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ORIGINAL PAPER

1. Which of the following is not a Language processor
   (a) compiler (b) Loader
   (c) Interpreter (d) Assembler
2. If $(41)_6 = (121)_b$, then b is
   (a) 1 (b) 2 (c) 3 (d) 4
3. Match List – I and List – II and select correct group of matching.

List – I	List – II
P. RAM	1. Hertz
Q. CPU Speed	2.MB
R. Monitor	3.Bytes/Sec
S. CD – ROM Speed	4.Inch

   (a) (P,2), (Q,1), (R,4), (S,3)
   (b) (P,1), (Q,2), (R,3), (S,4)
   (c) (P,3), (Q,4), (R,2), (S,1)
   (d) (P,4), (Q,3), (R,1), (S,2)
4. Bitcoin uses which network technology for transaction and mining.
   (a) Peer to peer network
   (b) Distributed Network
   (c) Wide Area Network
   (d) Intranet Network
5. The binary coding system that represents 256 different characters or bit combination is:
   (a) BCD (b) ASCII
   (c) EBCDIC (d) Both b and c
6. The hexadecimal subtraction $(56)_{16}$ from $(427)_{16}$ results in :
   (a) $(3B1)_{16}$ (b) $(331)_{16}$
   (c) $(371)_{16}$ (d) $(3D1)_{16}$
7. Which type of processors is ideal for Mobile phones and PDAs
   (a) CISC (b) RISC
   (c) VISC (d) LISC
8. RAID stands for
   (a) Reproduce Array of Intelligent Disks
   (b) Reproduce Array of Inexpensive Disks
   (c) Redundant Array of Inexpensive Drives
   (d) Redundant Array of Inexpensive Disks
9. Choose the ODD one out from the following:
   (a) QWERTY (b) SULTRY
   (c) AZERTY (d) DVORAK
10. What does XP stands for in the operating system 'Windows XP'?
    (a) Extra Power
    (b) Extended Product
    (c) Extra Performance
    (d) Experience
11. The range of 2's complement representation of n – bit signed integer is :
    (a) -2^n to 2^n
    (b) $-(2^{n-1}-1)$ to $(2^{n-1}-1)$
    (c) -2^{n-1} to 2^{n-1}
    (d) -2^{n-1} to $2^{n-1}-1$
12. Match List – I and List – II and select correct group of matching.

List – I	List – II
1.Procedural Oriented Language	P. COBOL
2. Object Oriented Language	Q. HTML
3. Business Oriented Language	C. C++
4. Web Page	D. Pascal

    (a) (1,S), (2,Q), (3,P), (4,R)
    (b) (1,S), (2,R), (3,P), (4,Q)
    (c) (1,P), (2,R), (3,S), (4,Q)
    (d) (1,S), (2,P), (3,Q), (4,R)
13. When a computer is switched on, the BIOS is loaded from:
    (a) Hard Disk (b) RAM
    (c) ROM (d) CD – Rom
14. Which of the following is not search engine:
    (a) Zing (b) Google
    (c) Yahoo (d) Bing
15. 8 GB is equal to:
    (a) 2^{30} bytes (b) 2^{33} bytes
    (c) 2^{20} bytes (d) 2^{23} bytes
16. $x = 0.125E + 01$, $x = (1.01)_2$ and $y = (1.2)_8$

(a) x, y and z are equal
(b) Only x and y are equal
(c) Only x and z are equal
(d) All x, y and z are different

17. The product of two binary numbers 00001101 and 00001111 is:
(a) 11000011 (b) 01100011
(c) 00001101 (d) 00010010

18. Which of the following group of statements are correct:
P: Mouse, Keyboard and Plotter are all input devices.
Q: Unix, Windows and Linux are all operating system
R. Register, Cache and Hard Disk are all memory modules.
S. Monitor, Printer and Scanner are all output devices.
(a) P,Q (b) P,S
(c) R,S (d) Q,R

19. Which of the following or inventor of BITCOIN the famous crypto currency.
(a) Santoshi Nakomoto (b) Peter Thiel
(c) Warren Buffet (d) Bitcoin.org

20. Which of the following group consists of volatile memory:
(a) RAM and Floppy Disk
(b) Hard Disk and ROM
(c) RAM and Cache
(d) Cache and ROM

21. Let A and B be two sets containing 2 elements and 4 elements respectively. The number of subsets of $A \times B$ having 3 or more elements is
(a) 256 (b) 220 (c) 219 (d) 211

22. If A, B and C are three sets such that $A \cap B = A \cap C$ and $A \cup B = A \cup C$, then
(a) $A = C$ (b) $B = C$
(c) $A \cap B = \phi$ (d) $A = B$

23. The value of $\tan^{-1}(\tan 13)$ is
(a) $\pi - 13$ (b) 13
(c) $4\pi - 13$ (d) $-4\pi + 13$

24. $(\cot x.\cot 2x - \cot 2x.\cot 3x - \cot 3x.\cot x)$ equals
(a) $\cot x + \cot 2x + \cot 3x$
(b) $\cot x - \cot 2x - \cot 3x$
(c) 1
(d) – 1

25. Value of $\tan\left(\frac{\pi}{8}\right)$ is
(a) $\sqrt{2} - 1$ (b) $1 - \sqrt{2}$
(c) $1 - \frac{1}{\sqrt{2}}$ (d) $1 + \frac{1}{\sqrt{2}}$

26. The number of complex numbers Z such that $|Z - 1| = |Z + 1| = |Z - i|$
(a) 1 (b) 2 (c) ∞ (d) 0

27. If ω is a cube root of unity and $(1 + \omega)^7 = A + B\omega$, then $A + B =$
(a) – 1 (b) 0 (c) 2 (d) – 2

28. If $x + y + z = 5$ and $xy + yz + zx = 3$, then the least and greatest value of x are
(a) $\frac{10}{3}, 5$ (b) $-1, \frac{13}{3}$
(c) $-\frac{17}{3}, 7$ (d) None of these

29. The sum of integers from 1 to 100 that are divisible by 2 or 5 is
(a) 3000 (b) 3050
(c) 3600 (d) 3250

30. The remainder when 27^{40} is divisible by 12 is
(a) 3 (b) 7 (c) 9 (d) 11

31. The sum of the series $1 + \frac{1}{4.2!} + \frac{1}{64.6!} + \cdots \infty$
(a) $\frac{e-1}{\sqrt{e}}$ (b) $\frac{e+1}{\sqrt{e}}$
(c) $\frac{e-1}{2\sqrt{e}}$ (d) $\frac{e+1}{2\sqrt{e}}$

32. If the sum of two numbers is 6 times their geometric mean, then the numbers are in the ration
(a) $\frac{3+\sqrt{2}}{3-\sqrt{2}}$ (b) $\frac{3+2\sqrt{2}}{3-2\sqrt{2}}$
(c) $\frac{2+\sqrt{3}}{2-\sqrt{3}}$ (d) $\frac{2+3\sqrt{3}}{2-3\sqrt{3}}$

33. The orthocenter of the triangle formed by (0,0), (4,0) and (3,4) is
(a) (2,0) (b) $\left(\frac{3}{2}, 2\right)$
(c) $\left(\frac{3}{4}, 3\right)$ (d) $\left(3, \frac{3}{4}\right)$

34. A ray of light passing through the point (1,2) reflects on the X – axis at point A and the reflected

ray passes through the point (5,3), the coordinates of A are

(a) (5,0) (b) (−5,0)

(c) $\left(\frac{13}{5},0\right)$ (d) $\left(-\frac{13}{5},0\right)$

35. From a point on the circle $x^2+y^2=a^2$, tangents are drawn to the circle $x^2+y^2=b^2$, the chord of contact of these tangents is tangent at $x^2+y^2=c^2$, then $a,,b$ and c are in

(a) AP (b) GP (c) HP (d) None

36. If the chord of contacts of tangents from a point P to the parabola $y^2=4ax$ touches the parabola $x^2=4by$, the locus of P is

(a) Circle (b) Parabola

(c) Ellipse (d) Hyperbola

37. A man running a race course notes that the sum of the distances from two flag posts from him is always 10m and the distance between the flag posts is 8,. The equation of path traced by man is

(a) $\frac{x^2}{25}+\frac{y^2}{9}=1$ (b) $\frac{x^2}{9}+\frac{y^2}{25}=1$

(c) $\frac{x^2}{9}-\frac{y^2}{25}=1$ (d) $\frac{y^2}{9}-\frac{x^2}{25}=1$

38. The vertices of parallelogram ABCD are $(3,-1,2)$, $B=(1,2,-4)$ and $C(-1,1,2)$. The fourth vertex D is

(a) (1,2,8) (b) $(1,-2,8)$

(c) $(-2,1,8)$ (d) $(-2,-1,8)$

39. If all the word with or without meaning formed using all the letters of the word JAMIA are arranged in dictionary then what will be the 50^{th} word

(a) AAJMI (b) AAMIJ

(c) JAAMI (d) MAAJI

40. Evaluate $\lim_{x\to 0}\left[\frac{\sin x}{x}\right]$, where [ ] denotes the greatest integer function

(a) 0 (b) 1

(c) – 1 (d) Does not exists

41. Evaluate $\lim_{x\to 0}\frac{\sqrt{1-\cos 2x}}{x}$

(a) $\sqrt{2}$ (b) $-\sqrt{2}$

(c) 1 (d) does not exists

42. The mean of 5 observations is 4.4 and their variance is 8024. If three of the observations are 1,2 and 6 , the other two observations are

(a) 4 and 5 (b) 5 and 9

(c) 4 and 9 (d) 5 and 8

43. Three letters are dictated to three persons and an envelope is addressed to each of them, the letters are inserted into the envelope at random so that each envelop contains exactly one letter. What is the probability that at least one letter is in its proper envelop

(a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{2}{5}$ (d) $\frac{1}{5}$

44. A tourist visits Four cities A,B,C and D in a random order. What is the probability that he visits A before B.

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{4}$ (d) $\frac{1}{5}$

45. The function $f:[0,3]\to[1,29]$ defined by $f(x)=2x^3-15x^2+36x+1$ is

(a) one – one and onto

(b) one but not one – one

(c) one –one but onto

(d) neither one-one nor onto

46. If $f:R\to R$ be given by $f(x)=(3-x^3)^{\frac{1}{3}}$, then $f\left(f(f(x))\right)$ is

(a) $x^{\frac{1}{3}}$ (b) x^3 (c) x (d) $3-x^3$

47. If the matrix A is both symmetric and skew symmetric, then

(a) A is a diagonal Matrix

(b) A is a null matrix

(c) A is a square Matrix

(d) None of these

48. If $A=\begin{pmatrix}2 & -3\\ -4 & 1\end{pmatrix}$, then $adj(3A^2+12A)$ is equal to

(a) $\begin{pmatrix}72 & -84\\ -63 & 51\end{pmatrix}$ (b) $\begin{pmatrix}51 & 63\\ 84 & 72\end{pmatrix}$

(c) $\begin{pmatrix}51 & 84\\ 63 & 72\end{pmatrix}$ (d) $\begin{pmatrix}72 & -63\\ -84 & 51\end{pmatrix}$

49. If a,b,c are in AP then value of the $\begin{vmatrix}x+2 & x+3 & x+2a\\ x+3 & x+4 & x+2b\\ x+4 & x+5 & x+2c\end{vmatrix}$ is

(a) 0 (b) 1 (c) x (d) $2x$

50. If a determinant of order 3×3 is formed using the numbers 1 or -1, then the minimum value of determinant is
(a) -2 (b) -4 (c) 0 (d) -8

51. Number of points at which $f(x) = \min(|x|, |x+1|, |x-4|)$ is not differentiable
(a) 3 (b) 4 (c) 5 (d) 6

52. Consider the functions $f(x)$ and $g(x)$ such that $f(x) = |x| + [x]$ and $g(x) = |x| \times [x]$, where $[x]$ denotes the greatest integer function
(a) $f(x)$ is continuous at $x = 1$, $g(x)$ is continuous at $x = 1$
(b) $f(x)$ is continuous at $x = 1$, $g(x)$ is discontinuous at $x = 1$
(c) $f(x)$ is discontinuous at $x = 1$, $g(x)$ is continuous at $x = 1$
(a) $f(x)$ is discontinuous at $x = 1$, $g(x)$ is discontinuous at $x = 1$

53. $\lim_{x\to\infty}\left(1+\frac{a}{x}+\frac{b}{x^2}\right)^{2x} = e^2$, then values of a and b are
(a) $a \in R, b \in R$ (b) $a = 1, b \in R$
(c) $A \in R, b = 2$ (d) $a = 1, b = 2$

54. If m is the slope of the tangent at any point on the curve $e^y = 1 + x^2$, then
(a) $|m| > 1$ (b) $|m| \leq 1$
(c) $|m| < 2$ (d) $|m| \geq 2$

55. Let $f(x) = (x^3 + ax^2 + bx + 5\sin^2 x)$ be increasing for all $x \in R$, then a and b satisfies
(a) $a^3 - 3b - 15 > 0$ (b) $a^3 - 3b + 15 > 0$
(c) $a^3 - 3b + 15 < 0$ (d) $a^3 - 3b - 15 < 0$

56. The point of extremum of the function $f(x) = \int_1^x e^{\frac{-t^2}{2}}(1-t^2)dt$ are
(a) ± 1 (b) 0 (c) $\pm\frac{1}{2}$ (d) ± 2

57. Value of $\int_1^2 e^{2x}\left(\frac{1}{x}-\frac{1}{2x^2}\right)dx$ is
(a) $\frac{e^2(e^2-4)}{4}$ (b) $\frac{e^2(e^2+4)}{4}$
(c) $\frac{e^2(e^2+2)}{2}$ (d) $\frac{e^2(e^2-2)}{2}$

58. Value of $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}}(x^3 + x.\cos x + \tan^3 x + 1)dx$ is
(a) $-\frac{\pi}{2}$ (b) 0
(c) 2π (d) 3π

59. $\int \frac{d\theta}{1-\tan\theta}$ equals to
(a) $\frac{\theta}{2} - \frac{1}{2}\log|\cos\theta - \sin\theta| + C$
(b) $\frac{\theta}{2} + \frac{1}{2}\log|\cos\theta - \sin\theta| + C$
(c) $\frac{\theta}{3} - \frac{1}{3}\log|\cos\theta - \sin\theta| + C$
(d) $\frac{\theta}{3} + \frac{1}{3}\log|\cos\theta - \sin\theta| + C$

60. If $|\hat{a} + \hat{b}| = |\hat{a} - \hat{b}|$, then
(a) $\hat{a}$ is parallel to $\hat{b}$
(b) $\hat{a}$ is perpendicular to $\hat{b}$
(c) $\hat{a} = \hat{b}$
(d) None

61. Distance between the two planes $2x + y + 2z = 8$ and $4x + 2y + 4z + 5 = 0$ is
(a) $\frac{3}{2}$ units (b) $\frac{5}{2}$ units
(c) $\frac{7}{2}$ units (d) $\frac{9}{2}$ units

62. A man known to speak truth 3 out of 4 time. He throws a die and report that it is a six. The probability that it is actually a six is
(a) $\frac{1}{8}$ (b) $\frac{5}{8}$ (c) $\frac{7}{8}$ (d) $\frac{3}{8}$

63. The probability of shooter hitting a target is $\frac{3}{4}$. The minimum number of times that he must fire so that the probability of hitting the target at least once is more than 0.99 is
(a) 2 (b) 3 (c) 4 (d) 5

64. A and B are two independent events such that $P(A) = 0.3, P(B) = 0.6$, then P(neither a nor B) is
(a) 0.28 (b) 0.30
(c) 0.32 (d) 0.18

65. Periods of the function $f(x) = \cos\left(\frac{2x}{3}\right) - \sin\left(\frac{4x}{5}\right)$ is
(a) 5π (b) 10π
(c) 15π (d) 20π

66. Which of the following is not an indeterminate form
(a) 0^0 (b) 0^∞ (c) ∞^0 (d) 1^∞

67. The area of the region described by
$A = \{(x,y): x^2 + y^2 \le 1 \text{ and } y^2 \le 1 - x\}$
(a) $\frac{\pi}{2} + \frac{4}{3}$ (b) $\frac{\pi}{2} - \frac{4}{3}$
(c) $\frac{\pi}{2} - \frac{2}{3}$ (d) $\frac{\pi}{2} + \frac{2}{3}$

68. A curve passes through the point $\left(1, \frac{\pi}{6}\right)$. Let the slope of the curve at each point (x,y) be $\frac{y}{x} + \sec\left(\frac{y}{x}\right), x > 0$. Then the equation of the curve is
(a) $\sin\left(\frac{y}{x}\right) = \log x + \frac{1}{2}$
(b) $\cos\left(\frac{2y}{x}\right) = \log x + 2$
(c) $\sec\left(\frac{2y}{x}\right) = \log x + 2$
(d) $\cos\left(\frac{2y}{x}\right) = \log x + \frac{1}{2}$

69. Let $P = \begin{bmatrix} 0 & \omega \\ \omega & 0 \end{bmatrix}$, where ω is a cube root of unity. Then P^{24} is
(a) P^2 (b) P
(c) Identity Matrix (d) Null Matrix

70. The area bounded by the curve is $y^2 = x$ and $x^2 = y$ is
(a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{4}{3}$ (d) $\frac{5}{3}$

71. Choose the most appropriate word from the option given below to complete the following sentence.
Given the seriousness of the situation that he had to face, his …… Was impressive.
(a) Beggary (b) nomenclature
(c) nonchalance (d) jealousy

72. Select the option, which would best fill in the blanks as follows.
Football evokes a ……response in India compared to cricket, the almost …… The nation.
(a) tepid, boiling
(b) lukewarm, electrifies
(c) turbid, fascinating
(d) apocryphal, genuinely fascinates

73. Which of the following words have similar meaning:
I. Cacophonic
II. Calligraphic
III. Calamitous
IV. Catastrophic
V. Contraindicative
VI. Cataclysmic
(a) IV and VI Only
(b) I, II and V only
(c) II, V and VI only
(d) III, IV and VI Only

74.
I. He is the most …… of the speakers to address us today.
II. The belief in ……. justice is the essence of his talk.
III. This hall would have been full but for the …….. Rain.
IV. Many in the audience have achieved ……in their respective fields.

Which of the following sequence of words would most appropriately fit the blanks in the sentences given above?

(a) Eminent, Imminent, Immanent, Eminence
(b) Immanent, Imminent, Imminence, Eminence
(c) Eminent, Immanent, Imminent, Eminence
(d) Eminent, Immanent, Imminent, Imminence

75. Clinical Practitioners ……. integrated mindfulness …… treatment of ……host of emotional and behavioral disorders, ……borderline personality disorder, major depression, chronic pain, eating disorders. Number f such practitioners ……increased substantially.
(a) have, in the, a, such as, has
(b) has, in the, the , like, have
(c) were, for, a, like, has
(d) have, for, a, like, has

76. Choose the statement where underlined and bold word is used correctly.

I. The minister **insured** the victims that everything would be all right.
II. He **ensured** that the company will not have to bear any loss.
III. The actor got himself **ensured** against any accident.
IV. The teacher **insured** students of good results.
(a) I (b) II (c) III (d) IV

77. The word similar to meaning of '**Dreary**' is
(a) Cheerful (b) Dreamy
(c) Hard (d) Dismal

78. Choose the appropriate word from the options given below to complete the following sentence.
The official answered ..... that the complaints of the citizens would be looked into.
(a) Respectably (b) Respectfully
(c) Reputably (d) Respectively

79. Which of the following sentence is/are grammatically incorrect?
I. Bats are able to fly in the dark.
II. Bats can fly in the dark.
III. Bats have the ability of flying in the dark, if it does not rain.
IV. Bats cannot fly in the dark if it rains.
V. Bats have the ability for flying in the dark.
(a) III and IV only (b) I only
(c) II and IV Only (d) V and II Only

80. Which is not the antonym of SANITY
(a) LANANCY (b) INSANITY
(c) STUPIDITY (d) RATIONALITY

81. A, B and C scored 681 runs such that four times A.s run is equal to 5 times B's run which is equal to 7 times C's run. Difference between A's and C's run is.
(a) 105 (b) 150 (c) 97 (d) 125

82. When the price of computer was reduced by 20% the sale increased by 60%. What was increase in total revenue?
(a) 30% (b) 28%
(c) 55% (d) 40%

83. A watch ticks 90 times in 95 seconds and another watch ticks 315 times in 323 seconds. If both the watches are started together, how many times they will tick together in the first hour?
(a) 110 times (b) 101 times
(c) 320 times (d) 210 times

84. Rama gets an elevator at 11^{th} floor of a multi – storey building an rides up at the rate of 57 floors per minutes. At the same time, Somya gets another elevator at the 51^{st} floor of the same building and rides down at the rate of 63 floors per minute. If they travel at these, at which floor they will cross each other?
(a) 19 (b) 28 (c) 30 (d) 32

85. If 7 parallel lines are intersected by another set of 7 parallel lines, the number of parallelograms formed is:
(a) 441 (b) 400 (c) 49 (d) 98

86. The result of a class were declared. The boy 'X' stood 5^{th} in the class. The girl was 8^{th} from the last. The position of the boy 'Z' , was 6^{th} after 'X', and in the middle of 'X' and 'Y'. The total number of students in the class was:
(a) 24 (b) 29 (c) 25 (d) 26

87. A is 300 days older to B and C is 50 weeks older to A. If C was born on Tuesday, on which day was B born?
(a) Tuesday (b) Thursday
(c) Wednesday (d) Monday

88. Branches of 5 nationalized banks A, B, C, D and E in Uttar Pradesh are as follows:
A, B, C, D and E are in Lucknow and Kanpur.
A, B and E are in Kanpur and Allahabad.
B, C, and D are in Lucknow and Varanasi.
B, E and D are in Allahabad and Saharanpur.
C, E and D are in Saharanpur and Moradabad?
Which bank has branches in all the cities except Moradabad?
(a) A (b) B (c) C (d) D

89. Select ODD ONE OUT from the following pairs:
(a) May : January
(b) September : November
(c) October : April
(d) January : December

90. If $A + B$ means A is the daughter of B, $A \times B$ means A is the son of B and $A - B$ means A is the wife of B, then $P \times Q - S$ means
(a) S is the father of P
(b) Q ia the daughter of
(c) A is the father of Q
(d) None of these

91. In the following series 50 is wrongly placed. Which number will come at place of 50?
(a) 51 (b) 53 (c) 48 (d) 49

92. Jamia Central Library has 510 visitors on Sundays and 240 visitors on other days. Then the average number of visitors per day in a 30 days month beginning with a Sunday is:
(a) 285 (b) 276 (c) 250 (d) 280

93. 6 : 43 ::5 : ?
(a) 63 (b) 52 (c) 26 (d) 31

94. Next term in the following series is :
122, 197, 290, …
(a) 399 (b) 400
(c) 401 (d) 402

95. Select the ODD number from given alternatives:
(a) 2179 (b) 3375
(c) 4099 (d) 2744

96. In the following series how many '8' are there which are not proceeded by '7' and followed by '9'.
7, 8, 9, 9, 8, 5, 4, 3, 8, 9, 5, 8, 9, 8, 7, 7, 8, 9
(a) One (b) Two
(c) Three (d) Four

97. Looking at a portrait of a man, Sanjay said, "His mother is the wife of my father's sons". Brother and sisters I have none". At whose portrait was Sanjay looking
(a) His son (b) His nephew
(c) His cousin (d) His uncle

98. In a certain code LATE is written as PEXI then code for TRACE is:
(a) XUEGH (b) XVFGI
(c) XVEGI (d) MVELI

99. **Statement :** S1: Some cats are rats.
S2: All rats are bats.
S3: Some bats are birds.
Conclusion : C1: Some birds are cats.
C2: Some bats are cats.
C3: Some birds are rats.
C4: No birds is a rat.
Which is the conclusions(s) follows from the above statements S1, S2 and S3:
(a) Only C3 follows
(b) Either C1 or C4 and C3 follows.
(c) Either C1 or C4 and C2 follows.
(d) None of these

100. A liquid container is usually filled up in 8 hrs. Due to a leak since the beginning it took 2 hours more to fill up the container. The leak empty the filled container in:
(a) 30 hrs. (b) 40 hrs
(c) 28 hrs (d) 34 hrs.