
**Reasoning** (R) : The elements of a tuple can be changed after it has been created.
(a) A is true and R is correct explanation
(b) A is false and R is incorrect explanation
(c) A is true and R is incorrect explanation
(d) A is false and R is correct explanation

**51.** **Assertion** (A) : The key-value pair is called an item in dictionaries are unordered.
**Reasoning** (R) : It may not be possible to get back the data in the same order in which it was initially entered in the dictionary
(a) A is true and R is correct explanation
(b) A is false and R is incorrect explanation
(c) A is true and R is incorrect explanation
(d) A is false and R is correct explanation

**52.** **Assertion** (A) : The keys in the dictionary must be unique and should be of any immutable data type.
**Reasoning** (R) : The values cannot be repeated and can be of any data type.
(a) A is true and R is correct explanation
(b) A is false and R is incorrect explanation
(c) A is true and R is incorrect explanation
(d) A is false and R is correct explanation

**53.** **Assertion** (A) : Dictionaries are mutable which implies that the contents can be changed after it has been created.
**Reasoning** (R) : Keys are of immutable type but values can be mutable.
(a) A is true and R is correct explanation
(b) A is false and R is incorrect explanation
(c) A is true and R is incorrect explanation
(d) A is false and R is correct explanation

**54** **Assertion** (A): Python dictionaries are unordered collections of key-value pairs.
**Reason** (R): Python dictionaries are implemented using hash tables.
a) Both A and R are true and R is the correct explanation for A
b) Both A and R are true and R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

**55** **Assertion** (A): Python dictionaries can have duplicate keys.
**Reason** (R): Python dictionaries can contain lists as values.
a) Both A and R are true and R is the correct explanation for A
b) Both A and R are true and R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True
e)

**56.** **Assertion** (A): The get() method in Python dictionaries returns the value associated witha given key, or None if the key does not exist.

**Reason** (R): The get() method in Python dictionaries is used to search for a key in thedictionary.

a) Both A and R are true and R is the correct explanation for A
b) Both A and R are true and R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

**57.** **Assertion** (A): The copy() method in Python dictionaries creates a shallow copy of the dictionary.

**Reason** (R): The copy() method in Python dictionaries creates a new dictionary with thesame key-value pairs as the original dictionary.

a) Both A and R are true and R is the correct explanation for A
b) Both A and R are true and R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

**58.** **Assertion** (A): Python dictionaries are mutable data types.

**Reason** (R): Python dictionaries can be changed.

a) Both A and R are true and R is the correct explanation for A
b) Both A and R are true and R is not the correct explanation for A
c) A is True but R is False
d) A is false but R is True

**Fill in the Blanks**

1. The keys of a dictionary must be of **……..**types.
2. The order of a dictionary's elements is **……..**.
3. To delete an element using a key, **……..** is used.
4. To get all the keys of a dictionary, **……..** method is used.
5. To create a new dictionary from a set of keys, **……** function is used.
6. The copy( ) method creates a **…….** copy of a dictionary.
7. The **……** statement will raise an error if the given key is not found in the dictionary.
8. The **……** function allows to specify own value/message, if the given key is not found in the dictionary.
9. The popitem( ) function will always remove the **…….** entered value of a dictionary.
10. For **…….** function to work, the keys of a dictionary must be addition compatible.

**2 Marks Questions**

1. What is a tuple in Python?
2. How are elements of a tuple enclosed?
3. How can you access the first element of a tuple named `tuple1`?
4. Give an example of a tuple with mixed data types.
5. What will be the output of `type((20,))` in Python?
6. Explain how to create a tuple with a single element.
7. How does Python treat a sequence without parentheses?
8. Describe the immutability of tuples.
9. How can you access elements of a tuple using negative indexing?
10. What is the result of concatenating the tuples `(1, 2, 3)` and `(4, 5, 6)`?
11. How does the repetition operator work on tuples?
12. What does the `in` operator check in a tuple?
13. Provide an example of slicing a tuple to get elements from index 2 to 5.
14. How do you create an empty tuple in Python?
15. What does the `len()` function do when applied to a tuple?
16. Write the code to count the number of occurrences of the element `10` in the tuple `(10, 20, 10, 30)`.
17. Explain the use of the `index()` method in tuples.
18. How do you modify an element inside a list that is an element of a tuple?
19. What is the output of `tuple1[::-1]` if `tuple1 = (1, 2, 3, 4
20. How can you extend a tuple with more elements using the concatenation operator?

**3 Marks Questions**

1. Explain the difference between lists and tuples in Python.
2. How can you concatenate two tuples and store the result in a new tuple? Provide an example.
3. Describe the process of accessing tuple elements using slicing.
4. What will be the result of `tuple1 * 3` if `tuple1 = ('Hello', 'World')`?
5. How can you use the `not in` operator with tuples? Provide an example.
6. Explain the steps to create a tuple from a string.
7. What will be the output of `tuple(range(5))`? Explain.
8. Describe the behavior of the `count()` method in tuples with an example.
9. How can you find the index of an element in a tuple? Provide a code example.
10. Explain how to modify the list element inside a tuple.
11. Describe how the repetition operator works when applied to a tuple with a single element.
12. How can you slice a tuple to get every second element? Provide an example.
13. Explain the use of the `len()` function with tuples and provide a code example.

14. How can you convert a list to a tuple? Provide a code example.
15. What happens if you try to modify an element of a tuple directly?
16. Explain the concept of nested tuples with an example.
17. How can you reverse the elements of a tuple? Provide a code example.
18. Describe how to check if an element exists in a tuple.
19. How can you append multiple elements to an existing tuple? Provide a code example.
20. Explain the immutability of tuples and their significance in Python programming.

**5 Marks Questions**

1. Describe in detail how to access elements in a tuple using both positive and negative indexing with examples.
2. Explain the concept of tuple immutability with relevant examples and discuss its implications.
3. How can you concatenate, repeat, and slice tuples? Provide examples and explain the results.
4. Discuss the use of the `in` and `not in` operators with tuples, providing examples and their outputs.
5. Explain the methods and built-in functions available for tuples in Python, including `len()`, `tuple()`, `count()`, and `index()` with examples.
6. Describe the process of creating tuples with different types of elements, including single elements, lists, and other tuples. Provide code examples.
7. How can you modify a list element inside a tuple? Explain with an example.
8. Discuss the use of the repetition operator with tuples, including its syntax and behavior with different types of tuples.
9. How can you extend an existing tuple using the concatenation operator? Provide detailed examples and explain the results.
10. Describe the slicing operation for tuples, including different ways to slice and access subsets of tuple elements. Provide examples.
11. Explain the concept of nested tuples and how to access their elements. Provide examples and discuss their applications.
12. How can you convert other data structures, such as strings and lists, to tuples? Provide examples and explain the process.
13. Discuss the significance of tuple immutability in Python programming and its advantages over mutable data structures like lists.
14. Provide a comprehensive explanation of tuple methods and built-in functions, including their syntax, usage, and examples.
15. Describe how to reverse the elements of a tuple and explain the different ways to achieve this. Provide code examples.

# CHAPTER 11
# SOCIETAL IMPACT

**Multiple Choice Questions**

**1. What are the two types of digital footprints?**

a) Active and Passive
b) Intentional and Unintentional
c) Direct and Indirect
d) Personal and Professional

**2. What is a digital society?**

a) A community based on physical interactions
b) A society that relies heavily on digital technologies
c) A society that avoids using the Internet
d) A community that only exists online

**3. What is an example of sensitive data?**

a) Social media posts
b) Public email address
c) Biometric information
d) Internet cookies

**4. What does the Indian IT Act of 2000 address?**

a) Cyber bullying
b) Electronic governance
c) Physical theft
d) Patent law

**5. How can privacy of sensitive data be implemented?**

a) By ignoring unauthorized access
b) By using encryption and authentication
c) By sharing passwords
d) By making data public

**6. Which of the following is a health concern associated with digital device usage?**

a) Improved vision
b) Eye strain
c) Better posture
d) Enhanced physical activity

**7. What should you do to protect your digital footprints?**

a) Share your passwords
b) Avoid using the Internet
c) Be cautious about what you upload or download
d) Post everything online

**8. What is one of the primary focuses of ergonomics?**

a) Increasing screen time
b) Reducing strain on the body
c) Maximizing internet speed
d) Enhancing software features

**9. What is a passive digital footprint?**

a) Data you intentionally leave online
b) Data you unintentionally leave online
c) Data that is deleted immediately
d) Data that cannot be tracked

**10. What does the Cyber Appellate Tribunal do?**

a) Resolves physical crimes
b) Resolves disputes arising from cyber crimes
c) Enforces traffic laws
d) Manages social media policies

**11. What is the effect of spending too much time on the Internet?**

a) Improved physical health
b) Enhanced social skills
c) Negative impact on physical and psychological well-being
d) Increased outdoor activities

**12. What should you do before uploading content online?**

a) Ensure it is sensitive
b) Think carefully about its potential impact
c) Upload it immediately without thought
d) Share it with everyone

**13. What is the purpose of the IT Act in India?**

a) To regulate offline transactions
b) To provide a legal framework for electronic governance
c) To restrict internet usage
d) To ban social media

**14. What can be done to reduce eye strain from digital devices?**

a) Increase screen brightness
b) Continuously use the device without breaks
c) Use ergonomically designed devices
d) Decrease the text size

**15. What is the nature of the changes brought by digital technologies?**

a) Slower communication
b) More convenient and faster processes
c) Reduced productivity
d) Limited access to information

**16. What is one method to ensure data privacy?**

a) Sharing passwords widely
b) Using strong and frequently changed passwords
c) Avoiding encryption
d) Ignoring data breaches

**17. What should be done if you receive fake information on social media?**

a) Believe it immediately
b) Validate it with knowledge and experience
c) Share it widely
d) Ignore it completely

**18. What type of digital footprint includes emails you write?**

a) Passive
b) Active
c) Unintentional
d) Invisible

**19. What should you be cautious about in a digital society?**

a) Only physical interactions
b) How you conduct yourself online
c) Avoiding all digital transactions
d) Never using social networks

**20. What is one of the penalties outlined in the IT Act for cyber crimes?**

a) Fine for physical assault
b) Punishment for hacking the computer system
c) Reward for using strong passwords
d) Incentive for not using the Internet

**21. What is one impact of improper posture while using digital devices?**

a) Improved mental health
b) Physical strain and fatigue
c) Enhanced physical fitness
d) Better concentration

**22. How should you handle sensitive or confidential files online?**

a) Upload them carelessly
b) Avoid uploading them whenever possible
c) Share them with unknown contacts
d) Ensure they are public

**23. What does digital signature ensure?**

a) Anonymity of the user
b) Authenticity of the document
c) Untraceability of the document
d) Permanent deletion of the document

**24. What should you do with your passwords to protect your online accounts?**

a) Keep the same password for all accounts
b) Share them with friends
c) Change them frequently
d) Write them down in a public place

**25. What is the effect of continuously looking at small handheld devices?**

a) Improved vision
b) Eye strain
c) Increased outdoor activity
d) Enhanced focus

**26. How can fake news on social media be identified?**

a) By sharing it without validation
b) By believing it immediately
c) By using experience and knowledge to validate
d) By ignoring all news

**27. What does the term 'netizen' refer to?**

a) A person who avoids using the Internet
b) A person who is actively involved in online communities
c) A person who uses only traditional communication
d) A person who has no digital footprint

**28. What should you avoid doing on social networks?**

a) Uploading everything immediately
b) Thinking before uploading
c) Validating information before sharing
d) Being cautious about privacy

**29. What is the impact of digital technologies on human activities?**

a) They have made things more difficult
b) They have evolved all spheres of activities
c) They have decreased efficiency
d) They have limited communication

**30. What is one way to reduce physical strain from using digital devices?**

a) Ignoring ergonomic guidelines
b) Using ergonomic devices and furniture
c) Avoiding breaks
d) Increasing screen brightness

**31. What is an active digital footprint?**

a) Data you unintentionally leave online
b) Data that is deleted automatically
c) Data you intentionally leave online
d) Data that cannot be tracked

**32. What does the term 'digital signature' imply?**

a) A person's handwritten signature
b) An electronic signature that verifies the authenticity of a document
c) A printed signature
d) An anonymous signature

**33. What is the goal of privacy in a digital society?**

a) To make all information public
b) To protect sensitive data from unauthorized access
c) To share passwords widely
d) To avoid using encryption

**34. What can help reduce the risk of cybercrimes?**

a) Ignoring software updates
b) Using outdated security software
c) Regularly updating security measures
d) Sharing passwords with everyone

**35. What is a common health issue from excessive screen time?**

a) Enhanced sleep quality
b) Eye strain
c) Improved posture
d) Increased physical activity

**36. What should you do if you are unsure about the authenticity of online content?**

a) Share it widely
b) Validate it before sharing
c) Ignore it
d) Believe it immediately

**37. What type of information is considered public data?**

a) Biometric information
b) Internet cookies
c) Social media posts
d) Financial records

**38. What should be done to protect sensitive online transactions?**

a) Use weak passwords
b) Ignore security protocols
c) Use encryption and authentication
d) Share transaction details publicly

**39. What is one approach to dealing with digital footprints?**

a) Sharing all personal data publicly
b) Ignoring the privacy settings
c) Being mindful about what you upload and download
d) Avoiding all online activities

**40. What is the function of the Cyber Appellate Tribunal?**

a) Handling offline crimes
b) Managing cybercrime disputes
c) Enforcing physical security measures
d) Regulating traditional media

**41. What can cause ergonomic issues while using digital devices**

a) Correct posture
b) Lack of breaks
c) Ergonomic furniture
d) Regular exercise

**42. What is the outcome of spending excessive time online?**

a) Enhanced physical fitness
b) Negative impact on health and well-being
c) Increased productivity
d) Better social interactions

**43. What type of footprint includes data collected by websites you visit?**

a) Active
b) Passive
c) Public
d) Private

**44. What should you do to ensure digital security?**

a) Avoid using security measures
b) Use strong and unique passwords
c) Share your passwords
d) Ignore security updates

**45. What is one feature of a digital society?**

a) Avoidance of digital technology
b) Dependence on digital technologies for various activities
c) Limited communication methods
d) Preference for physical interactions only

**46. What is the primary goal of data privacy?**

a) Making all data public
b) Preventing unauthorized access to sensitive data
c) Avoiding encryption
d) Sharing passwords widely

**47. What is the primary concern with digital footprints?**

a) Enhancing public profile
b) Privacy and security risks
c) Improved social interactions
d) Better online presence

**48. What is one way to reduce eye strain from screens?**

a) Increasing screen brightness
b) Taking regular breaks
c) Reducing text size
d) Ignoring ergonomic practices

**49. What should you do with sensitive files online?**

a) Share them with everyone
b) Avoid uploading them if possible
c) Ignore their privacy settings
d) Upload them without encryption

**50. What is the importance of a digital signature?**

a) It ensures anonymity
b) It verifies the authenticity of a document
c) It cannot be traced
d) It deletes documents permanently

**51.** **Statement 1:** Active and passive are the two types of digital foot prints.
**Statement 2:** Passive digital footprint means, data you unintentionally leave online.

a. Both statement 1 and 2 is false
b. Both statement 1 and 2 is true
c. Statement 1 is true, statement 2 is false
d. Statement 1 is false, statement 2 is true

**52.** **Statement 1:** India's IT act is amended in 2021.
**Statement 2:** The act outlines cyber crimes and penalties.

a. Both statement 1 and 2 is false
b. Both statement 1 and 2 is true
c. Statement 1 is true, statement 2 is false
d. Statement 1 is false, statement 2 is true

**53.** **Statement 1:** Trademark infringement means an unauthorized use of others trademark on products and services.
**Statement 2:** An owner of a trademark cannot commence legal proceedings against someone who infringes its registered trademark.

a. Both statement 1 and 2 is false
b. Both statement 1 and 2 is true
c. Statement 1 is true, statement 2 is false
d. Statement 1 is false, statement 2 is true

**54.** **Statement 1:** A patent is usually granted for inventions.
**Statement 2:** When a patent is granted, the owner gets an exclusive right to prevent others from using selling or distributing the protected inventions.

a. Both statement 1 and 2 is false
b. Both statement 1 and 2 is true

c. Statement 1 is true, statement 2 is false
d. Statement 1 is false, statement 2 is true

**55.** **Statement 1:** IPR stands for Intellectual Property Rights.
**Statement 2:** GPL stands for General Public Language.

a. Both statement 1 and 2 is false
b. Both statement 1 and 2 is true
c. Statement 1 is true, statement 2 is false
d. Statement 1 is false, statement 2 is true

**56.** **Statement – 1 :** Copyright is a type of intellectual property.
**Statement – 2 :** In FOSS, no one is freely licensed to use, copy, study, and changethesoftware in any way.

a) Statement – 1 is false but Statement – 2 is true
b) Statement – 1 is true but Statement – 2 is false
c) Both statements are false
d) Both statements are true

**57.** **Statement – 1** : Plagiarism is the practice of taking someone else's work or ideas andpassing them off as one's own.
**Statement – 2** : Plagiarism is not a violation of IPR.

a) Both statements are true.
b) Both statements are false.
c) Only Statement-1 is true.
d) Only Statement-2 is true.

**58.** **Assertion** (A) : Data theft is not a type of cybercrime.
**Reason**(R) : A Digital Footprint is a unique data trace of a user's activities, actions,communications or transactions in digital media.

a) A is false but R is true.
b) A is true but R is false.
c) Both A and R is true.
d) Both A and R is false.

**59.** **Assertion** (A) : A good digital citizen should avoid plagiarism, copyright infringementand trademark infringement.
**Reasoning** (R) : Intellectual Property Rights (IPR) help in data protection throughcopyrights, patents and trademarks.

a) Both A and R are true and R is not the correct explanation of A
b) Both A and R are true and R is the correct explanation of A
c) A is true, but R is false
d) A is false, but R is true

**60.** **Assertion :** Cyber bullying is a serious concern in the digital age.
**Reason:** It involves using digital platforms to intimidate or harm others.

a) A is false but R is true.
b) A is true but R is false.
c) Both A and R is true.
d) Both A and R is false.

**61.** **Assertion :** Ransomware encrypts files on a victim's computer and demands payment fordecryption.
**Reason:** Ransomware is a type of antivirus software designed to protect computers from cyberthreats.

a) A is false but R is true.
b) A is true but R is false.
c) Both A and R is true.
d) Both A and R is false.

**62.** **Assertion :** Adware is a type of malware that displays unwanted advertisements.
**Reason:** Adware enhances computer performance and speeds up internet browsing.
Correct

a) A is false but R is true.
b) A is true but R is false.
c) Both A and R is true.
d) Both A and R is false.

**63.** **Assertion :** Proper disposal of used electronic gadgets is crucial for environmental safety.
**Reason:** E-waste management mainly involves burning electronic waste to minimize pollution.

a) A is false but R is true.
b) A is true but R is false.
c) Both A and R is true.
d) Both A and R is false.

**64.** **Assertion :** The Information Technology Act (IT Act) primarily focuses on regulating socialmedia usage.
**Reason:** IT Act addresses cybercrime and electronic commerce, providing legal frameworks fordigital transactions.

a) A is false but R is true.
b) A is true but R is false.
c) Both A and R is true.
d) Both A and R is false.

**2-Mark Questions**

1. Define 'Digital Footprint'.
2. What is a 'Netizen'?
3. Explain the difference between active and passive digital footprints.
4. List two types of net etiquette.
5. What is cyberbullying?
6. Describe one impact of digital technologies on daily life.
7. What are social media etiquette?
8. Explain the term 'Digital Society'.
9. What is the importance of data protection in digital society?
10. Mention one benefit of using digital technologies.
11. Define 'cybercrime'.
12. What does being a good netizen entail?
13. Explain the significance of communication etiquette.
14. What is a 'Digital Citizen'?
15. How can digital footprints be misused?
16. Mention one responsibility of a digital citizen.
17. Why is it important to respect privacy online?
18. Define 'Digital Communication'.
19. What is the role of passwords in online security?
20. Explain the term 'Digital Environment'.

**3-Mark Questions**

1. Discuss the advantages of digital technologies in communication.
2. Explain how digital footprints can be used for targeted advertising.
3. Describe the role of personal computers and the Internet in spreading digital technologies.
4. How can digital footprints impact a person's privacy?
5. Explain the concept of digital society and its relevance.
6. Discuss the importance of respecting diversity in online interactions.
7. How can netizens avoid cyberbullying?
8. What are the key elements of communication etiquette?
9. Explain the significance of sharing expertise online.
10. Discuss the potential risks associated with social media usage.
11. Describe the ethical considerations in using digital technologies.
12. Explain the role of net etiquette in maintaining online harmony.
13. What are the implications of cybercrime on society?
14. Discuss the importance of responsible behavior in digital communication.
15. How can one ensure their digital footprints are secure?
16. Explain the concept of digital footprints with examples.

17. Discuss the impact of digital technologies on health.
18. Explain the role of the Indian IT Act in regulating digital activities.
19. What are the best practices for protecting personal data online?
20. Discuss the importance of using strong passwords for online security.

**5-Mark Questions**

1. Discuss the societal impact of digital technologies on different sectors.
2. Explain the significance of digital footprints and their implications for personal privacy.
3. Describe the role of digital technologies in transforming traditional communication methods.
4. Discuss the ethical responsibilities of netizens in a digital society.
5. Explain how cybercrime can be prevented and the role of laws in this context.
6. Discuss the impact of social media on culture and politics.
7. Explain the importance of digital communication etiquette and provide examples.
8. Discuss the concept of a digital citizen and the responsibilities associated with it.
9. Explain the measures one can take to protect their digital footprints.
10. Discuss the advantages and disadvantages of digital technologies in education.
11. Explain the role of digital technologies in enhancing productivity and efficiency.
12. Discuss the importance of data protection laws in the digital age.
13. Explain the concept of net etiquette and their importance in online interactions.
14. Discuss the impact of digital technologies on personal and professional life.
15. Explain the significance of being a responsible netizen and the practices involved.