Total No. of Printed Pages—16

X/19/CSc (O)

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COMPUTER SCIENCE

(Old Course)

(COMPARTMENTAL CANDIDATES WITH INTERNAL ASSESSMENT)

Full Marks : 80
Pass Marks : 24

(NON-REGULAR, PRIVATE AND COMPARTMENT WITHOUT INTERNAL ASSESSMENT)

Full Marks : 100
Pass Marks : 30

Time : 3 hours

The figures in the margin indicate full marks for the questions

General Instructions :

(i) The candidates are advised to attempt all questions accordingly.

(ii) Marks allocated to every question are indicated against each.

(iii) Section A, B, C and D are to be answered by **Compartmental candidates with Internal marks**.

(iv) Section A, B, C, D and E are to be answered by **Compartmental candidates without Internal marks/ Non-Regular/Private candidates**.

SECTION—A

(COMPUTER FUNDAMENTALS)

(*Maximum Marks* : 20)

(Objective-type Questions)

I. Choose and write the correct answer for the following (any *three*) : 1×3=3

1. Which of the following is the non-positional number system?

   (a) Roman

   (b) Octal

   (c) Decimal

   (d) Hexadecimal

2. The logic gate NOR is represented by which Boolean expression from the following?

   (a) $\overline{A \quad B}$ *(b)* $\overline{A \;\; B}$

   (c) $A \;\; B$ *(d)* $A \quad B$

3. A nibble is a string of

   (a) 8 bits

   (b) 2 bits

   (c) 4 bits

   (d) 16 bits

4. The equivalent binary number of a hexadecimal number *ABC* is

   (a) $(1010\ 1011\ 1100)_2$ *(b)* $(1010\ 1001\ 1100)_2$

   (c) $(1010\ 1011\ 1001)_2$ *(d)* $(1010\ 1011\ 1011)_2$

5. The 1's complement of $(10101110)_2$ will be

   (a) $(01010000)_2$ *(b)* $(01010001)_2$

   (c) $(01011111)_2$ *(d)* $(01010101)_2$

6. What is the sum of $(10110)_2$ and $(11001)_2$?

   (a) $(100100)_2$

   (b) $(110110)_2$

   (c) $(101111)_2$

   (d) $(100001)_2$

II. State whether the following statements are *True* or *False* (any *two*) : 1×2=2

1. BCD represents each digit of a decimal number as a nibble.

2. The product of $(1011)_2$ $(101)_2$ according to binary arithmetic is $(110111)_2$.

3. The Boolean algebra was developed by J. G. Kemeny and T. E. Kurtz.

4. The NOT operation is also called complementation.

III. Fill in the blanks of the following sentences (any *two*) : 1×2=2

1. _____ are electronic circuits that implement the Boolean operations.

2. The _____ operator acts on a single operand.

3. The binary equivalent of the number $(28)_{10}$ is _____.

4. The ASCII–7 uses 7 bits, thereby allowing a total of _____ different codes.

(Short Answer-type Questions)

IV. Answer the following questions : 1×3=3

1. Give the truth table of AND operation with two inputs.

2. Write the full form of EBCDIC.

3. Name the number systems that (1011) can belong.

(Descriptive-type Questions)

V. *Either*

(a) *(i)* What is NAND gate? Give its truth table. 1+1=2

(ii) Write the formulae of the binary arithmetic for addition and subtraction. 1½+1½=3

Or

(b) *(i)* What is hexadecimal number? 1

(ii) Convert the following : 2

$(432)_5$ $(?)_6$

(iii) Subtract the following using 2's complement method : 2

$(11111)_2$ $(11001)_2$

VI. *Either*

(a) *(i)* What is Boolean algebra? 2

(ii) Draw the logic circuit of the following : 3

$$A \quad (\overline{x \quad y} \quad z) \quad (x \quad \overline{y} \quad \overline{z})$$

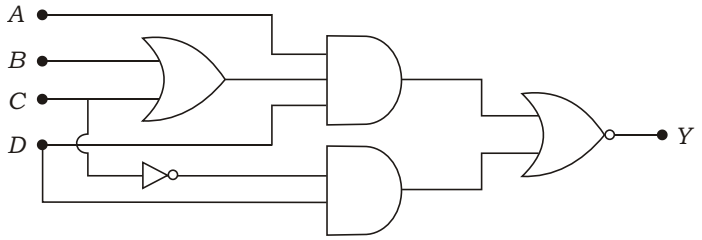
[For the Visually Handicapped (Blind) Students only in lieu of Question No. VI*(a)(ii)* above]

(ii) Explain the OR operation with its truth table and logic symbol. 1+1+1=3

Or

(b) *(i)* Define bit and byte. 1+1=2

(ii) Give the Boolean expression of the following logic circuit : 3



[For the Visually Handicapped (Blind) Students only in lieu of Question No. VI*(b)(ii)* above]

(ii) What are the three rules for subtraction using 1's complement method? 1+1+1=3

SECTION—B

(OPERATING SYSTEMS)

(*Maximum Marks* : 20)

(Objective-type Questions)

I. Choose and write the correct answer for the following (any *two*) : 1×2=2

1. The switch to display subdirectories with DIR command is

   (a) /D

   (b) /E

   (c) /S

   (d) /P

2. Which command deletes a file from the secondary storage medium?

   (a) RD

   (b) MD

   (c) DEL

   (d) CLS

3. Which of the following DOS commands is a filter?

   (a) SORT

   (b) MOVE

   (c) EDIT

   (d) FIND

4. Which Linux command from the following is used to display the information about files and subdirectories in a directory?

   (a) who *(b)* cal

   (c) ls *(d)* cd

II. State whether the following statements are *True* or *False* (any *two*) : 1×2=2

1. VOL command just displays the disk volume name and serial number.
2. FORMAT command can create a new root directory and FAT for a disk.
3. Defragmentation is the process by which a file is written on a disk in parts.
4. The BOSS Linux is an Indian distribution of Linux operating system.

III. Fill in the blanks of the following sentences (any *two*) : 1×2=2

1. _____ DOS command is used to rename a file or files.
2. _____ DOS command checks drive C: for errors.
3. _____ DOS command displays the memory information.
4. In Linux, to rename a directory, we use _____ command.

(Short Answer-type Questions)

IV. Write the commands and their switches (or options) for the following (any *two*) : 2×2=4

1. Copy a file TEST.TXT from current directory to D:\Exam.
2. Check the current disk for fragmentation.

3. Move all the files from C:\TEMP to D:\MISC.

4. Delete a file TRY.TMP from current directory.

(Descriptive-type Questions)

V. *Either*

(a) *(i)* What is the purpose of TREE command? 1

(ii) Differentiate between MOVE and MORE commands. 2+2=4

Or

(b) *(i)* What is the purpose of 'cal' command in Linux? 1

(ii) Write the purpose and syntax of the following Linux commands : 2+2=4

1. rmdir
2. rm

VI. *Either*

(a) Explain COPY command with its syntax and options in DOS. 5

Or

(b) *(i)* Name any four common distributions of Linux. 2

(ii) Write the content of the following Linux directory structures : 1×3=3

1. bin
2. boot
3. dev

SECTION—C

(QBASIC)

(*Maximum Marks* : 28)

(Objective-type Questions)

I. Choose and write the correct answer for the following (any *two*) : 1×2=2

1. Which of the following characters is not a type declaration character?

   (a) ||

   (b) %

   (c) $

   (d) #

2. ASCII code for alphabet D in QBasic is

   (a) 65 *(b)* 66

   (c) 67 *(d)* 68

3. Which one of the following can move both column and row?

   (a) TAB

   (b) SPC

   (c) LOCATE

   (d) None of the above

4. Which one of the following is the oldest loop?
   (a) FOR_NEXT loop
   (b) DO_LOOP
   (c) WHILE_WEND loop
   (d) IF_THEN_ELSE

II. State whether the following statements are *True* or *False* (any *two*) : 1×2=2

1. XOR and EQV are logical operators in QBasic.
2. The statement PRINT USING "##.##"; 123·4567 will return #123·46.
3. The variable that exists only in a procedure is called local variable.
4. The ERASE statement reinitializes array elements or free dynamic array storage.

III. Fill in the blanks of the following sentences (any *two*) : 1×2=2

1. _____ keyword is used to define global variables.
2. RIGHT$ ("WINDOW", 3) will return _____.
3. GOTO is an _____ branching statement.
4. _____ function returns the length of a string.

IV. Answer the following questions : 1×3=3

1. Write the QBasic expression of

$$\frac{x \quad y}{2a}$$

2. What is the purpose of STATIC keyword?
3. How many elements can be stored in an array X(5, 6)?

(Short Answer-type Questions)

V. Answer the following questions within *2* or *3* sentences or steps (any *two*) : 2×2=4

1. Name the two argument passing mechanisms.
2. What is dynamic array?
3. What is the function of ASC?
4. Write the syntax of nested-IF structure.

(Descriptive-type Questions)

VI. Answer the following questions : 5×3=15

1. *Either*

   (a) Differentiate between FIX and INT functions with examples. 2½+2½=5

   Or

   (b) Write the QBasic code to find the sum of first 10 even numbers. 5

2. *Either*

   (a) Write a QBasic program to input any three numbers and print out the largest. 5

   Or

   (b) Enumerate the rules of READ_DATA statement. 5

3. *Either*

(a) Enumerate the points to be remembered while writing QBasic expressions. 5

Or

(b) Enumerate the rules for naming variables in QBasic. 5

SECTION—D

(JAVA CONCEPT)

(*Maximum Marks* : 12)

(Objective-type Questions)

I. Choose and write the correct answer for the following (any *two*) : 1×2=2

1. The number of bytes required to store 'short' data type in Java is

(a) 1

(b) 2

(c) 3

(d) 4

2. Which one of the following is not a Java primitive data type?

   (a) float

   (b) single

   (c) double

   (d) char

3. Which one of the following is not a numeric operator?

   (a) %

   (b) + +

   (c) = =

   (d) – –

4. Which one of the following is not a loop statement?

   (a) for_next

   (b) do_loop

   (c) while_loop

   (d) switch_case

II. State whether the following statements are *True* or *False* (any *two*) : 1×2=2

1. java.awt contains a number of miscellaneous utility classes.

2. A method defines the operations that an object of a class can execute.

3. next() reads a string as input terminated by white space.

4. A package is a group of classes stored together.

III. Fill in the blanks of the following sentences (any *two*) : 1×2=2

1. The keyword _____ is used to indicate that an identifier is a constant.

2. The _____ symbol represents AND operator in Java.

3. A class declaration is enclosed within _____ brackets.

4. The full form of API is _____.

IV. Answer the following questions : 1×3=3

1. What is the purpose of 'new' keyword?

2. What is a constructor?

3. Define data encapsulation.

V. *Either*

(a) *(i)* Define object in Java. 1

(ii) Write the two data types available in Java. 2

Or

(b) *(i)* Who developed Java programming language? 1

(ii) What are the two Java tools used for compiling and executing Java codes? 2

SECTION—E

(*Maximum Marks* : 20)

I. Answer the following questions within *2* or *3* sentences each (any *five*) : 2×5=10

1. Define constant and variable.
2. Write the five type-declaration characters in QBasic.
3. What is the output of PRINT “12” + “12”?
4. What is a pseudocode?
5. What is the purpose of EXIT statement?
6. Write all the symbols of Boolean operators in Java.
7. Differentiate between public and private visibility modifiers.

II. Answer the following questions : 5×2=10

1. *Either*

(a) Write a QBasic code to print out the following :

1 2 3 4 5
1 2 3 4
1 2 3
1 2
1

Or

(b) Write a QBasic program to input two numbers and print out their sum.

2. *Either*

(a) Write all the arithmetic operators available in QBasic with their purposes and examples.

Or

(b) Write the results of the following QBasic expressions :

(i) "Delhi" > "Guwahati"

(ii) "Assam" < "Meghalaya"

(iii) Total = 5 65/100

(iv) MID$ ("Europe", 3)

(v) CHR$ (65)

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