1. The minimum value of the expression $\sin x + \sin y + \sin z$, where $x + y + z = \pi$ is
   (A) positive
   (B) negative
   (C) zero
   (D) -1

2. If $\tan^{-1}\frac{3x}{3x+1} + \tan^{-1}\frac{3x}{3x+2} = \frac{\pi}{4}$, then $x =$
   (A) $\frac{1}{2}$
   (B) $-\frac{1}{2}$
   (C) $\frac{1}{3}$
   (D) $\frac{1}{6}$

3. $\sin^{-1}(\cos(\sin^{-1} x)) + \cos^{-1}(\sin(\cos^{-1} x))$ is equal to
   (A) $\frac{\pi}{4}$
   (B) $\frac{\pi}{2}$
   (C) $\frac{3\pi}{4}$
   (D) 0

4. If $\tan(x + y) = 33$ and $x = \tan^{-1} 3$, then y will be
   (A) $\tan^{-1}\left(\frac{3}{10}\right)$
   (B) $\tan^{-1}\left(\frac{13}{10}\right)$
   (C) $\tan^{-1}\left(\frac{10}{3}\right)$
   (D) $\tan^{-1}\left(\frac{1}{18}\right)$

Space for Rough Work

5. $\lim_{x \to 0} \frac{\tan 2x - x}{3x - \sin x}$ is equal to

(A) $\frac{1}{2}$

(B) $-\frac{1}{2}$

(C) $\frac{3}{2}$

(D) $-\frac{3}{2}$

6. $\lim_{x \to 1} \left(\frac{x}{x-1} - \frac{1}{\log x} \right)$ is

(A) 1

(B) 0

(C) $\frac{1}{2}$

(D) $\frac{2}{3}$

7. If $f(x) = |x| + 2$, then derivative of the function at 2, i.e. $f'(2)$ is

(A) 2

(B) 4

(C) 1

(D) does not exist

Space for Rough Work

8. If $y = \cot^{-1}\left(\frac{1-x}{1+x}\right)$, then $\frac{dy}{dx}$ is equal to

(A) $\frac{1}{1+x^2}$

(B) $-\frac{1}{1+x^2}$

(C) $\frac{1-x^2}{1+x^2}$

(D) $\frac{x}{(1+x)^2}$

9. If $u = \frac{1}{x^2+y^2+z^2}$ then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} + z\frac{\partial u}{\partial z}$ is equal to

(A) $2u$

(B) $-2u$

(C) $\frac{u}{2}$

(D) $-u$

10. If $z = \log(x^2+y^2)$, then $x\frac{\partial z}{\partial x} + y\frac{\partial z}{\partial y}$ is equal to

(A) $2e^z$

(B) $\frac{2}{e^z}$

(C) e^z

(D) 2

Space for Rough Work

11. If $y = \tan^{-1}(\sec x + \tan x)$, then $\frac{dy}{dx}$ is equal to

(A) $-\frac{1}{2}$

(B) -1

(C) 1

(D) $\frac{1}{2}$

12. The minimum distance from the point (4, 2) to the parabola $y^2 = 8x$ is

(A) $\sqrt{2}$

(B) $2\sqrt{2}$

(C) 2

(D) $3\sqrt{2}$

13. If $xy > 0$ and $x + y = 16$, then the maximum value of xy is

(A) 256

(B) 128

(C) 64

(D) 32

14. The maximum value of $f(x) = \sin^4 x + \cos^4 x$, $0 < x < \frac{\pi}{2}$ is

(A) $\frac{1}{2\sqrt{2}}$

(B) $\frac{1}{4}$

(C) $\frac{1}{2}$

(D) 1

Space for Rough Work

15. The curve for which the sub-normal is of constant length is

(A) a parabola

(B) a hyperbola

(C) an ellipse

(D) a circle

16. $\int_0^{\frac{\pi}{2}} \cos^4 x dx$ is equal to

(A) $\frac{\pi}{8}$

(B) $\frac{\pi}{4}$

(C) $\frac{3\pi}{16}$

(D) $\frac{5\pi}{16}$

17. $\int \frac{dx}{(\sin x + \cos x)^2}$ is equal to

(A) $\tan x + \cot x + c$

(B) $\tan x / (1 + \tan x) + c$

(C) $2(\tan x + \cot x) + c$

(D) $2(\tan x - \cot x) + c$

18. $\int_{13}^{20} \frac{dx}{\sqrt{(x-13)(20-x)}}$ is equal to

(A) $\frac{\pi}{4}$

(B) $\frac{\pi}{2}$

(C) π

(D) $\frac{3\pi}{4}$

Space for Rough Work

19. The area bounded by the curves $y^2 = 4x$ and $x^2 = 4y$ is

(A) $\frac{2}{3}$

(B) $\frac{4}{3}$

(C) $\frac{8}{3}$

(D) $\frac{16}{3}$

20. The area bounded by the curve $y = x\sin x$ and the x-axis between $x = 0$ and $x = \pi$ is

(A) π

(B) 3π

(C) 4π

(D) 2π

21. The solution of the differential equation $x\sqrt{1+y^2}\,dx + y\sqrt{1+x^2}\,dy = 0$ is

(A) $\sqrt{1+x^2} + \sqrt{1+y^2} = c$

(B) $\log(1+x^2) + \log(1+y^2) = c$

(C) $\tan^{-1} x + \tan^{-1} y = c$

(D) $\sin^{-1} x + \sin^{-1} y = c$

22. The solution of $\frac{dy}{dx} = y\tan 2x$, where $y(0) = 2$ is

(A) $y = \frac{2}{\sqrt{\cos 2x}}$

(B) $y = 2\sqrt{\cos 2x}$

(C) $y = \frac{2}{\sqrt{\sin 2x}}$

(D) $y = 2\sqrt{\sin 2x}$

Space for Rough Work

23. The value of h for which $2x^2 + 2hxy + 3y^2 = 0$ represents a pair of coincident lines are

(A) $\pm\sqrt{3}$

(B) ± 2

(C) ± 3

(D) $\pm\sqrt{6}$

24. The distance between the lines $4x + 3y = 9$ and $8x + 6y = 15$ is

(A) 3

(B) 0.3

(C) 6

(D) 0.6

25. The equation of the circles through origin which cuts the intercepts of length p and q on axes is

(A) $x^2 + y^2 + px + qy = 0$

(B) $x^2 + y^2 - px - qy = 0$

(C) $x^2 + y^2 + qx + py = 0$

(D) $x^2 + y^2 - qx - py = 0$

26. If $2x + y + k = 0$ is a normal to the parabola $y^2 = -8x$, then $k =$

(A) -12

(B) 12

(C) 24

(D) -24

Space for Rough Work

27. The eccentricity of the ellipse $3x^2 + 2y^2 = 6$ is

(A) $\frac{1}{\sqrt{3}}$

(B) $\frac{1}{\sqrt{2}}$

(C) $\frac{\sqrt{2}}{3}$

(D) $\frac{2}{\sqrt{3}}$

28. If P is a point on the ellipse $\frac{x^2}{16} + \frac{y^2}{25} = 1$ and S_1 and S_2 are the foci, then $PS_1 + PS_2 =$

(A) 5

(B) 4

(C) 8

(D) 10

29. The eccentricity of the hyperbola $9x^2 - 16y^2 = 144$ is

(A) $\frac{19}{16}$

(B) $\frac{14}{5}$

(C) $\frac{9}{7}$

(D) $\frac{5}{4}$

Space for Rough Work

30. The angle between the lines whose direction ratios are 3, 4, 5 and 4, –3, 5 is

(A) $\frac{\pi}{6}$

(B) $\frac{\pi}{3}$

(C) $\frac{\pi}{2}$

(D) $\frac{\pi}{4}$

31. Hexadecimal form of the decimal number 2013 is

(A) DD7

(B) D7D

(C) 7DD

(D) 7CD

32. The equation of the sphere passing through the origin and the points P(1, 0, 0), Q(0, 1, 0), R(0, 0, 1) and having the minimum radius is

(A) $x^2 + y^2 + z^2 - 2x - 2y - 2z - 1 = 0$

(B) $x^2 + y^2 + z^2 + 2x + 2y + 2z + 1 = 0$

(C) $3(x^2 + y^2 + z^2) + 2x + 2y + 2z + 1 = 0$

(D) $3(x^2 + y^2 + z^2) - 2x - 2y - 2z - 1 = 0$

Space for Rough Work

33. A bag contains 6 white and 4 red balls. Two balls are drawn at random. The probability that they are not same colour is :

(A) $\frac{5}{9}$

(B) $\frac{6}{11}$

(C) $\frac{5}{11}$

(D) $\frac{8}{15}$

34. The probability that a leap year selected at random will contain 53 Friday is :

(A) $\frac{2}{7}$

(B) $\frac{5}{7}$

(C) $\frac{1}{7}$

(D) $\frac{5}{12}$

35. The probability of getting more than 6 when a pair of dice are thrown is :

(A) $\frac{5}{12}$

(B) $\frac{7}{12}$

(C) $\frac{5}{18}$

(D) $\frac{13}{18}$

Space for Rough Work

36. Six coins are tossed simultaneously. The probability of getting at least 5 heads is :

(A) $\frac{7}{32}$

(B) $\frac{3}{32}$

(C) $\frac{7}{64}$

(D) $\frac{5}{64}$

37. The variance of 12, 16, 20, 24, 28 is :

(A) 32

(B) 36

(C) 30

(D) 34

38. If $|\vec{a}| = 2$, $|\vec{b}| = 7$ and $\vec{a} \times \vec{b} = 3\hat{i} + 2\hat{j} + 6\hat{k}$, then the angle between $|\vec{a}|$ and $|\vec{b}|$ is :

(A) $\frac{\pi}{4}$

(B) $\frac{\pi}{6}$

(C) $\frac{\pi}{3}$

(D) $\frac{\pi}{5}$

39. If $|\vec{a}|$ is perpendicular to $|\vec{b}|$ and $|\vec{c}|$, then $|\vec{a} \times (\vec{b} \times \vec{c})|$ is equal to :

(A) –1

(B) 1

(C) 0

(D) 2

Space for Rough Work

40. Let p, q, r be three distinct real numbers. Then, the points, P, Q, R with position vectors $p\hat{i} + q\hat{j} + r\hat{k}$, $q\hat{i} + r\hat{j} + p\hat{k}$ and $r\hat{i} + p\hat{j} + q\hat{k}$ respectively :

(A) are collinear

(B) form an equilateral triangle

(C) form an isosceles triangle

(D) form a right angled triangle

41. If $\vec{F} \cdot \vec{a} = 0$, $\vec{F} \cdot \vec{b} = 0$ and $\vec{F} \cdot \vec{c} = 0$ for some non-zero vectors $\vec{F}$, $\vec{a}$, $\vec{b}$ and $\vec{c}$, then $[\vec{a}\ \vec{b}\ \vec{c}]$ is equal to :

(A) 0

(B) 1

(C) 2

(D) 3

42. Three vectors $\hat{i} + \hat{j}$, $\hat{j} + \hat{k}$, $\hat{k} + \hat{i}$ taken two at a time form three planes. Three unit vectors drawn perpendicular to these three planes form a parallelepiped of volume :

(A) $\frac{1}{3}$

(B) 4

(C) $\frac{3\sqrt{3}}{4}$

(D) $\frac{4}{3\sqrt{3}}$

43. If S is Skew-Hermitian matrix and $i = \sqrt{-1}$, then iS is :

(A) Skew-Hermitian

(B) Hermitian

(C) Skew-Symmetric

(D) Symmetric

Space for Rough Work

44. If P and Q are two matrices such that P + Q and PQ are defined, then P and Q are :

(A) both row matrices

(B) both column matrices

(C) both rectangular matrices of same size

(D) both square matrices of same size

45. If $S = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$, then S^{-1} is equal to:

(A) S

(B) S^2

(C) S^3

(D) S^4

46. If $M = \begin{bmatrix} -1 & -2 & -2 \\ 2 & 1 & -2 \\ 2 & -2 & 1 \end{bmatrix}$, then $adj(M)$ is equal to

(A) M

(B) M^T

(C) 3M

(D) $3M^T$

47. For what value of λ the system of equations is inconsistent ?

$x + y + z = 6$

$x + 2y + 3z = 10$

$x + 2y + \lambda z = 12$

(A) 3

(B) 2

(C) –2

(D) 1

Space for Rough Work

48. The coefficient of x in the expansion of $(x^2 - \frac{1}{x})^5$ is

(A) 10

(B) –10

(C) –20

(D) 20

49. In the expansion of $(1+t)^{50}$, the sum of the coefficients of odd powers of t is

(A) 2^{48}

(B) 2^{50}

(C) 2^{49}

(D) 2^{51}

50. How many 10- digit numbers can be formed by using 3 and 9 ?

(A) $^{10}C_2$

(B) $^{10}P_2$

(C) 2^{10}

(D) 10!

51. How many diagonals are there in a polygon of k sides (k > 10) ?

(A) $\frac{k(k-1)}{2}$

(B) $\frac{k(k-2)}{2}$

(C) $\frac{k(k+1)}{2}$

(D) $\frac{k(k-3)}{2}$

Space for Rough Work

52. If S and T are two subset of U such that n(U) = 900, n(S) = 300, n(T) = 400, $n(S \cap T) = 150$. Then $n(S' \cap T') = ?$

(A) 250

(B) 350

(C) 550

(D) 450

53. The range of $\varphi(x) = \frac{1 - x + x^2}{1 + x + x^2}$ is

(A) $(3, \infty)$

(B) $[3, \infty]$

(C) $\left(\frac{1}{3}, 3\right)$

(D) $\left[\frac{1}{3}, 3\right]$

54. The domain of $\varphi(x) = \sin^{-1}(2x)$ is

(A) $[-1, 1]$

(B) $\left[-\frac{1}{2}, \frac{1}{2}\right]$

(C) $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

(D) $\left[-\frac{\pi}{4}, \frac{\pi}{4}\right]$

55. If the sets S and T have n elements in common, then the number of elements common to $(S \times T)$ and $(T \times S)$ is

(A) n

(B) 2n

(C) n!

(D) n^2

Space for Rough Work

56. The relation R defined by $xRY \Leftrightarrow x - y$ divisible by 3, on the set of all integers is
(A) symmetric and transitive but not reflexive
(B) reflexive and transitive but not symmetric
(C) reflexive and symmetric but not transitive
(D) an equivalent relation

57. The smallest positive integer k for which $(1 - i)^{2k} = (1 + i)^{2k}$ is
(A) 2
(B) 4
(C) 8
(D) 1

58. If $z = 20 + 13i$, then $\arg(\bar{z}) + \arg(z)$ is equal to
(A) 0
(B) $\frac{\pi}{2}$
(C) 2π
(D) π

59. If $x^2 + px + q = 0$ and $x^2 + qx + p = 0$ have a common root, then the value of $p + q$ is
(A) -1
(B) 1
(C) 2
(D) -2

60. The value of $\left(1 + \cos\frac{\pi}{8}\right)\left(1 + \cos\frac{3\pi}{8}\right)\left(1 + \cos\frac{5\pi}{8}\right)\left(1 + \cos\frac{7\pi}{8}\right)$ is
(A) $\frac{1}{4}$
(B) $\frac{1}{2}$
(C) $\frac{1}{8}$
(D) $\frac{1}{16}$

Space for Rough Work

61. Sequential file organization is most appropriate for which of the following applications

(A) Airline reservations

(B) Payroll

(C) Grocery store checkout

(D) Bank checking accounts

62. The 2's complement of binary number $(111011101101)_2$ is

(A) $(000011101011)_2$

(B) $(000011101111)_2$

(C) $(000100110011)_2$

(D) $(000100010011)_2$

63. Which of the following does not affect the resolution of a video display image?

(A) Screen size

(B) Bandwidth

(C) Raster scan rate

(D) None of the above

64. The concentric circles on floppy disks are known as

(A) Cylinders

(B) Tracks

(C) Sectors

(D) None of the above

65. The OCR stands for

(A) Outsized character reader

(B) Optical character recognition

(C) Operational character reader

(D) None of the above

Space for Rough Work

66. The microelectronics is the technology of

(A) Microwave

(B) Microcomputers

(C) Chips

(D) None of the above

67. Which method is used for accessing secondary memory?

(A) Transfer method

(B) Density method

(C) Action method

(D) Random access method

68. The number of binary digits which can be added by a full adder is

(A) 16

(B) 12

(C) 4

(D) 3

69. In Analog computer

(A) Input is first converted to digital form

(B) Input is never converted to digital form

(C) Output is displayed in digital form

(D) None of the Above

70. The operators << and >> used by C are

(A) Bit wise logical operators

(B) Logical operators

(C) Relational operators

(D) None of the above

Space for Rough Work

71. IFPS is a
(A) Financial planning package
(B) Graphics package
(C) Database management package
(D) None of the above

72. Addition of $(1011111)_2$ and $(1110011)_2$ is
(A) $(11010110)_2$
(B) $(11011010)_2$
(C) $(11010010)_2$
(D) None of the above

73. Subtraction of $(10010111)_2$ from $(11001011)_2$ is
(A) $(001000100)_2$
(B) $(00110100)_2$
(C) $(001001001)_2$
(D) None of the above

74. Multiplication of $(45)_8$ and $(51)_8$ is
(A) $(5277)_8$
(B) $(2577)_8$
(C) $(2755)_8$
(D) None of the above

75. Division of $(111110001)_2$ by $(111)_2$ is
(A) $(1000111)_2$
(B) $(1101110)_2$
(C) $(1010001)_2$
(D) None of the above

76. Which of the following is a programming method that is used to minimize data errors when data is transferred ?
(A) Startbit
(B) Checksum
(C) Checkbit
(D) None of the above

Space for Rough Work

77. Start and stop bits do not contain any information but are used for serial communication for

(A) Error detection

(B) Error correction

(C) Slowing down the communication

(D) Synchronization

78. Which of the following operation is commutative but not associative ?

(A) AND

(B) OR

(C) NAND

(D) None of the above

79. Check the odd term out

(A) Speech recognition

(B) Artificial intelligence

(C) Multiprocessing

(D) Thermodynamics

80. Choose the correct statement in C

(A) Non-zero value represents a false condition.

(B) 0 represents a false condition.

(C) 1 represents a false condition.

(D) None of the above

81. System Software which under all circumstances must reside in main memory is

(A) Assembler

(B) Loader

(C) Linker

(D) Text editor

Space for Rough Work

82. A microprocessor with 12 address lines is capable of addressing

(A) 1024 locations

(B) 2048 locations

(C) 8192 locations

(D) 4096 locations

83. What will be the output of the following C program ?

```
main ( )
{
  int  a,  n = 5674, b = 0;
  a = n  / 1000;
  b = b + a;
  a = n % 10;
  b = b + a;
 printf( "%d", b );
 }
```

(A) 22

(B) 12

(C) 11

(D) 9

84. The preprocessor directive in C always starts with the symbol

(A) %

(B) &

(C) #

(D) None of the above

85. While passing an array as an actual argument, the function call must have the array name

(A) alone

(B) with its size

(C) with empty brackets

(D) None of the above

Space for Rough Work

86. The following C program

```
main ( )
 {
printf( "tim");
main( );
 }
```

(A) keeps on printing tim
(B) is illegal
(C) prints tim once
(D) None of the above

87. What the word AT stands for in IBM PC-AT ?
(A) Additional Technology
(B) Applied Technology
(C) Advanced Technology
(D) None of the above

88. The number of memory locations reserved for the arrays A, B, C is

```
int A[10][6], B[7][12], C[6][8];
```

(A) (77, 104, 63)
(B) (60, 84, 48)
(C) (66, 96, 54)
(D) None of the above

89. The output of the following C program is

```
main ( )
{
 int r = 48, s = 12, t, y;
 t = r / (s + 12);
 y = ( r / s ) + 12;
printf ( "%d %d",  t , y);
}
```

(A) 2 2
(B) 4 16
(C) 2 16
(D) None of the above

Space for Rough Work

90. What type of control pins are needed in a microprocessor to regulate traffic on the bus, in order to prevent two devices from trying to use it at the same time ?

(A) Bus control

(B) Interrupts

(C) Bus arbitration

(D) None of the above

91. Bubble memory is a

(A) Sequential access devise only

(B) Direct access device only

(C) Combination of sequential and direct access devices

(D) None of the above

92. SPSS stands for

(A) Statistical Package for System Science

(B) Statistical Package for Social Science

(C) Systems Package for Social Science

(D) None of the above

93. If ↑ represents exponentiation then the value of y and z for $x = 2$ is

$y = (x - 1) / x$

$z = y + (y \uparrow 2) / 2 + (y \uparrow 4) /4 + (y \uparrow 5) / 5$

(A) (0.5, 0.734521)

(B) (0.5, 0.567384)

(C) (0.5, 0.688542)

(D) None of the above

Space for Rough Work

94. C was primarily developed as a

(A) Systems programming language

(B) General purpose language

(C) Data processing language

(D) None of the above

95. The operating system UNIX was first developed by

(A) Brian Kernighan

(B) Bjarne Strostrup

(C) Dennis Ritchie

(D) Ken Thompson

96. The keyword used to define a structure in C is

(A) struct

(B) stru

(C) stt

(D) None of the above

97. A Spooler program

(A) Alternates between processing an interrupt and controlling the printing process.

(B) Alternates between processing a system-call and controlling the printing process.

(C) Alternates between processing a user's ongoing activity and controlling the printing Process.

(D) None of the above

98. The operating system UNIX is a

(A) Single user, single tasking operating system

(B) Single user, multi-tasking operating system

(C) Multi-user, multi-tasking operating system

(D) None of the above

Space for Rough Work

99. A single bus structure is primarily found in

(A) Super computers

(B) Parallel computers

(C) Mini and micro computers

(D) None of the above

100. A storage device used to compensate the difference in flow of data, is known as

(A) Core memory

(B) Auxiliary storage

(C) Main storage

(D) Buffer

101. The hexadecimal equivalent of the octal number $(627156)_8$ is

(A) $(32C6E)_{16}$

(B) $(32D6E)_{16}$

(C) $(32F6E)_{16}$

(D) $(32E6E)_{16}$

102. The binary equivalent of the decimal number $(367.25)_{10}$ is

(A) $(101011010.01)_2$

(B) $(101101111.01)_2$

(C) $(101101010.01)_2$

(D) None of the above

103. Which of the following is a popular terminal emulation software ?

(A) VT100

(B) COMIT

(C) VTERM

(D) None of the above

Space for Rough Work

104. Which of the following is the user programmed semiconductor memory ?

(A) EPROM

(B) DRAM

(C) SRAM

(D) None of the above

105. The octal equivalent of binary number $(1110111101101.1101001)_2$ is

(A) $(7352.641)_8$

(B) $(7354.643)_8$

(C) $(7353.642)_8$

(D) $(7355.644)_8$

106. Which of the following is used as storage locations both in the Arithmetic and Logical Unit (ALU) and the Control Unit (CU) of a computer ?

(A) Register

(B) Decoder

(C) Accumulator

(D) None of the above

107. The binary equivalent of hexadecimal number $(AF8B.ED)_{16}$ is

(A) $(1010111110001011.11101101)_2$

(B) $(1010111111010011.11101110)_2$

(C) $(1110111111011010.11101101)_2$

(D) None of the above

108. The octal equivalent of the decimal number $(56576)_{10}$ is

(A) $(156400)_8$

(B) $(154600)_8$

(C) $(145600)_8$

(D) None of the above

Space for Rough Work

109. The period of time between an allocation and its subsequent disposal is

(A) Scope
(B) Binding
(C) Longevity
(D) Lifetime

110. Which of the following is not a hexadecimal (base 16) number?

(A) $(D8CE1B)_{16}$
(B) $(F3DE1A)_{16}$
(C) $(2E4FCB)_{16}$
(D) $(A4BGD2)_{16}$

111. The output of the following C program is :

```
main ( )
{
   int a = 4;
  change (a);
  printf("%d", a);
}
   change (a)
    int a;
  {
   printf ( "%d" , ++ a );
   }
```

(A) 55
(B) 45
(C) 44
(D) 54

112. An ordinary calculator treats all operators

(A) to be of equal precedence and associating to the right
(B) to be of equal precedence and associating to the left
(C) to be of unequal precedence and associating to the left
(D) None of the above

Space for Rough Work

113. Use of recursion

(A) Reduces execution time

(B) Reduces code size

(C) Makes debugging easier

(D) None of the above

114. Which of the following language is case sensitive (IF is not same as if) ?

(A) C

(B) FORTRAN

(C) BASIC

(D) None of the above

115. BNF is a meta-language for

(A) Shell programming

(B) Describing how a program works

(C) Specifying the syntax of a language

(D) None of the above

116. The following program

```
int x[5][5], i, j;
for ( i = 0; i < 5; ++i )
for ( j = 0; j < 5; ++j )
  x[i][j] = x[j][i];
```

(A) Does not alter the matrix x

(B) Makes the given matrix x, symmetric

(C) Transposes the given matrix x

(D) None of the above

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117. The output of the following C program is :

```
main( )
 {
int f1 = 2, f2 = 3, f, i;
   for ( i = 3; i < 6; i++ )
    {
    f = f1 + f2;
    f2 = f1;
    f1 = f;
    }
  printf ( "%d", f );
 }
```

(A) 4
(B) 8
(C) 10
(D) 12

118. An integrated circuit chip was first developed by
(A) Robert Noyce
(B) J. S. Kilby
(C) W.H. Britain
(D) None of the above

119. An I/O device which provides photographic outputs for printing galleys is the
(A) Radix printer
(B) Camera printer
(C) Automatic typesetter
(D) None of the above

120. Which of the following is used to check for errors in RAM chips ?
(A) ROM chip
(B) Parity chip
(C) EPROM chip
(D) None of the above

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