Sr. No. 141

ENTRANCE TEST-2024

SCHOOL OF APPLIED SCIENCES AND TECHNOLOGY

M.Sc. (IT)

Question Booklet Series **A**

Total Questions : 60
Time Allowed : 70 Minutes

Roll No. : | | | | | | |

Instructions for Candidates :

1. Write your Entrance Test Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
3. All entries in the OMR Answer Sheet, including answers to questions, are to be recorded in the Original Copy only.
4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
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SEAL

1. We usually face hard times in our life. I think I need to put _____ some money for hard times.

(A) over

(B) up

(C) away

(D) into

2. Three out of the four words are same/similar in a certain way and so belong to a group. Choose the odd word that does not belong to the group :

(A) Racket

(B) Din

(C) Cacophony

(D) Cadence

3. Three out of the four words are same/similar in a certain way and so belong to a group. Choose the odd word that does not belong to the group :

(A) Orange

(B) Pink

(C) Indigo

(D) Green

4. Three out of the four words are same/similar in a certain way and so belong to a group. Choose the odd word that does not belong to the group :

(A) Hypothesis

(B) Assumption

(C) Experiment

(D) Observation

5. A single word equivalent for the statement '*Speak falsely with deliberate intent*' is :

(A) equivocate

(B) repudiate

(C) spurn

(D) disparage

6. Select the most appropriate alternative for the bold underlined idiom/phrase in the given sentence. The business partners now behave like enemies. They do not ***see eye to eye*** on all matters :

(A) discuss matters with one another

(B) agree with one another

(C) fight with one another

(D) want to see one another

7. The word *'connote'* is most similar to which of the following words ?

(A) provoke

(B) infer

(C) agree

(D) insinuate

8. Categorize the listed four sentences as Fact (F), Inference (I), or Judgement (J). Facts denoted as F, which deal with pieces of information that one has heard, seen or read, and which are open to discovery or verification.

Inferences denoted as I, which are conclusions drawn about the unknown, on the basis of the known.

Judgements denoted as J, which are opinions that imply approval or disapproval of persons, objects, situations and occurrences in the past, the present or the future :

I. The audience responded well to the Animal Movie.

II. The movie had a budget of 200 Crores and grossed 900 Crores globally.

III. The movie was terrible; though the acting was superb but message conveyed was detrimental for the society.

IV. The director won the best director award.

(A) FFIF

(B) IFIF

(C) IFJF

(D) JFJF

9. Slack : _____ :: plucky : courageous.

(A) tight

(B) silent

(C) negligent

(D) cowardly

10. Household chores are still not evenly distributed even in the _____ countries, but things are much better especially how people talk about it. A young man was _____ for asking a woman whether her husband helps with the child care. He does not help but does his share, she responded.

(A) elitist, rebuked

(B) egalitarian, rebuked

(C) developed, rebuked

(D) non-partisan, rebuked

11. Choose the word which is least like the other words :

(A) Barber

(B) Carpenter

(C) Blacksmith

(D) Tailor

12. If yellow means green, green means white, white means blue, blue means violet, violet means black then which of the following will be the colour of the sky ?

(A) Black

(B) Blue

(C) White

(D) None of these

13. In a certain coding language if 3=10, 4=18, 5=28, then 23 = ?

(A) 551

(B) 552

(C) 553

(D) 554

14. In the number 421579368, how many such pairs of digits are there, each having the same number of digits between them as when they are placed in ascending order ?

(A) Two

(B) Three

(C) Four

(D) Five

15. If North becomes South-West and South-West becomes East and all the rest directions are changed in the same manner, what will be the direction for the East ?

(A) North-East

(B) North

(C) West

(D) North-West

16. Complete the following series 1, 3, 6, 11, 18, 29 :

(A) 40

(B) 41

(C) 42

(D) 43

17. Find the missing number in the sequence: 4896, 3360, _____, 1320, 720.

(A) 2184

(B) 2730

(C) 1716

(D) None of the above

18. A mobile seller sells mobile at 7000 per mobile. However, he gives two successive discounts of 8% and 5% respectively. But he recovers the sales tax on the net sale price from the customer at 5% of the net price. What price does one have to pay him to buy the mobile ?

(A) 6423.7

(B) 6423.9

(C) 6118.7

(D) 6118.9

19. In how many different ways can the letters of the word 'FRUSRUDWLRIA' be arranged so that the vowels always come together ?

(A) 725760

(B) 725770

(C) 725880

(D) 725890

20. A number which when divided by 3, 4, 5, 6 and 7 leaves the remainder 2, 3, 4, 5 and 6 respectively. Such smallest six-digit number is :

(A) 100019

(B) 100379

(C) 100399

(D) None of these

21. Saurabh, Santosh and Kumar work in a software company at same positions. However, their salaries are different. Saurabh's salary to Santosh's salary and Santosh's salary to Kumar's salary are in the ratio 4:3. If the total salary of all the three employees is Rs. 29230, what is the salary of Kumar ?

(A) 7110 INR

(B) 9480 INR

(C) 8110 INR

(D) 10480 INR

22. In how many ways team of 12 developers out of 24 developers can be made if 7 particular developers are always to be included and 5 particular developers are always to be excluded from the team ?

(A) $^{24}C_{12}$

(B) $^{12}C_{7}$

(C) $^{12}C_{5}$

(D) $^{19}C_{12}$

23. If $\log_{10} 23 = y$ what does $\log_{10} 230000$ equal ?

(A) y

(B) $y + 229977$

(C) $y + 4$

(D) $y + \log(229977)$

24. If v, w, x are in H.P. w, x, y are in G.P. and x, y, z are in A.P. then $\frac{vx^2}{(2v-x)^2}$ is equal to :

(A) w

(B) x

(C) y

(D) z

25. For all 'x', $x^2+2px+(10-3p)>0$, then the interval in which 'p' lies is :

(A) $p<-5$

(B) $-5<p<2$

(C) $p>5$

(D) $2<p<5$

26. The equations $a+2b+3c=1$, $a-b+4c=0$, $2a+b+7c=1$ have :

(A) only one solution

(B) two solutions

(C) no solution

(D) infinitely many solutions

27. Five different scientists are to be transported to another place through a secret tunnel. 15 security guards in total are to be inserted between the two scientists with at least three guards between every two scientists. The number of ways it can be done is :

(A) 2000

(B) 2400

(C) 2800

(D) 3200

28. The number of terms in the expansion of $\left(1-3\sqrt{2x}\right)^9$ is :

(A) 10

(B) 15

(C) 20

(D) 25

29. The equation of the line through $(-2, 3)$ with slope -4 is :

(A) $x+4y-5=0$

(B) $4x+y+5=0$

(C) $x+y+1=0$

(D) $3x+4y-5=0$

30. If two lines are perpendicular, then product of their slopes is equal to :

(A) $m_1m_2=-1$

(B) $m_1m_2=0$

(C) $m_1m_2=1$

(D) Any value -1 to 1

31. Let R be a relation on the set N of natural numbers defined by nRm if n divides m. Then R is :

(A) Reflexive, transitive and symmetric

(B) Reflexive and symmetric

(C) Transitive and symmetric

(D) Reflexive, transitive but not symmetric

32. If the Set X contains 8 elements and Set Y contains 11 elements, then the number of one-one function from X to Y is :

(A) $^{11}C_8$

(B) $^{11}C_8 * 8!$

(C) 11^8

(D) 8^{11}

33. The number of all possible matrices of order 4×4 with each entry 0 or 1 is :

(A) 16

(B) 32

(C) 64

(D) None of the above

34. If A and B are two matrices such that $AB = B$ and $BA = A$, then $A^2 + B^2 = ?$

(A) A+B

(B) 2AB

(C) $(A+B)^2$

(D) AB

35. The probability of drawing a King from a pack of 52 well shuffled deck of cards is :

(A) 1/13

(B) 2/13

(C) 1/52

(D) 11/52

36. The correlation coefficient is the _____ of two regression coefficients.

(A) Arithmetic mean

(B) Geometric mean

(C) Harmonic mean

(D) Median

37. Which measure of dispersion is considered to be best and easiest to calculate respectively ?

(A) Range, Standard deviation

(B) Interquartile range, variance

(C) Variance, range

(D) Standard deviation, range

38. Let A be a finite set of size n. The number of elements in the power set of $A \times A$ is :

(A) 2^{2^n}

(B) 2^{n^2}

(C) n^2

(D) 2^n

39. A square matrix is singular whenever :

(A) The rows are linearly independent

(B) The rows are linearly dependent

(C) The columns are linearly independent

(D) The columns are linearly dependent

40. The centres of a set of circles, each of radius 3, lie on the circle $x^2 + y^2 = 25$. The locus of any point with such circle is :

(A) $4 \leq x^2 + y^2 \leq 64$

(B) $x^2 + y^2 \leq 25$

(C) $x^2 + y^2 \geq 25$

(D) $3 \leq x^2 + y^2 \leq 9$

41. The process through which an illegitimate website pretends to be a specific legitimate website is known as :

(A) Sniffing

(B) Spoofing

(C) Cloning

(D) Phishing

42. In the carrier sense network, if prevailing condition is a 'channel busy' then which of the following technique is used ?

(A) 1-persistent then channel is continuously sensed

(B) Non-persistent then it results in randomised wait and sense

(C) P-persistent then randomised retransmission is done

(D) Both (A) and (B)

43. The HTTP request message is sent in ____ part of three-way handshake.

(A) 1st

(B) 2nd

(C) 3rd

(D) None of the above

44. In a Class A subnet, IP address of one of the hosts and the mask is :

IP address: 25.34.12.56

Mask: 255.255.0.0

What is the first network address?

(A) 25.0.0.0

(B) 25.34.0.0

(C) 25.34.12.0

(D) 25.34.12.56

45. Minimum average waiting time is possible in which of the following process scheduling algorithms?

(A) First Come First Serve

(B) Shortest Job First

(C) Round Robin

(D) Time Sharing

46. A system uses 3-page frames and Least Recently Used (LRU) page replacement policy for storing process pages in main memory. What is the total number of page faults that will occur while processing the page reference string given below : 6241, 6271, 6261, 6211, 6271, 6261, 6211, 6221, 6271, 6221 assuming that all the page frames are initially empty ?

(A) 4

(B) 5

(C) 6

(D) 7

47. Which of the following consists of bit-level striping with dedicated Hamming-code parity ?

(A) RAID 2

(B) RAID 3

(C) RAID 4

(D) RAID 5

48. A, B and C are the decimal integers corresponding to the 4-bit binary number 1100 considered in signed magnitude, 1's complement, and 2's complement representation. The 6-bit 2's complement representation of (A+B+C) is :

(A) 110010

(B) 110101

(C) 111101

(D) 111001

49. If we do not write our own construct; the following construct(s) will be automatically added to every class :

(A) Copy Constructor

(B) Assignment Operator

(C) Constructor with a parameter

(D) All of the above

50. How many solutions are there for 8 queens on 8*8 board?

(A) 64

(B) 92

(C) ${}^{64}C_8$

(D) ${}^{64}C_8 * 8$

51. The concept of locking can be used to solve the problem of :

1. Lost update
2. Uncommitted dependency
3. Inconsistent data
4. Deadlock

(A) 1, 2 and 3

(B) 1, 2 and 4

(C) 2, 3 and 4

(D) All can be solved

52. Insertion of a node in circular linked list requires modification of how many pointers ?

(A) 1

(B) 2

(C) Depends on the place of the node

(D) Multiple pointers need to changed

53. Program Evaluation Review Technique analysis is based on :

(A) optimistic time

(B) pessimistic time

(C) most likely time

(D) all of these

54. The for loop

```
for (i=0;i<10;++i)
printf("%d", i & 1);
```

will print the following output :

(A) 0000000000

(B) 0101010101

(C) 1010101010

(D) 1111111111

55. A standard for performance established early in the project for later comparisons :

(A) Baseline

(B) Scopeline

(C) Evaluation

(D) Performance line

56. If A has x tuples and B has y tuples, then the maximum and minimum size of join between A and B is :

(A) x + y, 0

(B) 2(x + y), 0

(C) (x + y)/2, 0

(D) xy, 0

57. In order to avoid writing additional SQL statements to update a live database, you instantiate an object of which class ?

(A) DataAdapter

(B) DataReader

(C) DataSet

(D) DataProvider

58. Which of the following is not a colour specification format ?

(A) RGB

(B) TGA

(C) HSB

(D) CIE

59. The process of determining the appropriate pixels for representing a picture is called as :

(A) Rasterization

(B) Rendering

(C) Projection

(D) Representation

60. Which HTML element defines text with strong importance ?

(A) <b>

(B) <mark>

(C)

(D) <i>

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Q1 below contain an idiom. Four possible meanings of the idiom are provided. Select the one which best expresses the meaning of the idiom.

1. She was at the awkward age when she did not want to be seen playing with her dolls.
   (A) Clumsy
   (B) Uncomfortable
   (C) Period of early adolescence
   (D) Unsure
2. A form of government in which a small group of people hold most or all political power :
   (A) Oligarchy
   (B) Monarchy
   (C) Anarchy
   (D) Autocracy
3. Gown : Graduate :: Cassock : ?
   (A) Mason
   (B) Priest
   (C) Carpenter
   (D) Doctor
4. Which of the following is an example of an Imperative sentence?
   (A) Do not pluck flowers here
   (B) There is a lot of confusion here
   (C) He does not work hard enough
   (D) Have you been to the school lately?
5. Choose the word which is most nearly the same in meaning as the word ABERRATION :
   (A) Observation
   (B) Deviation
   (C) Outcome
   (D) Alternative

In Q6, from the given words select the one which is most appropriate so that the sentence not only makes sense, but is grammatically correct

6. The deadly fever left him completely _____.
   (A) Dying
   (B) Dissipated
   (C) Hot
   (D) Enervated
7. Choose the word which is most opposite in meaning as the word PHILANTHROPIST :
   (A) Cynic
   (B) Misogynist
   (C) Misanthrope
   (D) Egotist

In Q8, which of the phrases given below the sentence should replace the phrase printed in bold type to make the sentence grammatically correct?

8. The fact finding team **which had been to** the area found villagers giving information to police.
   (A) Which had been for
   (B) That had been to
   (C) Which led to
   (D) No correction required
9. A, B, C, D, E and F are six members in a group. There are two couples in the group. There are two teachers, one doctor, one lawyer and two engineers. Both the teachers are of the same sex. A and C are in the same profession. The doctor is married to the teacher. An engineer is married to the lady lawyer. A is an engineer. E is a male teacher. Both of them are unmarried. Who is the lawyer?
   (A) C
   (B) F
   (C) B
   (D) None of these

10. How many such pairs of letters are there in the word GREATER each of which has as many letters between them in the words as in the alphabet?

(A) One

(B) Two

(C) Three

(D) More than Three

11. The graph below gives the percent of population below poverty line in six states and the proportion of males and females.

State	Percentage below poverty line	Proportion of Males and Females			
		Below Poverty Line		Above Poverty Line	
		M	F	M	F
A	12	3	2	4	3
B	15	5	7	3	4
C	25	4	5	2	3
D	26	1	2	5	6
E	10	6	5	3	2
F	32	2	3	4	5

If the total population of state A is 3000, what is the approximate number of females above poverty line in that state?

(A) 1131

(B) 1700

(C) 1800

(D) 2112

12. The product of which of the following pairs of numbers is the highest?

(A) 351236912 and 351236930

(B) 351236920 and 351236918

(C) 351236940 and 351236909

(D) 351236906 and 351236960

In Q13 there are three statements followed by four conclusions numbered I, II, III and IV. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements.

13. *Statements:*

Some oranges are apples

All apples are guavas

No guava is banana

Conclusions:

I. Some guavas are oranges

II. No apple is banana

III. Some oranges are bananas

IV. Some apples are bananas

(A) Only I or II follow

(B) Only I and either II or IV follow

(C) Only I, II and IV follow

(D) Only III and either II or IV follow

In the following question (Q14) the symbols +, *, =, / and – are used with the following meaning

P + Q means P is greater than Q

P * Q means P is either greater than or equal to Q

P = Q means P is equal to Q

P/Q means P is smaller than Q

P – Q means P is either smaller than or equal to Q

Now in the following questions, assuming the given statement to be true, find which of the two conclusions I and II given below them is/are definitely true. Give answer (a) if only conclusion I is true; Give answer (b) if only conclusion II is true; Give answer (c) if neither I nor II is true and give answer (d) if both I and II are true.

14. *Statement:*

S * Q, R + T, R–S

Conclusions:

I. S + T

II. Q = T

15. In a certain language, the word FLOWER is written as HOQZGU. How will the word EXAMINATION be written in that code language?

(A) GZCPKQCVKRP

(B) GACPKQCWKRP

(C) GZCPKQCWKQP

(D) None of the above

In Q16 a statement is given, followed by two conclusions. Give answer (a) if only conclusion I is true; Give answer (b) if only conclusion II is true; Give answer (c) if neither I nor II is true and give answer (d) if both I and II are true.

16. *Statement:*

Global ecological issues have eclipsed local environmental problems which are being faced by the poor societies.

Conclusions:

I. Poor societies always have to suffer because of their poverty.

II. Global ecological issues are not so important. Rich societies can bear with it.

17. The length and breadth of a rectangle are in the ratio 5:3 respectively. If the sides of the rectangle are extended on each side by lm, the ratio of length to breadth becomes 16:10. Find the area of the original rectangle in square metres.

(A) $115m^2$

(B) $125m^2$

(C) $135m^2$

(D) $145m^2$

18. Given the mean of a distribution is 120 and the mode is 48, find the median :

(A) 144

(B) 145

(C) 151

(D) 152

19. Find the sum of first 40 terms of the series: 15, 12, 9, 6, 3 ...

(A) –979

(B) –1740

(C) –1942

(D) –2140

20. The sides of two similar triangles are in the ratio of 6:9. What will be the ratio of the areas of these triangles?

(A) 36:54

(B) 54:81

(C) 36:81

(D) 81:36

21. If $5x^2 - 11x - 7 = 0$, then the value of $\frac{4x}{(5x^2 - 6x - 7)}$ will be _____.

(A) –1/5

(B) 1/5

(C) –4/5

(D) 4/5

22. The equation $4x^2 - 3x + \frac{1}{5} = 0$ will have:

(A) No real roots

(B) Two distinct real roots

(C) Two equal real roots

(D) More than two real roots

23. The coefficient of the middle term in the Binomial expansion of $(7 + 2x)^4$ is _____.

(A) 1176

(B) 1678

(C) 1845

(D) 1548

24. Find the value of x if $\log_5(x^5 - x^4) - \log_5(x-1) = 4$:

(A) 1

(B) 3

(C) 5

(D) 7

25. Find the Cartesian equations of the lines that pass through (1,1,1) and (4, –8, 12)

(A) $\frac{x}{2} = \frac{y}{-4} = \frac{z}{6}$

(B) $\frac{x-1}{4} = \frac{y-1}{-8} = \frac{z-1}{12}$

(C) $4x = -8y = 12z$

(D) $2x = -4y = 6z$

26. The end points of the diameter of a circle are A(4, –6) and B(–6, 10). Find the equation of the circle.

(A) $x^2 + y^2 + x - 2y - 25 = 0$

(B) $x^2 + y^2 + 4x - 6y - 24 = 0$

(C) $x^2 + y^2 - 6x + 10y - 60 = 0$

(D) $x^2 + y^2 + 2x - 4y - 84 = 0$

27. Consider a polygon with three vertices: A = (2, 5), B = (7, 10) and C = (10, 2). Let $t_x = 2$ and $t_y = 3$. The coordinates of the points A, B and C after translation will be _____.

(A) $\acute{A}$=(4,7); $\acute{B}$ = (9,12); $\acute{C}$ = (12,4);

(B) $\acute{A}$ = (5,8); $\acute{B}$ = (10,13); $\acute{C}$ = (13,5);

(C) $\acute{A}$ =(4,8); $\acute{B}$ = (9,13); $\acute{C}$ = (12,5);

(D) $\acute{A}$ =(5,7); $\acute{B}$ = (10,12); $\acute{C}$ = (13,4);

28. The transformation matrix [T] for rotation should have the following feature(s):

(A) The determinant of transformation matrix for rotation should be a unit.

(B) The transformation matrix for rotation should be orthogonal.

(C) $[T]^{-1} = [T]^{T}$..... (where $[T]^{T}$ is transpose of transformation matrix)

(D) All the above

29. If $2\sin\theta + 2\operatorname{cosec}\theta = 4$, find the value of $\sin^{75}\theta + \cos^{75}\theta$

(A) 1

(B) 2

(C) 468

(D) 5768

30. If $\tan\theta = 8/7$, find the correct value of $(5\sin\theta + 4\cos\theta)/(5\sin\theta - 4\cos\theta) = ?$

(A) 83/13

(B) 13/36

(C) 68/11

(D) 17/3

31. Choose the incorrect statement(s) among the following:

(A) If the degree of all the terms in an equation is the same then the equation is termed as homogeneous equation

(B) A linear partial differential equation of first order is of the form Pp+Qq=R where P, Q and R are functions of x, y and z.

(C) A quasi-linear equation of first order is of the form Pp+Qq=R where P, Q and R are functions of x, y and z.

(D) None of the above

32. What is the degree of differential equation $5\left(\frac{dy}{dx}\right)^{3} + \frac{\partial^{2} y}{\partial x^{2}}$?

(A) 1

(B) 2

(C) 3

(D) 6

33. Choose the correct statement among the following:

(A) Skewness is the measure of size of a curve and not of its shape.

(B) Skewness is positive when the mean is greater than the mode or the median.

(C) Skewness is positive when the mode is greater than the mean or the median.

(D) Skewness is positive when the median is greater than the mode or the mean.

34. In a completed book of 1500 pages, 600 typographical errors occur. What is the probability that 5 specimen pages selected for advertisement contain one error only?

(A) 0.0067

(B) 0.2706

(C) 0.1254

(D) 0.3514

35. A box contains 5 red balls, 4 black balls and 7 white balls. What is the probability that a ball drawn is either red or black?

(A) 5/16

(B) 4/11

(C) 9/11

(D) 9/16

36. The Poisson distribution is derived as the limit of the Binomial distribution when:

(A) The number of trials n is very large and the probability of success p is very large.

(B) The number of trials n is very small and the probability of success p is very small.

(C) The number of trials n is very large and the probability of success p is very small.

(D) The number of trials n is very small and the probability of success p is very large.

37. If A^t and B^t are transposes of A and B respectively, then:

(A) $(A + B)^t = A^t + B^t + AB$

(B) $(kA)^t = kA^t$ *where k is a scalar*

(C) $(AB)^t = B^tA^t$

(D) All the above

38. Choose the correct statement(s) among the following:

For a system $AX=D$ *if* $\rho(A)$ and $\rho(A, D)$ are the ranks of A and the augmented matrix (A, D) respectively, then

(A) If $\rho(A) = \rho(A, D)$ = the number of unknowns, then the set is consistent and possesses a unique solution

(B) If $\rho(A) = \rho(A, D)$ = the number of unknowns, then the set is consistent and possesses an infinite number of solutions

(C) If $\rho(A) = \rho(A,D)$ = the number of unknowns, then the set is inconsistent and does not have any solution

(D) None of the above

39. A function f(x, y) is continuous at a point (a, *b)* for which it is defined if _____.

(A) $\lim_{\substack{x \to a \\ y \to b}} f(x,y) = f(a,b)$

(B) $\lim_{\substack{x \to a \\ y \to b}} f(x,y) = f(ax,by)$

(C) $\lim_{\substack{x \to a \\ y \to b}} f(x,y) = f(x + y)$

(D) All the above

40. What is the range of the function $f(x) = x^2$, $x \in R$?

(A) Set of all real numbers

(B) Set of all positive real numbers

(C) Set of all real numbers ≥ 0

(D) None of the above

41. Hexadecimal Addition of $(AA8)_{16}$ and $(3B9)_{16}$ will give :

(A) EA1

(B) 3E5

(C) E61

(D) 9E6

42. Which of the following mapping techniques does not allow each memory block to be loaded into any line of the cache ?

(A) Direct Mapping

(B) Associative Mapping

(C) Set Associative Mapping

(D) None of the above

43. In 2s complement arithmetic the representation for "–0" (negative zero) is

(A) 10000000

(B) 01111111

(C) 00000000

(D) 11111111

44. Choose the incorrect statement among the following:

(A) A 1-byte instruction is always 1-address instruction.

(B) Use of program counter enables shorter instruction size.

(C) "MOV A, A" is a valid instruction

(D) Implicit addressing instructions work on the contents of the accumulator.

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

```
#include<stdio .h>
main()
{  int a=084;
    printf("\n a = %x", a);
}
```

(A) Compile error

(B) 84

(C) 54

(D) 124

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

```
#include <stdio.h>
main()
{  char s1 [] = "Abdul";
char s2[] = "Mannan";
sl=s2;
printf("\n %s", s1);
}
```

(A) Abdul

(B) Mannan

(C) Abdul Mannan

(D) Error

47. *0(n* log *n)* is the complexity of which searching and sorting algorithm?

(A) Linear search

(B) Binary search

(C) Bubble sort

(D) Merge sort

48. A _____ graph is a connected graph that is not broken into disconnected pieces by deleting any single vertex (and incident edges)

(A) Bi-connected

(B) Directed Acyclic

(C) Complete

(D) Tree

49. Which of the following is not volatile ?

(A) DRAM

(B) SDRAM

(C) MRAM

(D) None of the above

50. The data received from user is converted into computer understandable format by _____.

(A) Output Unit

(B) Input Unit

(C) Memory Unit

(D) Arithmetic & Logic Unit

51. The loss of signal strength due to the different propagation speeds of each frequency that makes up the signal is known as _____.

(A) Distortion

(B) Attenuation

(C) Noise

(D) Decibel

52. The rate at which we can send data over a noisy channel can be calculated using :

(A) Nyquist Bit Rate formula

(B) BitRate = $2 \times Bandwidth \times \log_2 L$

(C) Shannon Capacity formula

(D) All the above

53. The concurrency control protocol(s) that ensure both conflict serialzability and freedom from deadlock is(are) _____?

(A) 2-phase locking

(B) Time-stamp ordering

(C) Both (A) and (B)

(D) None of the above

54. Consider the relational schema given below, where eId of the relation dependent is a foreign key referring to empId of a relation employee. Assume that every employee has at least one associated dependent in the dependent relation.

employee (empId, empName, empAge)
dependent(depId, eId, depName, depAge)

Consider the following relational algebra query:

$\pi_{empId}(employee) - \pi_{empId}(employee \bowtie_{empId = eID} \rho_{(empAge \leftarrow depAge)} dependent)$

The above query evaluates to the set of empIds of employees whose age is greater than that of :

(A) Some dependent

(B) All dependents

(C) Some of his/her dependents

(D) All of his/her dependents

55. If every non-key attribute is functionally dependent on the primary key, then the relation is in _____.

(A) First normal form

(B) Second normal form

(C) Third normal form

(D) Fourth normal form

56. A system design is said to be functionally modular if _____.

(A) The system is able to handle all the function of the application

(B) The system is developed using structured programming through COBOL or PASCAL

(C) The system makes extensive use of function, keys for maximum user assistance

(D) Each module performs a specific function and can be developed relatively independently by programmers

57. Which of the following is implemented as a DLL?

(A) App Wizard

(B) Gallery

(C) Class Wizard

(D) Resource Wizard

58. A raster scan display system with 24 bits per pixel and a screen resolution of 1024 x 1024 requires a frame buffer of what size?

(A) 3 MB

(B) 12 MB

(C) 8 MB

(D) 24 MB

59. The aspect ratio of an image is defined as .

(A) The ratio of height to width measured in number of pixels

(B) The ratio of width to height measured in unit length

(C) The ratio of depth to width measured in unit length

(D) The ratio of depth to width measured in number of pixels

60. In the refresh process of an image on a raster terminal, which of the following statement is true?

(A) The refresh memory stores the value of each pixel; therefore, the refresh time is constant.

(B) The raster terminals do not require refreshing the image because it is stored in its memory.

(C) The refresh memory (raster) stores the sequence of commands to redraw complete image.

(D) The time required to refresh an image depends on complexity of the scene to be rendered.

ROUGH WORK

Sr. No. 160

ENTRANCE TEST-2022

SCHOOL OF APPLIED SCIENCES AND TECHNOLOGY

INFORMATION TECHNOLOGY

Question Booklet Series **D**

Total Questions : 60
Time Allowed : 70 Minutes

Roll No. : | | | | | | |

Instructions for Candidates :

1. Write your Entrance Test Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
3. All entries in the OMR Answer Sheet, including answers to questions, are to be recorded in the Original Copy only.
4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
5. Use only blue/black ball point pen to darken the circle of correct/most appropriate response. In no case gel/ink pen or pencil should be used.
6. Do not darken more than one circle of options for any question. A question with more than one darkened response shall be considered wrong.
7. There will be **'Negative Marking'** for wrong answers. Each wrong answer will lead to the deduction of 0.25 marks from the total score of the candidate.
8. Only those candidates who would obtain positive score in Entrance Test Examination shall be eligible for admission.
9. Do not make any stray mark on the OMR sheet.
10. Calculators and mobiles shall not be permitted inside the examination hall.
11. Rough work, if any, should be done on the blank sheets provided with the question booklet.
12. OMR Answer Sheet must be handled carefully and it should not be folded or mutilated in which case it will not be evaluated.
13. Ensure that your OMR Answer Sheet has been signed by the Invigilator and the candidate himself/ herself.
14. At the end of the examination, hand over the OMR Answer Sheet to the invigilator who will first tear off the original OMR sheet in presence of the Candidate and hand over the Candidate's Copy to the candidate.

AAAA

(2022) Information

1. Octal subtraction of $(123)_8$ from $(315)_8$ will give :
   (A) 172
   (B) 192
   (C) 215
   (D) 116

2. What will be the value of X + X as per idempotent law?
   (A) 0 always
   (B) 1 always
   (C) X always
   (D) 2X always

3. _____ is a special cache that contains the table entries of those pages that have been most recently used.
   (A) Translation lookaside buffer
   (B) Memory Address Buffer
   (C) Page Table Buffer
   (D) Job Control Buffer

4. In which of the following addressing modes the address of the operand is specified by a register pair ?
   (A) Register Addressing Mode
   (B) Register Indirect Addressing Mode
   (C) Direct Addressing Mode
   (D) None of the above

5. Identify the incorrect statement among the following :
   (A) #include "stdio.h"
   (B) #include<stdio.h>
   (C) for(; ;);
   (D) None of the above

6. If x is a one dimensional array, then :
   (A) &x[i] is same as x+i-1
   (B) *(x+1) is same as *(x]i])
   (C) *(x+i) is same as x[i]
   (D) None of the above

7. Choose the correct statement among the following:
   (A) An automatic variable is created when the function in which it is defined is called
   (B) An external variable is initialised to 0 (zero), if not initialised explicitly by the program
   (C) Automatic variables are visible only in the function in which they are defined
   (D) All the above

8. A tree is said to be ____ if all its levels except possibly the last, have the maximum number of possible nodes and if all the nodes at the last level appear as far left as possible.
   (A) Balanced
   (B) Complete
   (C) Threaded
   (D) Expression

9. "There is a chance that element will be present in the close proximity to the reference point and next time if again searched then more close proximity to the point of reference." This refers to :
   (A) Spatial Locality of reference
   (B) Temporal Locality of reference
   (C) Associative Locality of reference
   (D) None of the above

SEAL

10. Find the correct statement in case of a magnetic hard drive :
    (A) Data movement time = Disk access time + seek time
    (B) Data movement time = Disk access time + seek time + rotational delay
    (C) Disk access time = Data movement time + seek time
    (D) Disk access time = Data movement time + seek time + rotational delay
11. The loss of signal strength due to the resistance of the transmission medium is known as :
    (A) Attenuation
    (B) Distortion
    (C) Noise
    (D) Decibel
12. Choose the incorrect statement out of the following :
    (A) The attenuation is less in coaxial cable than in twisted-pair cable
    (B) The attenuation increases sharply with increase in frequency in case of twisted pair cable
    (C) Microwaves are used in unicasting
    (D) Electromagnetic noise cannot affect fiber-optic cables
13. Choose the correct statement out of the following :
    (A) A Tuple Relational Calculus query is defined to be expression of the form $\{T|p(T)\}$, where T is the only free variable in the formula p
    (B) A Tuple variable is a variable that ranges over the values in the domain of some attribute
    (C) Natural join guarantees that the result does not have two fields with the same name
    (D) All the above
14. Which of the following scenarios may lead to an irrecoverable error in a database system?
    (A) A transaction writes a data item after it is read by an uncommitted transaction
    (B) A transaction reads a data item after it is read by an uncommitted transaction
    (C) A transaction reads a data item after it is written by a committed transaction
    (D) A transaction reads a data item after it is written by an uncommitted transaction
15. Choose the correct statement among the following :
    (A) Every relation in 3NF is also in BCNF
    (B) A relation R is in 3NF if every non-prime attribute of R is fully functionally dependent on every key of R
    (C) Every relation in BCNF is also in 3NF
    (D) No relation can be in both BCNF and 3NF
16. The failure of a system development project does not depend on :
    (A) Size of the company
    (B) Inadequate user involvement
    (C) Failure of systems integration
    (D) None of the above
17. Visual C++ is :
    (A) Procedure Oriented
    (B) Event-Driven Programming
    (C) Both (A) and (B)
    (D) None of these

18. Choose the correct statement among the following :

(A) We can use a raster scan method to render a vector graphics and vice versa

(B) We can use a vector scan method to render a raster graphics but cannot use a raster scan method to render a vector graphics

(C) We can use only raster scan method to render a raster graphics and only vector screen method to render vector graphics

(D) None of the above

19. Which of the following is not a colour model ?

(A) RGB

(B) XYZ

(C) CMY

(D) ABC

20. Interlacing is primarily used with :

(A) Slower refreshing rates

(B) Faster refreshing rates

(C) Lower resolution

(D) Higher resolution

In Q21 below, contain an idiom. Four possible meanings of the idiom are provided. Select the one which best expresses the meaning of the idiom.

21. It was surprising that she looked quite pretty at close quarters :

(A) Very near

(B) Government quarters

(C) Close confinement

(D) Close examination

22. A person who collects or has a great love of books :

(A) Philophile

(B) Bibliophile

(C) Bibliologist

(D) Misologist

23. Cobbler : Shoes :: Farrier : ?

(A) Fur

(B) Leather

(C) Hoof

(D) Feather

24. Root word ____ means doctrine, system, manner, condition, act and characteristic. It has the quality of enlargement, and it carries you from the particular to the general, from the individual to the mass.

(A) ity

(B) ism

(C) sion

(D) None of the above

25. Choose the word which is most nearly the same in meaning as word CONNOTES :

(A) Helps

(B) Confirms

(C) Implies

(D) Follows

In Q 26 below, from the given words select the one which is most appropriate so that the sentence not only makes sense, but is grammatically correct.

26. The good is often _____ with the bones.

(A) Fleshed

(B) Exhumed

(C) Interred

(D) Covered

27. Choose the word which is most opposite in meaning as the word DEPLORABLE :

(A) Laudable

(B) Outstanding

(C) Memorable

(D) Unforgettable

In Q 28 below, which of the phrases given below the sentence should replace the phrases printed in bold type to make the sentence grammatically correct ?

28. The speaker highlighted the contribution of women **for bringing about** social changes :

(A) For bringing in

(B) In bringing about

(C) In bringing of

(D) No correction required

29. A, B, C, D, E, F, G and H are standing in a row facing North. B is not neighbour of G. F is to the immediate right of G. C is not at the extreme end. A is sixth to the left of E. H is sixth to the right of C. Who among the following are neighbours ?

(A) AB

(B) CA

(C) FH

(D) CG

30. In a class Sam is ranked 7th from the top. Victor is ranked 15th from the top and 21st from the bottom in the same class. What is Sam's rank from the bottom ?

(A) 25th

(B) 28th

(C) 29th

(D) None of these

31. Find the missing term in the following :

1	2	1
2	13	3
5	89	?

(A) 6

(B) 7

(C) 8

(D) 9

32. The graph below gives the percent of population below poverty line in six states and the proportion of males and females.

State	Percentage below Poverty line	Proportion of Males and Females			
		Below Poverty Line		Above Poverty Line	
		M	F	M	F
A	12	3	2	4	3
B	15	5	7	3	4
C	25	4	5	2	3
D	26	1	2	5	6
E	10	6	5	3	2
F	32	2	3	4	5

If the number of males below poverty line for the state B is 500, what is the total population of that state ?

(A) 6000

(B) 7000

(C) 8000

(D) 14400

In Q 33 below, there are three statements followed by four conclusions numbered I, II, III and IV. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements.

33. Statements :

All books are notes.

Some notes are pencils

No pencil is paper

Conclusions :

I. Some notes are books

II. Some pencils are books

III. Some books are papers

IV. No book is paper

(A) Only I follows

(B) Only I and either III or IV follow

(C) Either III or IV follows

(D) Only I and III follow

34. If P$Q means 'P is brother of Q', P#Q means 'P is mother of Q', and P*Q means 'P is daughter of Q', then who is the father in 'A#B$C*D' ?

(A) A

(B) B

(C) C

(D) D

*In the following question (Q35) the symbols +, *, =, / and – are used with the following meaning :*

P + Q means P is greater than Q

*P * Q means P is either greater than or equal to Q*

P = Q means P is equal to Q

P / Q means P is smaller than Q

P - Q means P is either smaller than or equal to Q

Now in the following question, assuming the given statement to be true, find which of the two conclusions I and II given below them is/are definitely true.

35. Statement :

M / N, P * Q, P +N

Conclusions :

I. N + Q

II. N - Q

(A) Only I is true

(B) Only II is true

(C) Neither I nor II is true

(D) Both I and II are true

36. In a certain language, the word APPLE is written as BQROJ. How will the word PLATED be written in that code language ?

(A) QMCXKM

(B) QMDWKM

(C) QMCWJL

(D) None of the above

37. Sam has 2 parents, 4 grandparents, 8 great grandparents and so on. Assuming that there are 20 years to a generation, how many ancestors did Sam have 400 years ago ?

(A) 2097148

(B) 2097150

(C) 1097148

(D) 1097150

38. If the numerator of a fraction is increased by 2 and the denominator is increased by 1, the fraction becomes 5/8 and if the numerator of the same fraction increased by 3 and the denominator is increased by 1, the fraction becomes 3/4. Find the fraction .

(A) 2/7

(B) 3/7

(C) 4/7

(D) 5/7

39. The average age of P, Q and R at present is 26 years. If R is 6 years older than P, how old is Q now ?

(A) 28 years

(B) 32 years

(C) 18 years

(D) None of the above

40. Find the sum of first 30 terms of the series: 27, 24, 21, 18, 15...

(A) -195

(B) -295

(C) 395

(D) -495

41. If $x^2+3x+3=0$, then the value of $\frac{3x}{(x^2-5x+3)}$ will be :

(A) 1/8

(B) -1/8

(C) -3/8

(D) None of the above

42. Choose the incorrect statement among the following :

A quadratic equation $ax^2+bx+c=0$ has :

(A) No real roots, if $b^2-4ac<0$

(B) Two distinct real roots, if $b^2-4ac<0$

(C) Two equal real roots, if $b^2-4ac=0$

(D) None of the above

43. The coefficient of the middle term in the Binomial expansion of $(5+6x)^4$ is :

(A) 2160

(B) 3240

(C) 5400

(D) 6400

44. Find the value of x if $\log_4(x^2-1)-\log_4(x-1)=2$:

(A) 3

(B) 9

(C) 15

(D) 16

45. Find the Cartesian equations of the lines that pass through the origin and (2, -6, 8) :

(A) $\frac{x}{1}=\frac{y}{-3}=\frac{z}{4}$

(B) $\frac{x}{2}=\frac{y}{-6}=\frac{z}{8}$

(C) $x=-3y=4z$

(D) $2x=-6y=8z$

46. Equation of the circle with centre (4, -2) and passing through (6, 12) is :

(A) $x^2 + y^2 + 4x - 2y - 60 = 0$

(B) $x^2 + y^2 - 4x + 2y - 60 = 0$

(C) $x^2 + y^2 + 8x - 4y - 180 = 0$

(D) $x^2 + y^2 - 8x + 4y - 180 = 0$

47. The formula for calculating the transformed coordinates in case of rotation is given by :

(A) $x' = r\cos(\phi + \theta); y' = r\sin(\phi + \theta)$

(B) $x' = r\sin(\phi + \theta); y' = r\cos(\phi + \theta)$

(C) $x' = r\cos(\phi - \theta); y' = r\sin(\phi - \theta)$

(D) $x' = r\sin(\phi - \theta); y' = r\cos(\phi - \theta)$

48. Find the transformed point after applying rotation at 45° on a point (4, 3) :

(A) $P' = \left(\frac{1}{\sqrt{2}}, \frac{7}{\sqrt{2}}\right)$

(B) $P' = \left(\frac{7}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$

(C) $P' = \left(-\frac{1}{\sqrt{2}}, \frac{7}{\sqrt{2}}\right)$

(D) $P' = \left(\frac{1}{\sqrt{2}}, -\frac{7}{\sqrt{2}}\right)$

49. If $x\cos 45° = y\tan 60°$, find the value of $\frac{x^5}{y^5}$.

(A) 216

(B) 36

(C) 2

(D) $\sqrt{6}$

50. If $\cos A = 6/7$, then what is the value of $\tan A$?

(A) 0

(B) $13/\sqrt{6}$

(C) $\sqrt{13}/6$

(D) $\sqrt{5}/2$

51. Choose the correct statement(s) among the following :

(A) Inverse of a function exists only if that function is not a bijection

(B) Inverse of a function exists only if that function is a bijection

(C) Inverse of a bijection function cannot be a bijection

(D) None of the above

52. $\frac{\partial y}{\partial t} + u\frac{\partial u}{\partial x} = \frac{\partial^2 u}{\partial x^2}$ is an example of :

(A) Linear equation of order 1

(B) Non-Linear equation of order 2

(C) Linear equation of order 2

(D) Non-Linear equation of order 1

53. Which of the following is not a measure of dispersion ?

(A) Range

(B) Mean Deviation

(C) Mean

(D) Quartile Deviation

54. It is known that 100 litres of water have been polluted with 10^6 bacteria. If 1 cc of water is drawn off, what is the probability that the sample is not polluted ?

(A) 0.000706

(B) 0.000156

(C) 0.000065

(D) 0.000045

55. Two events A and B are said to be mutually exclusive when :

(A) Happening of B does not influence in any way the probability of happening of A

(B) Through the occurrence of one of them the other event cannot take place

(C) The happening of B influences in any way the probability of happening of A

(D) None of the above

56. A bag contains 5 red balls and 4 black balls and another bag contains 2 red balls and 7 black balls. Two balls are drawn from each bag. What is the probability that both balls are red ?

(A) 10/81

(B) 7/18

(C) 7/69

(D) 7/9

57. For a square matrix $A = [a_{ij}]$ if $a_{ij} = a_{ji}$ for all values of i and j, then A is known as :

(A) Singular Matrix

(B) Scalar Matrix

(C) Symmetric Matrix

(D) Square Matrix

58. A matrix A is said to have a rank r if :

(A) At least one minor of A of order r is non-zero

(B) All minors of A of order (r +1) are zero

(C) Both (A) and (B)

(D) None of the above

59. A function f(x, y) is said to be a homogeneous function of degree n if :

(A) $f(kx, ky) = kf(x, y)$

(B) $f(kx, ky) = k^2 f(x, y)$

(C) $f(kx, ky) = k^n f(x, y)$

(D) $f(kx, ky) = nkf(x, y)$

60. What is the domain of function cosec x ?

(A) Set of all real numbers

(B) Set of all real numbers except $n\pi$ where n is zero or any positive integer

(C) Set of all real numbers except $n\pi$ where n is zero or any integer, positive or negative

(D) Cannot be ascertained.

Sr. No. .....

ENTRANCE TEST-2021

SCHOOL OF APPLIED SCIENCES & TECHNOLOGY

INFORMATION TECHNOLOGY

Question Booklet Series **A**

Total Questions : 60

Time Allowed : 70 Minutes

Roll No. : | | | | | | |

Instructions for Candidates :

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2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
3. All entries in the OMR Answer Sheet, including answers to questions, are to be recorded in the Original Copy only.
4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
5. Use only blue/black ball point pen to darken the circle of correct/most appropriate response. In no case gel/ink pen or pencil should be used.
6. Do not darken more than one circle of options for any question. A question with more than one darkened response shall be considered wrong.
7. There will be **'Negative Marking'** for wrong answers. Each wrong answer will lead to the deduction of 0.25 marks from the total score of the candidate.
8. Only those candidates who would obtain positive score in Entrance Test Examination shall be eligible for admission.
9. Do not make any stray mark on the OMR sheet.
10. Calculators and mobiles shall not be permitted inside the examination hall.
11. Rough work, if any, should be done on the blank sheets provided with the question booklet.
12. OMR Answer Sheet must be handled carefully and it should not be folded or mutilated in which case it will not be evaluated.
13. Ensure that your OMR Answer Sheet has been signed by the Invigilator and the candidate himself/ herself.
14. At the end of the examination, hand over the OMR Answer Sheet to the invigilator who will first tear off the original OMR sheet in presence of the Candidate and hand over the Candidate's Copy to the candidate.

✦

In questions (1-2) below choose the option which can be substituted for the given words/sentences.

1. One who breaks the established traditions and image

   (A) fatalist

   (B) iconoclast

   (C) fanatic

   (D) philogynist

2. Placing a thing beside another

   (A) impose

   (B) repose

   (C) juxtapose

   (D) expose

Choose the best possible analogies for Q3-Q4.

3. Thrust:Spear::

   (A) mangle:iron

   (B) scabbard:sword

   (C) bow:arrow

   (D) fence:epee

4. Bewilderment:Confusion ::

   (A) Bursa : sack

   (B) Bewitched : alliteration

   (C) Fantod : nervousness

   (D) Coracle : lodestar

5. Choose the word which is least like the other words.

   (A) Barber

   (B) Carpenter

   (C) Blacksmith

   (D) Tailor

6. Ted Rosen explained in an interview that_____ his new book describes actual historical events from the days of the establishment of the State, he does not_____ regarded as a history book. He even states explicitly that he _____objective facts in the book: "In writing this book, I felt bound_____ ," he said.

   (A) although / intend it to be / never claimed to present / only by my experiences and thoughts

   (B) since / object to it being / spared no effort to present / only by my personal impressions

   (C) although / intend it to be / spared no effort to present / by facts alone

   (D) since / intend it to be / never claimed to present / by facts alone

7. Following an internet advertising campaign for the beverage Trix, the director of the advertising agency that launched the campaign conducted a survey and found that Trix's sales were higher than those of the competing beverage, Platon. He concluded from this that internet advertising is more effective than advertising by means of other communications media. Which of the following does not weaken his conclusion?

   (A) The price of Trix was reduced during the course of the internet advertising campaign.

   (B) Trix's sales were higher than Platon's sales even before the start of the internet advertising campaign.

   (C) During the advertising campaign for Trix, Platon was not advertised at all.

   (D) A widespread television advertising campaign conducted a year earlier did not result in an increase in Trix's sales.

8. Which of the following options would be the best synonym for "seethe"?

(A) hate

(B) fume

(C) avoid

(D) show

9. X and Y start moving towards each other from two places 200 m apart. After walking 60 m, Y turns left and goes 20 m, and then he turns right and goes 40 m. He then turns right again and comes back to the road on which he had started walking. If X and Y walk with the same speed, what is the distance between them now?

(A) 20 m

(B) 30 m

(C) 40 m

(D) 50 m

10. Insert the missing number in the following sequence:4, 9, 20, 43, 90, ___

(A) 126

(B) 145

(C) 167

(D) 185

11. If '+' means 'brother of', 'x' means 'mother of', '-' means 'father of' and '/' means 'son of', then which of the following means V is nephew of W?

(A) V + U - W

(B) V x W - U

(C) V / W – U

(D) V / U + W

12. In a row of boys, A's position from the left end is 33rd and B's position from the right end is 25th. After interchanging their position, A's position becomes 45th from the left end. How many boys are there in the row?

(A) 67

(B) 69

(C) 70

(D) 71

13. Which of the conclusions can be made based on the statements given below?

Statements : The old order changed yielding place to new.

Conclusions : I. Change is the law of nature.

II. Discard old ideas because they are old.

(A) Only conclusion I follows

(B) Only conclusion II follows

(C) Neither I nor II follows

(D) Both I and II follow

14. The police rounded up A, B and C yesterday because one of them was suspected of robbing the local bank. The 3 suspects gave following statements after intensive questioning:

A : I'm innocent.

B : I'm innocent.

C : B is the guilty one.

Who robbed the bank among the three persons, if only one of the statements will be true?

(A) A

(B) B

(C) C

(D) None of these

15. Three persons A, B, C were sitting in a row of three chairs. When asked about their respective positions, each of them made two statements as follows. It is known that each of them made a true statement and a false statement in any order.

A : I am at the extreme left and C is at the extreme right.

B : A is between me and C and I am at extreme right.

C : I am at the extreme left and B is at the extreme right.

What are the actual positions from left to right?

(A) A-B-C

(B) C-A-B

(C) A-C-B

(D) None of these

16. Three persons A, B and C gave these statements:

A said, either Freedom Party or Green Party won the elections.

B said, Freedom Party won.

C said, neither Freedom Party nor Green Party won the elections.

Of these persons, only one person is wrong.

Who won the elections?

(A) Freedom Party

(B) Green Party

(C) Data Inadequate

(D) None of these

17. A, B and C can do a piece of work in 20, 30 and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every third day?

(A) 12 days

(B) 15 days

(C) 16 days

(D) 18 days

18. The salaries of A, B and C are of ratio 2:3:5. If the increments of 15%, 10% and 20% are done to their respective salaries, then find the new ratio of their salaries.

(A) 20:33:60

(B) 21:33:60

(C) 22:33:60

(D) 23:33:60

19. Two bicyclists do the same journey by travelling respectively at the rate of 9 and 10 km an hour. Find the distance travelled when one takes 32 minutes longer than the other?

(A) 32 KM

(B) 48 KM

(C) 64 KM

(D) 72 KM

20. Three pipes A, B and C can fill a tank in 6 hours. After working at it together for 2 hours, C is closed and A and B can fill the remaining part in 7 hours. The number of hours taken by C alone to fill the tank is:

(A) 10

(B) 12

(C) 14

(D) 16

21. $\log_9 (3\log_2 (1 + \log_3 (1 + 2\log_2 x))) = 1/2$. Find x.

(A) 1/2

(B) 1

(C) 2

(D) 3/2

22. What is the sum of all 3 digit numbers that leave a remainder of '2' when divided by 3?

(A) 149,743

(B) 164,850

(C) 164,749

(D) 149,700

23. Find the number of ways of arranging the letters of the words DANGER, so that no vowel occupies odd place.

(A) 36

(B) 48

(C) 96

(D) 144

24. The sum and the product of the roots of equation $x^2 - kx + k^2 = 0$

(A) k, k^2

(B) k^2, k

(C) $-k, k^2$

(D) $k, -k^2$

25. The equation $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents a circle, the condition will be

(A) a = b and c = 0

(B) f = g and h = 0

(C) a = b and h = 0

(D) f = g and c = 0

26. The point (4, 1) undergoes the following three transformations successively

(a) Reflection about the line y = x

(b) Transformation through distance 2 units along the positive direction of the x-axis.

(c) Rotation through an angle $\pi/4$ about the origin in the anti clockwise direction.

(A) $(-4/\sqrt{2}, 1/\sqrt{2})$

(B) $(-1/\sqrt{2}, 7/\sqrt{2})$

(C) $(-1/\sqrt{2}, 4/\sqrt{2})$

(D) $(-3/\sqrt{2}, 4/\sqrt{2})$

27. The point of intersection of $3x - y = 4$ and $x + y = 8$ is

(A) (5,3)

(B) (4,4)

(C) (3,5)

(D) (2,4)

28. Which of the following has an eccentricity greater than zero but less than one?

(A) Circle

(B) Parabola

(C) Hyperbola

(D) Ellipse

29. The minimum value of $2\sin^2\theta + 3\cos^2\theta$ is :

(A) 3

(B) 2

(C) 1

(D) 0

30. What is the degree of first order differential equation, given by $\left(\frac{dy}{dx}\right)^{1.5} = \left(\frac{x \cos x}{\left(x^2 + \sqrt{\sin x}\right)}\right)^3$?

(A) 1

(B) 1.5

(C) 2

(D) 2.5

31. A ladder 15 meters long just reaches the top of a vertical wall. If the ladder makes an angle of 60° with the wall, then the height of the wall will be

(A) 7.3m

(B) 7.5m

(C) 7.7m

(D) 7.9m

32. The range of $\tan^{-1}x$ is

(A) [–1,1]

(B) $(0, \pi)$

(C) $(-\pi/2, \pi/2)$

(D) R

33. The number of patients who visited the cardiologist is as 63, 57, 51 and 65 in four days, then the mean absolute deviation is

(A) 5 patients

(B) 8 patients

(C) 13 patients

(D) 17 patients

34. The distribution in which mean = 60 and mode = 50, will be _____

(A) Symmetrical

(B) Positive skewed

(C) Negative skewed

(D) None of these

35. The range of the correlation coefficient is.

(A) (–1, 1)

(B) (0, 1)

(C) [–1, 1]

(D) None of these

36. If the regression coefficient of x on y and y on x are –0.5 and –0.125 respectively, then what is the correlation coefficient between x and y?

(A) –0.25

(B) 0.25

(C) –0.5

(D) 0.5

37. Among 18 students in a classroom, 7 study Mathematics, 10 study Science and 10 study Computer programming. Also, 3 study Mathematics and Science, 4 study Mathematics and Computer programming and 5 study Science and Computer programming. We know that 1 student studies all three subjects. How many of these students study none of the three subjects?

(A) 1

(B) 2

(C) 3

(D) 4

38. For matrix A, $(A^3) = I$, A^{-1} is equal to _____

(A) A^2

(B) A^{-2}

(C) Can't say

(D) None of the mentioned

39. A cow is tied with a 14 ft. long rope in the centre of a field. If the cow can graze the grass of 100 ft^2 area per day. What will be the time taken by the cow in grazing the grass of whole field?

(A) 6 Days

(B) 12 days

(C) 18 Days

(D) 24 Days

40. Evaluate the Limit:

$$\lim_{x \to 0}\left(\frac{1 - \cos x}{x^2}\right)$$

(A) 1/6

(B) 1/2

(C) -1/6

(D) -1/2

41. Consider a 64 TB (tera-byte memory) wherein each byte is addressable. Minimum size of address bus for this memory is

(A) 26

(B) 36

(C) 46

(D) 56

42. A class B IP address has the subnet mask 255.255.248.0, then how many maximum host will be possible in the network?

(A) 2046

(B) 2048

(C) 4094

(D) 4096

43. The Media Access Control Address consists of how many bits?

(A) 16

(B) 32

(C) 48

(D) 64

44. Which of the following field in IPv4 datagram is not related to fragmentation?

(A) TOS

(B) Flags

(C) Offset

(D) Identifier

45. Instruction Queue of 8086 is _____ byte long.

(A) 5

(B) 6

(C) 7

(D) 8

46. A stack-organized computer uses which of the following ?

(A) Direct addressing

(B) Zero addressing

(C) Index addressing

(D) All of the above

47. The type of mapping used by cache memory is/are

(A) Associative mapping

(B) Direct mapping

(C) Set-associative mapping

(D) All of the above

48. The two's complement of the signed decimal number -78_{10} is _____.

(A) 11001110_2

(B) 01001110_2

(C) 10110010_2

(D) 10110001_2

49. Choose the pure virtual function definition from the following.

(A) virtual void f()=0 { }

(B) void virtual f()=0 { }

(C) virtual void f() {} = 0;

(D) None of the above

50. Assume that there are 3 page frames which are initially empty. If the page reference string is 1, 2, 3, 4, 2, 1, 5, 3, 2, 4, 6, the number of page faults using the optimal replacement policy is_____.

(A) 5

(B) 6

(C) 7

(D) 8

51. When searching for the key value 60 in a binary search tree, nodes containing the key values 10, 20, 40, 50, 70, 80, 90 are traversed, not necessarily in the order given. How many different orders are possible in which these key values can occur on the search path from the root to the node containing the value 60?

(A) 35

(B) 720

(C) 7

(D) 5040

52. Consider the array A[]= {6,4,8,1,3} apply the insertion sort to sort the array. Consider the cost associated with each sort is 20 Units, what is the total cost of the insertion sort when element 1 reaches the first position of the array?

(A) 20

(B) 40

(C) 60

(D) 80

53. Consider the following scenario: T1 consists of 6 operations and T2 consists of 4 operations then the number of concurrent schedules possible is:

(A) 17280

(B) 3628798

(C) 127

(D) 210

54. Specifying that only people who satisfy certain criteria receive a questionnaire is a feature of a

(A) Purposeful sample

(B) Convenient sample

(C) Controlled sample

(D) Stratified sample

55. A Relation R with attributes (A, B, C, D, E) with the functional dependencies A —> C, B —> D and (A, B) —> E. In terms of normalization, this table is in

(A) 1NF

(B) 2NF

(C) 3NF

(D) BCNF

56. Relation R has 7 tuples and 5 attributes. Relation R2 has 0 tuples and 5 attributes. A Cartesian Product between R and S would have how many tuples?

(A) 27

(B) 25

(C) 7

(D) 0

57. Which of the following provides an interface by which application programs can access and process SQL databases in a platform independent manner?

(A) ADO

(B) ODBC

(C) ADO.NET

(D) OLE DB

58. Two parts of Morphing algorithms are :

(A) Wrap & Dissolve

(B) Tweening & Dissolve

(C) Warp & Tweening

(D) Tweening & Wrap

59. Aspect ratio is generally defined as the ratio of the :

(A) Horizontal to vertical points

(B) Vertical to horizontal points

(C) Vertical to (horizontal + vertical) points

(D) Either A or B, depending on the convention followed

60. EPS image file format is used for :

(A) Vector graphics

(B) Bitmap

(C) Both (A) & (B)

(D) None of these

ROUGH WORK

ROUGH WORK

Sr. No. 266

ENTRANCE TEST-2020

SCHOOL OF APPLIED SCIENCES AND TECHNOLOGY

INFORMATION TECHNOLOGY

Total Questions : 60
Time Allowed : 70 Minutes

Question Booklet Series **B**

Roll No. : | | | | | | |

Instructions for Candidates :

1. Write your Entrance Test Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
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SEAL

1. A man walking at the rate 3 km/hr crosses a square field diagonally in 2 minutes. What is the area of the field ?
   (A) 1000 m^2
   (B) 1250 m^2
   (C) 2500 m^2
   (D) 5000 m^2
2. A lead pencil is in the shape of a cylinder. The pencil is 21 cm long with radius 0.4 cm and its lead is of radius 0.1 cm. What is the volume of wood in the pencils ?
   (A) 9.0 cm^3
   (B) 9.4 cm^3
   (C) 9.9 cm^3
   (D) 10.1 cm^3
3. In how many different ways can 3 identical green shirts and 3 identical red shirts be distributed among 6 children such that each child receives a shirt ?
   (A) 20
   (B) 40
   (C) 216
   (D) 720
4. If log 2 = 0.3010 and log 3 = 0.4771, the value of $\log_5 512$ is :
   (A) 2.870
   (B) 2.967
   (C) 3.876
   (D) 3.910
5. For $x^2 + 2x + 5$ to be a factor of $x^4 + px^2 + q$, then the value of p and q must be :
   (A) 5,25
   (B) 6,25
   (C) 6,50
   (D) 5,50
6. What is the radius of the circle $x^2 + y^2 - 6y = 0$?
   (A) 3
   (B) 4
   (C) 5
   (D) 6
7. The centre of the hyperbola $4x^2 - 8x - 5y^2 + 10y = 21$, is :
   (A) (–1, –1)
   (B) (1, 1)
   (C) (1, 2)
   (D) (2, 1)
8. Find x so that the distance between (x, 3) and (2, –1) = 5 :
   (A) 5 or –1
   (B) 6 or –2
   (C) 7 or –3
   (D) 7 or –4
9. A partial differential equation has :
   (A) One independent variable
   (B) Two or more independent variables
   (C) More than one dependent variable
   (D) Equal number of dependent and independent variables
10. Total number of solutions of sin x. tan 4x = cos x belonging to $(0, \pi)$ are :
    (A) 3
    (B) 4
    (C) 5
    (D) 6
11. In triangle PQR length of the side QR is less than twice the length of the side PQ by 2 cm. Length of the side PR exceeds the length of the side PQ by 10 cm. The perimeter is 40 cm. The length of the smallest side of the triangle PQR is :
    (A) 8 cm
    (B) 7 cm
    (C) 10 cm
    (D) 6 cm
12. If in a triangle ABC, BE and CF are two medians perpendicular to each other and if AB = 19 cm and AC = 22 cm then the length of BC is :
    (A) 29 cm
    (B) 23.5 cm
    (C) 16.5 cm
    (D) 13 cm

13. The probability of a leap year selected at random containing 53 Sundays is :
(A) 53/366
(B) 2/7
(C) 1/7
(D) 53/365

14. If three coins are tossed simultaneously, then the probability of getting at least two heads is :
(A) 1/2
(B) 1/3
(C) 2/3
(D) 1/8

15. The probability that a particular machine breaks down on any day is 0.2 and is independent of the breakdowns on any other day. The machine can break down only once per day. Calculate the probability that the machine breaks down two or more times in ten days :
(A) 0.0175
(B) 0.2684
(C) 0.6242
(D) 0.9596

16. The coefficient of correlation :
(A) Is the square of the coefficient of determination
(B) Is the square root of the coefficient of determination
(C) Is the same as r-square
(D) Can never be negative

17. 20 teachers of a school either teach Mathematics or Physics. 12 of them teach Mathematics while 4 teach both the subjects. Then, the number of teachers teaching Physics only is :
(A) 12
(B) 8
(C) 16
(D) None of these

18. The circumference of the front wheel of a cart is 30 ft long and that of the back wheel is 36 ft long. What is the distance travelled by the cart, when the front wheel has done five more revolutions than the rear wheel ?
(A) 20 ft
(B) 25 ft
(C) 750 ft
(D) 900 ft

19. A 4 cm cube is cut into 1 cm cubes. What is the percentage increase in the surface area after cutting ?
(A) 200%
(B) 300%
(C) 400%
(D) 500%

20. The area of a square field is 24200 sq. m. How long will a lady take to cross the field diagonally at the rate of 6.6 km/hr ?
(A) 2 minutes
(B) 2.4 minutes
(C) 2.8 minutes
(D) 3 minutes

21. _____ are computer programs that are designed by attackers to gain root or administrative access to your computer.
(A) Backdoors
(B) Rootkits
(C) Malware
(D) Spyware

22. Which field helps to check rearrangement of the fragments in a datagram ?
(A) Offset
(B) Flag
(C) TTL
(D) Identifier

23. One of the header fields in an IP datagram is the Time to Live (TTL) field. Which of the following statements best explains the need for this field ?
(A) It can be used to prioritize packets
(B) It can be used to reduce delays
(C) It can be used to optimize throughput
(D) It can be used to prevent packet looping

24. The transmission of digital signal at the original frequency without modulation is called :
(A) Baseband signalling
(B) Broadband signalling
(C) Digital signalling
(D) None of these

25. If $(101.01)_2 = (x)_{10}$, then what is the value of x ?
(A) 5.05
(B) 5.10
(C) 5.15
(D) 5.25

26. You are given the following instruction :
ADD AX, [1024]
You are provided the following data :
DS = 3423 H; SS = 1234H; CS = 4567H
Find the effective address location for the given instruction :
(A) 35254 H
(B) 46694 H
(C) 4447 H
(D) 13364 H

27. Which of the following instructions is not valid ?
(A) MOV AX, BX
(B) MOV DS, 5000H
(C) MOV AX, 5000H
(D) PUSH AX

28. The amount of ROM needed to implement a 4-bit multiplier is :
(A) 64 bits
(B) 128 bits
(C) 1 Kbits
(D) 2 Kbits

29. Which of the following is/are automatically added to every class, if we do not write our own ?
(A) Copy Constructor
(B) Assignment Operator
(C) A constructor without any parameter
(D) All of the above

30. Which of the following is true about constructors ?
(1) They cannot be virtual
(2) They cannot be private
(3) They are automatically called by new operator.
(A) All (1), (2) and (3)
(B) Only (1) and (3)
(C) Only (1) and (2)
(D) Only (2) and (3)

31. What is the time, space complexity of the following code ?

```
int a = 0, b = 0;
for (i = 0; i < N; i++) {
    a = a + rand();
}
for (j = 0; j < M; j++) {
    b = b + rand();
}
```

(A) O(N * M) time, O(1) space
(B) O(N + M) time, O(N + M) space
(C) O(N + M) time, O(1) space
(D) O(N * M) time, O(N + M) space

32. Which is the correct order of the following algorithms with respect to their time complexity in the best case ?
(A) Merge sort > Quick sort > Insertion sort > Selection sort
(B) Insertion sort < Quick sort < Merge sort < Selection sort
(C) Merge sort > Selection sort > Quick sort > Insertion sort
(D) Merge sort > Quick sort > Selection sort > Insertion sort

33. The file organization that provides very fast access to any arbitrary record of a file is :
(A) Ordered File
(B) Unordered File
(C) Hashed File
(D) B-Tree

34. A BCNF is always :
(A) Lossless join and dependency preserving
(B) Lossless join but not dependency preserving
(C) Lossy join but dependency preserving
(D) None of these

35. The critical path :
(A) Is a path that operates from the starting node to the end node
(B) Is a mixture of all paths
(C) Is the longest path
(D) Is the shortest path

36. For a relation R with schema R(A, B, C, D), let us assume that A is the primary key and R consists of the set of functional dependencies $F = \{A \rightarrow B, A \rightarrow C, AB \rightarrow C, C \rightarrow D\}$. Which of the following would violate the 3NF rule ?
(A) $AB \rightarrow C$
(B) $C \rightarrow D$
(C) $A \rightarrow BCD$
(D) None of the above

37. The minimum refresh rate to avoid flicker for most motion devices is :
(A) 30 Hz
(B) 40 Hz
(C) 50 Hz
(D) 70 Hz

38. Block size in block preparation step of JPEG compression is :
(A) 4×4
(B) 8×8
(C) 16×16
(D) 64×64

39. When trying to access a URL, the following message is displayed on the browser : 'Server; Error 403'. What could be the reason for the message ?
(A) The requested HTML file is not available
(B) The path to the interpreter of the script file is invalid
(C) The first line of the output from the script is not a valid HTTP header
(D) The requested HTML file or CGI script has insufficient permission

40. Vector graphics is composed of :
(A) Pixels
(B) Paths
(C) Palette
(D) Both (B) and (C)

For questions (41-42) choose a word which is most similar in meaning to the given word printed in bold.

41. **Vindicate** :
(A) Argue
(B) Destroy
(C) Acquit
(D) Identify

42. **Controvert** :
(A) Confuse
(B) Contradict
(C) Indict
(D) Subvert

43. God saved us ! Fortunately, the firefighters were able to put _____ the fire.
(A) away
(B) off
(C) down
(D) out

44. There wasn't much space on the table, so I asked the student next to me if he could move _____ a bit.
(A) up
(B) off
(C) over
(D) under

Directions for Questions 45 to 46 : Each question has a set of four sequentially ordered statements. Each statement can be classified as one of the following :

Facts, which deal with pieces of information that one has heard, seen or read, and which are open to discovery or verification (the answer option indicates such a statement with an 'F').

Inferences, which are conclusions drawn about the unknown, on the basis of the known (the answer option indicates such a statement with an 'I').

Judgements which are opinions that imply approval or disapproval of persons, objects, situations and occurrences in the past, the present or the future (the answer option indicates such a statement with a 'J').

45. I. Red tape leads to corruption and distorts a people's character.
    II. We should not be hopelessly addicted to an erroneous belief that corruption in India is caused by the wickedness of Indians.
    III The truth is that we have more red tape — we take 90 days to start a small business, Finns take just 2 days.
    IV. Every red tape procedure is a point of contact with an official and such contacts have the potential to become opportunities for money to change hands.
    (A) JFJJ
    (B) JIJF
    (C) IFJF
    (D) JJFI

46. I. The prices of electronic items are increasing.
    II. Since we have substantial increase in import duties, this is obvious.
    III. The trend is bound to continue in the near future.
    IV. But the turnover of the electronic industry is still rising, because the consumers are increasing at a rapid rate.
    (A) FIJJ
    (B) FFJF
    (C) FIJF
    (D) FFIF

47. particular : fussy : : _____ : subservient
    (A) meek
    (B) above
    (C) cranky
    (D) uptight

48. implement : rule : : _____ : verdict
    (A) propose
    (B) render
    (C) divide
    (D) teach

49. In a queue, A is eighteenth from the front while B is sixteenth from the back. If C is twenty fifth from the front and is exactly in the middle of A and B, then how many persons are there in the queue ?
    (A) 45
    (B) 46
    (C) 47
    (D) 48

50. A family consists of 6 members P, Q, R, X, Y, Z. Q is the son of R but R is not mother of Q. P and R are married couple. Y is the brother of R, X is the daughter of P. Z is the brother of P. How many female members are there in the family ?
    (A) 1
    (B) 2
    (C) 3
    (D) 4

51. If A + B means A is the sister of B; A × B means A is the wife of B, A % B means A is the father of B and A – B means A is the brother of B. Which of the following means T is the daughter of P ?
    (A) P × Q % R + S – T
    (B) P × Q % R + T – S
    (C) P × Q % R + S + T
    (D) P × Q % R – T + S

52. In how many different ways can the letters of the word '**MATHEMATICS**' be arranged so that the vowels always come together ?
(A) 120960
(B) 240960
(C) 360960
(D) 480761

53. Find the missing number in the sequence 504, ____, 990, 1320, 1716.
(A) 716
(B) 720
(C) 724
(D) 738

54. John is supposed to walk from his house to park every morning. One morning, he is in real hurry and wants to save at least 1/3rd of the time. By how much percentage he should increase his speed ?
(A) 100%
(B) 33%
(C) 66%
(D) 50%

55. The perimeter of a square and a rectangle is the same. If the rectangle is 12 cm by 10 cm, then by what percentage is the area of the square more than that of the rectangle ?
(A) 1
(B) 3
(C) 5/6
(D) 1/2

56. Aayan, Basit and Danish work in a software company at same positions. However, their salaries are different. Aayan's salary to Basit's salary and Basit's salary to Danish's salary are in the ratio 4 : 3. If the total salary of all the three employes is Rs. 29,230, what is the salary of Danish ?
(A) Rs. 12,640
(B) Rs. 9,480
(C) Rs. 8,660
(D) Rs. 7,110

57. How many such pairs of digits are there in the number 421579368 each of which has as many digits between them in the number as when they are arranged in ascending order ?
(A) Four
(B) Three
(C) Two
(D) None

58. Two trains move in the same direction at 50 kmph and 32 kmph respectively. A man in the slower train observes the 15 seconds elapse before the faster train completely passes by him. What is the length of faster train ?
(A) 95 m
(B) 85 m
(C) 75 m
(D) 65 m

59. If a boat is moving in upstream with velocity of 14 km/hr and goes downstream with a velocity of 40 km/hr. Then what is the speed of the stream ?
(A) 13 km/hr
(B) 26 km/hr
(C) 34 km/hr
(D) 40 km/hr

60. If $2b - 1, 4b + 1, 15b - 3, 40b + 1$ is a geometric series, then b =
(A) 4
(B) 3
(C) 2
(D) 1

In questions (1-3) below choose the option which can be substituted for the given words/sentences.

1. Other side of the globe :
   (A) Antipodes
   (B) Poles
   (C) Antipole
   (D) Reverse
2. Commencement of Words with the same letter :
   (A) Pun
   (B) Alliteration
   (C) Transferred epithet
   (D) Oxymoron
3. A hater of knowledge and learning :
   (A) Bibliophile
   (B) Philologist
   (C) Misogynist
   (D) Misologist

Directions (4-5) : In each of the questions given below is an incomplete sentence which must be filled/ completed with one of the sentences/words given below i.e. one of the sentences/words can be fit into the given blanks. Choose the correct option and complete the given sentences.

4. So much of our day-to-day focus seems to be on getting things done, _____ living – it can feel like a treadmill that gets you nowhere; where is the childlike joy ?
   (A) Trudging our way through the tasks of
   (B) Trudge our way through the tasks of
   (C) Trudging our way through the tasking of
   (D) Trudging our ways through the tasks of
5. We are doing the things that make us happy, bring us joy; the things that we cannot wait to do because _____
   (A) we enjoyed them so much.
   (B) we enjoy them so much.
   (C) we enjoy the so much.
   (D) we enjoy them so many.

Directions for Questions 6 to 7 : Each question has a set of four sequentially ordered statements. Each statement can be classified as one of the following :

Facts which deal with pieces of information that one has heard, seen or read, and which are open to discovery or verification (the answer option indicates such a statement with an 'F').

Inferences which are conclusions drawn about the unknown, on the basis of the known (the answer option indicates such a statement with an 'I').

Judgements which are opinions that imply approval or disapproval of persons, objects, situations and occurrences in the past, the present or the future (the answer option indicates such a statement with a 'J').

Select the answer option that best describes the set of four statements.

6. I. According to all statistical indications, the Sarva Shiksha Abhiyan has managed to keep pace with its ambitious goals.
   II. The Mid-day Meal Scheme has been a significant incentive for the poor to send their little ones to school, thus establishing the vital link between healthy bodies and healthy minds.
   III. Only about 13 million children in the age group of 6 to 14 years are out of school.
   IV. The goal of universalization of elementary education has to be a pre-requisite for the evolution and development of our country.
   (A) IIFJ
   (B) JIIJ
   (C) IJFJ
   (D) IJFI

7. I. Inequitable distribution of all kinds of resources is certainly one of the strongest and most sinister sources of conflict.

II. Even without war, we know that conflicts continue to trouble us—they only change in character.

III. Extensive disarmament is the only insurance for our future; imagine the amount of resources that can be released and redeployed.

IV. The economies of the industrialized western world derive 20% of their income from the sale of all kinds of arms.

(A) IJJI

(B) JIJF

(C) IIJF

(D) JIIF

Choose the best possible analogies for Q. 8-Q. 9.

8. LOUD : STENTORIAN

(A) Mild : Noisy

(B) Painful : Prickly

(C) Adjective : Descriptive

(D) Bright : Resplendent

9. EASE : ALLEVIATE

(A) Hint : Allocate

(B) Revolt : Repudiate

(C) Question : Interrogate

(D) Collapse : Rise

Answer the questions (10-12) based on the following information given below :

There are two grandfathers and two grandmothers in a family of 21. There are six couples each having at least one child. The grandparents have 9 grandchildren altogether, among them three are Anne, Jerry and Ravi. Their father and mother are a physician and physiotherapist respectively. The Physician has a sister who is a lawyer. The Physiotherapist has two brothers, one Engineer and a Banker. Among the 9 grandchildren there are 5 granddaughters and 4 grandsons. The mother of two granddaughters among the five is the lawyer whose husband is not in the party. The father of two grandsons among the four is an Engineer, whose wife is a homemaker.

10. How many children does the banker have ?

(A) 1

(B) 2

(C) 3

(D) 4

11. How many fathers are there in the family ?

(A) 3

(B) 4

(C) 5

(D) 6

12. The banker has :

(A) Two sons

(B) Two daughters

(C) One daughter and a son

(D) No children

7. I. Inequitable distribution of all kinds of resources is certainly one of the strongest and most sinister sources of conflict.

II. Even without war, we know that conflicts continue to trouble us—they only change in character.

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IV. The economies of the industrialized western world derive 20% of their income from the sale of all kinds of arms.

(A) IJJI

(B) JIJF

(C) IIJF

(D) JIIF

Choose the best possible analogies for Q. 8-Q. 9.

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(A) 3

(B) 4

(C) 5

(D) 6

12. The banker has :

(A) Two sons

(B) Two daughters

(C) One daughter and a son

(D) No children

13. A – B means B is son of A and A × B means A is brother of B, A ÷ B means B is sister of A, and A + B means A is mother of B. Which of the following is definitely TRUE about N × K – M ÷ L ?

(A) K is father of L and M

(B) L is daughter of K and is the niece of her uncle N

(C) K is the father of M and L—his son and daughter respectively

(D) M is the uncle of K's brother N

14. In a family of seven people lawyer is married to a teacher and has three sons, one engineer, one doctor and one actor. The actor's wife is a dancer and aunt of Emily. Emily, the daughter of engineer learns martial arts with her brother Joseph. How is doctor related to Joseph ?

(A) Son

(B) Brother

(C) Nephew

(D) Uncle

15. Find out the two signs to be interchanged for making following equation correct :

$5 + 3 \times 8 - 12 \div 4 = 3$

(A) + and –

(B) – and ÷

(C) + and ×

(D) + and ÷

16. How many times will you write even numerals if you write all the numbers from 291 to 301 ?

(A) 05

(B) 09

(C) 13

(D) 18

17. If it is possible to make a number which is perfect square of a two-digit odd number with the second, the sixth and ninth digits of the numbers 187642539, which of the following is the digit in the unit's place of that two-digit odd number ?

(A) 1

(B) 7

(C) 9

(D) No such number can be made

18. A driver traveled from Srinagar to Delhi. He covered a third of the distance at a speed of 75 kph (kilometers per hour), a fifth of the remaining distance in one hour, and the rest of the distance at a speed of 80 kph. The distance between Srinagar and Delhi is 450 kilometers. If the driver had driven the entire distance at a constant speed, at what speed would he have needed to drive so that the journey from Srinagar to Delhi would take exactly the same amount of time ?

(A) 70 kmph

(B) 75 kmph

(C) 80 kmph

(D) 90 kmph

19. A group of men decided to do a job in 8 days. But since 10 men dropped out every day, the job got completed at the end of the 12th day. How many men were there at the beginning ?

(A) 165
(B) 175
(C) 80
(D) None of these

20. One man can do as much work in one day as a woman can do in 2 days. A child does one-third the work in a day as a woman. If an estate owner hires 39 pairs of hands—men, women and children in the ratio 6 : 5 : 2 and pays them in all Rs. 1, 113 at the end of the day's work, what must the daily wages of a child be, if the wages are proportional to the amount of work done ?

(A) Rs. 14
(B) Rs. 5
(C) Rs. 20
(D) Rs. 7

21. An intelligence agency forms a code of two distinct digits selected from 0, 1, 2, ..., 9 such that the first digit of the code is non-zero. The code, handwritten on a slip, can however potentially create confusion, when read upside down. For example, the code 91 may appear as 16. How many codes are there for which no such confusion can arise ?

(A) 80
(B) 71
(C) 62
(D) 53

22. How many numbers can be made with digits 0, 7, 8 which are greater than 0 and less than a million ?

(A) 486
(B) 488
(C) 726
(D) 728

23. For all 'x', $x^2 + 2px + (10 - 3p) > 0$, then the interval in which 'p' lies is :

(A) $p < -5$
(B) $-5 < p < 2$
(C) $p > 5$
(D) $2 < p < 5$

24. Find the following sum :

$1/(2^2-1) + 1/(4^2-1) + 1/(6^2-1) + ... + 1/(20^2-1)$

(A) 9/10
(B) 10/11
(C) 19/21
(D) 10/21

25. Two men X and Y started working for a certain company at similar jobs on January 1, 1950. X asked for an initial salary of Rs. 300 with an annual increment of Rs. 30. Y asked for an initial salary of Rs. 200 with a rise of Rs. 15 every six months. Assume that the arrangements remained unaltered till December 31, 1959. Salary is paid on the last day of the month. What is the total amount paid to them as salary during the period ?

(A) Rs. 93,300
(B) Rs. 93,200
(C) Rs. 93,100
(D) None of these

26. The locus of the image of origin in line rotating about the point (1, 1) is :

(A) $x^2 + y^2 = 2(x + y)$
(B) $x^2 + y^2 = (x + y)$
(C) $x^2 + y^2 = 2(x - y)$
(D) $x^2 + y^2 = (x - y)$

27. The triangle ABC has medians AD, BE, CF. AD lies along the line $y = x + 3$, BE lies along the line $y = 2x + 4$, AB has length 60 and angle $C = 90°$, then the area of ΔABC is :

(A) 100

(B) 200

(C) 300

(D) 400

28. Suppose y is a function of x. Which of the following is $d(x^3y)/dx$? Exactly one option must be correct :

(A) $3x^2y + x^3\frac{dy}{dx}$

(B) $3x^2y$

(C) $3x^2\frac{dy}{dx}$

(D) $3x^2y + x^3$

29. What is the probability of getting a sum of 9 from two throws of a dice ?

(A) 1/6

(B) 1/8

(C) 1/9

(D) 1/12

30. What is a, if B is a singular matrix ?

$$B = \begin{bmatrix} 1 & 4 \\ 2 & a \end{bmatrix}$$

(A) 5

(B) 6

(C) 7

(D) 8

31. A subnet has been assigned a subnet mask of 255.255.255.192. What is the maximum number of hosts that can belong to this subnet ?

(A) 14

(B) 30

(C) 62

(D) 126

32. The truth table below represents the Boolean function :

x	y	f(x, y)
0	0	0
0	1	0
1	0	1
1	1	1

(A) X

(B) X + Y

(C) X xor Y

(D) Y

33. The smallest integer that can be represented by an 8-bit number in 2's complement form is :

(A) –256

(B) –128

(C) –127

(D) 255

34. In the following indexed addressing mode instruction, MOV 5(R1), LOC the effective address is :

(A) EA = 5 + R1

(B) EA = R1

(C) EA = [R1]

(D) EA = 5 + [R1]

35. A computer's memory is composed of 8 K words of 32 bits each, and the smallest addressable memory unit is an 8 bit byte. How many bits will be required for the memory address ?

(A) 8

(B) 13

(C) 15

(D) 16

36. How many times will University of Kashmir be printed in the below program ?

```
#include <stdio.h>
int main()
{
    int i = 1024;
    for (; i; i>>=1)
        printf("University of Kashmir");
    return 0;
}
```

(A) 10
(B) 11
(C) Infinite
(D) The program will show a compilation error

37. Which of the following is true about constructors in C++ ?

1. They cannot be virtual.
2. They cannot be private.
3. They are automatically called by new operator.

(A) All 1, 2 and 3
(B) Only 1 and 3
(C) Only 1 and 2
(D) Only 2 and 3

38. The performance of Round Robin algorithm depends heavily on :

(A) Size of the process
(B) I/O bursts of the process
(C) CPU bursts of the process
(D) Size of the time quantum

39. Assume that there are 3 page frames which are initially empty. If the page reference string is 1, 2, 3, 4, 2, 1, 5, 3, 2, 4, 6, the number of page faults using the optimal replacement policy is _____.

(A) 6
(B) 7
(C) 8
(D) 9

40. What are the time complexities of finding 8th element from beginning and 8th element from end in a singly linked list ? Let n be the number of nodes in linked list, you may assume that n > 8.

(A) O(1) and O(n)
(B) O(1) and O(1)
(C) O(n) and O(1)
(D) O(n) and O(n)

41. The height of a binary tree is the maximum number of edges in any root to leaf path. The maximum number of nodes in a binary tree of height h is :

(A) 2^{h-1}
(B) $2^{h-1} - 1$
(C) $2^{h+1} - 1$
(D) 2^{h+1}

42. A program P reads in 500 integers in the range [0..100] representing the scores of 500 students. It then prints the frequency of each score above 50. What would be the best way for P to store the frequencies ?

(A) An array of 50 numbers
(B) An array of 100 numbers
(C) An array of 500 numbers
(D) An array of 550 numbers

43. Consider a sorted array of size N, how many minimum comparisons will it take to know whether array is sorted in ascending or descending manner :
(A) 1
(B) N/2
(C) N – 1
(D) N

44. What is the maximum number of edges in an acyclic undirected graph with N vertices ?
(A) N
(B) N + 1
(C) N – 1
(D) 2N – 1

45. A CPU has 24-bit instructions. A program starts at address 300 (in decimal). Which one of the following is a legal program counter (all values in decimal) ?
(A) 400
(B) 500
(C) 600
(D) 700

46. The minimum time delay between the initiation of two independent memory operations is called :
(A) Access Time
(B) Cycle Time
(C) Delay Time
(D) Latency Time

47. The search concept used in associative memory is :
(A) Parallel Search
(B) Sequential Search
(C) Binary Search
(D) Selection Search

48. Which one of the following protocols is NOT used to resolve one form of address to another one ?
(A) DNS
(B) ARP
(C) DHCP
(D) RARP

49. Dijkstra's algorithm is based on :
(A) Greedy Approach
(B) Divide and Conquer Paradigm
(C) Backtracking Paradigm
(D) Dynamic Programming

50. Which one of the following is NOT desired in a good Software Requirement Specifications (SRS) document ?
(A) Functional Requirements
(B) Non-Functional Requirements
(C) Goals of Implementation
(D) Algorithms for Implementation

51. Cohesion is an extension of :
(A) Abstraction Concept
(B) Refinement Concept
(C) Information Hiding Concept
(D) Modularity

52. Which of the following statements are TRUE ?
I. The context diagram should depict the system as a single bubble.
II. External entities should be identified clearly at all levels of DFDs.
III. Control information should not be represented in a DFD.
IV. A data store can be connected whether to another data store or to an external entity.
(A) II and III
(B) I and III
(C) I, II and III
(D) II and IV

53. Elapsed time between initiating a query and receiving a response is called :
(A) Response Time
(B) Processing Time
(C) Waiting Time
(D) Turnaround Time

54. If an activity has zero activity slack it :
(A) means that the project is expected to be delayed
(B) must be a dummy activity
(C) is on the critical path
(D) All of the above

55. The maximum number of superkeys for the relation schema R(E, F, G, H) with E as the key is :

(A) 5

(B) 6

(C) 7

(D) 8

56. Consider a database table R with attributes A and B. Which of the following SQL queries is illegal ?

(A) SELECT A FROM R;

(B) SELECT A, COUNT(*) FROM R;

(C) SELECT A, COUNT(*) FROM R GROUP BY A;

(D) SELECT A, B COUNT(*) FROM R GROUP BY A, B;

57. Consider the join of a relation R with a relation S. If K has m tuples and S has n tuples, then the maximum and minimum sizes of the join respectively are :

(A) m + n and 0

(B) mn and 0

(C) mn and 1

(D) None of the above

58. Which of the following concurrency control protocol ensures both conflict serializability and free from deadlock ?

(A) Time stamp ordering

(B) Two phase locking

(C) Both (A) and (B)

(D) None of the above

59. Kind of index in which records have fixed length with only two fields is classified as :

(A) Primary index

(B) Secondary index

(C) Anchor index

(D) Cluster index

60. Grayscale images have a maximum color depth of :

(A) 4 Bit

(B) 8 Bit

(C) 16 Bit

(D) 24 Bit

1. Synonym of word "***Stubborn***" is :
   (A) Easy
   (B) Obstinate
   (C) Willing
   (D) Pliable

2. Antonym of word "***Sublime***" is :
   (A) Base
   (B) Concise
   (C) Partial
   (D) Insist

3. Harassed by repeated acts of linguistics Rahul decided to "***put his foot down***", it means Rahul decided to :
   (A) Resign
   (B) Not to yield
   (C) Withdraw
   (D) Accept the proposal

4. The one word substitution for "**something which cannot be avoided**" is :
   (A) Invincible
   (B) Incredible
   (C) Inevitable
   (D) Irrevocable

5. A person who does not believe in the existence of God is :
   (A) Theist
   (B) Atheist
   (C) Cynic
   (D) None of the above

6. I have been working here _____ six months.
   (A) since
   (B) by
   (C) for
   (D) in

7. The people _____ you socialise are called friends.
   (A) with whom
   (B) who
   (C) with who
   (D) whom

8. An office or post with no work but high pay :
   (A) Honorary
   (B) Sinecure
   (C) Gratis
   (D) None of the above

9. A person who kills somebody especially for political reason :
   (A) Criminal
   (B) Murderer
   (C) Assassin
   (D) Hangman

10. Arrange the following words in alphabetical order in which they appear in dictionary, the word at third position is :
   (A) Prominent
   (B) Prohibition
   (C) Protracted
   (D) Prolong

11. "***Weight***" is related to "***Pound***", in the same way as **Current** is related to :
   (A) Ampere
   (B) Scale
   (C) Kgs
   (D) Measurement

12. "***Sailor***" is related to "***Ship***", in the same way as **Lawyer** is related to :

(A) Legal

(B) Ruling

(C) Law

(D) Court

13. Introducing Asha to guests Bahskar said "Her father is the only son of my father", how is Asha related to Bahskar ?

(A) Daughter

(B) Mother

(C) Sister

(D) Niece

14. Introducing a man, a woman said "His wife is the only daughter of my father", how is the man related to the woman ?

(A) Husband

(B) Brother

(C) Father-in-law

(D) None of the above

15. Mashesh went 15 km to the west of his house, then turned left and walked 20 kms, he then turned east and walked 25 kms and finally turned left covered 20 kms. How far is he from his house ?

(A) 15 kms

(B) 10 kms

(C) 25 kms

(D) None of the above

16. In 10 years A will be twice as old as B was 10 years ago. If at present A is 9 years older than B, then present age of B is :

(A) 29 years

(B) 19 years

(C) 49 years

(D) 39 years

17. In a group of 15 people 7 read French, 8 read English while 3 of them read none of these two. How many of them read French and English both ?

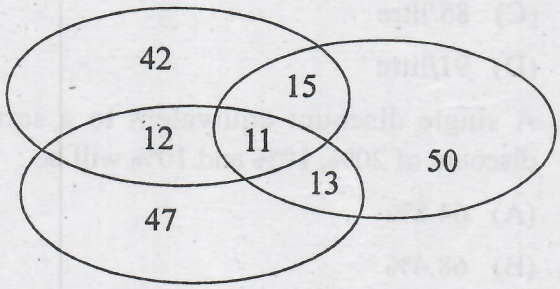
(A) 0

(B) 3

(C) 4

(D) 5

18. The following diagram shows the number of students who got distinction in three subjects out of 500 students. Study the diagram carefully and check the percentage of students who got distinction in two subjects :



(A) 18%

(B) 8%

(C) 9%

(D) 12%

19. Which of the following number is divisible by 4 ?

(A) 6897956

(B) 6893573

(C) 6897957

(D) 6897955

20. Find the least number which when divided by 27, 35, 45 and 49 leaves remainder 6 in each case :

(A) 6628

(B) 6631

(C) 6621

(D) 6620

21. How many numbers between 400 and 500 are exactly divisible by 12, 15 and 20 ?

(A) One

(B) Two

(C) Three

(D) None of these

22. The price of petrol is increased by 30% and subsequently by 40%. What is the final price of petrol per litre if the original price was 50/litre ?

(A) 100/litre

(B) 84/litre

(C) 85/litre

(D) 91/litre

23. A single discount equivalent to a series of discount of 20%, 10% and 10% will be :

(A) 64.8%

(B) 68.4%

(C) 65.4%

(D) 66.8%

24. The average score of a cricketer in three matches is 22 runs and in two other matches it is 17 runs, find average in all the five matches :

(A) 20

(B) 19.6

(C) 21

(D) 19.5

25. A car covers four successive 3 km stretches at speeds of 10 km/hour, 20 km/hour, 30 km/hour and 60 km/hour respectively. What is the average speed of the car for the entire journey ?

(A) 30 km/hour

(B) 40 km/hour

(C) 10 km/hour

(D) 20 km/hour

26. If the chord of tangents from a point p to the parabola $y^2 = 4ax$ touches $x^2 = 4by$ then the locus of p is :

(A) Circle

(B) Parabola

(C) Hyperbola

(D) None of the above

27. The triangle formed by the tangents to a parabola $y^2 = 4ax$ at the ends of the latus rectum and the double ordinate through the focus is :

(A) Equilateral

(B) Isosceles

(C) Right Angled Isosceles

(D) Dependent on value of a for clarification

28. The distance between P(3, –2) and Q(–7, –5) is :

(A) $\sqrt{115}$

(B) $\sqrt{109}$

(C) $\sqrt{91}$

(D) 11

29. The number of real solutions of the equation $\log_{0.5} x = |x|$ is :

(A) 1

(B) 2

(C) 0

(D) None of the above

30. If $x^2 + x - 1 = 0$ and $2x^2 - x + k = 0$ have a common root then :

(A) $k^2 - 7k + 1 = 0$

(B) $k^2 + 7k + 1 = 0$

(C) $k^2 + 7k - 1 = 0$

(D) $k^2 - 7k - 1 = 0$

31. If $^{20}C_r = {}^{20}C_{(r-10)}$ then $^{18}C_r$:

(A) 4896

(B) 816

(C) 1632

(D) None of the above

32. The value of

$3({}^nC_0) - 8({}^nC_1) + 13({}^nC_2) - 18({}^nC_3) + ... + n =$

(A) 0

(B) 3^n

(C) 5^n

(D) None of the above

33. If $X = \sqrt{(6+\sqrt{(6+\sqrt{(6+.....\infty)})})}$ then x =

(A) 3

(B) 6

(C) –2

(D) None of the above

34. $\sqrt{(10+2\sqrt{6}+2\sqrt{15}+2\sqrt{10})}$ =

(A) $\sqrt{2}+\sqrt{3}+\sqrt{5}$

(B) $2-\sqrt{3}+\sqrt{5}$

(C) $\sqrt{2}+2(\sqrt{3})+\sqrt{5}$

(D) None of the above

35. If A, B and C can do a work in x, y and z days respectively, then all of them working together can finish the work in :

(A) $\frac{xyz}{x+y+z}$ days

(B) $\frac{xyz}{xy+yz}$ days

(C) $\frac{xyz}{xy+yz+xz}$ days

(D) None of the above

36. A person buys an article for Rs. 600 and sells the same with a loss of 30%, find the selling price of the article :

(A) 240

(B) 420

(C) 280

(D) 820

37. At what time between 8 and 9 O' clock will the hands of a clock be in the same straight line but not together ?

(A) $10\frac{10}{11}$ minutes past 8

(B) $50\frac{10}{11}$ minutes past 8

(C) $10\frac{12}{11}$ minutes past 8

(D) None of the above

38. What will be output if you will compile and execute the following c code ?

```
void main( )
    {
        int i;
        float a = 7.2;
        char *ptr;
        ptr = (char *) & a;
        for (i = 0; i <= 3; i++)
        printf("%d ",*ptr++);
    }
```

(A) 102 102 –26 64

(B) 102 56 –80 32

(C) 102 201 62 46

(D) None of the above

39. What will be output if you will compile and execute the following c code ?

```
void main( )
    {
        int a = –909;
        a = a > > 3;
        printf("%d", a);
    }
```

(A) 110

(B) 114

(C) –114

(D) None of the above

40. When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, it is called :

(A) Critical condition

(B) Race condition

(C) Dynamic condition

(D) None of the above

41. If a process is executing in its critical section, then no other processes can be executing in their critical section. This condition is called :

(A) mutual exclusion

(B) critical exclusion

(C) synchronous exclusion

(D) asynchronous exclusion

42. Bring a page into memory only when it is needed is called :

(A) Demand Memory

(B) Demand Paging

(C) Page fault

(D) Segmentation

43. CPU fetches the instruction from memory according to the value of :

(A) Program counter

(B) Status register

(C) Instruction register

(D) Accumulator

44. How many instances of an abstract class can be created ?

(A) 0

(B) 1

(C) 2

(D) 100

45. *cout* is a/an _____.

(A) Operator

(B) Function

(C) Object

(D) None of the above

46. What is the output of this program ?

```
#include <iostream>
    using namespace std;
int main ( )
    {
        int n;
        for (n = 4; n > 0; n--)
            {
                cout << n;
                    if (n = = 3)
                        break ;
            }
        return 0;
    }
```

(A) 4

(B) 43

(C) 143

(D) 1143

47. RAD stands for :
(A) Relative Application Development
(B) Rapid Application Development
(C) Rapid Application Document
(D) None of the above

48. "**Select * from employee;**". What type of statement is this ?
(A) DML
(B) DDL
(C) View
(D) Integrity constraint

49. The term _____ is used to refer to a table row.
(A) Attribute
(B) Tuple
(C) Field
(D) Instance

50. Which phase is not available in software life cycle ?
(A) Coding
(B) Testing
(C) Maintenance
(D) Abstraction

51. In the spiral model 'risk analysis' is performed :
(A) In the first loop
(B) In the first and second loop
(C) In every loop
(D) Before using spiral model

52. Alpha and Beta Testing are forms of :
(A) Acceptance testing
(B) Integration testing
(C) System Testing
(D) None of the above

53. <Base> tag is designed to appear only between :
(A) <head>
(B) <title>
(C) <body>
(D) <form>

54. Main container for <TR>, <TD> and <TH> is :
(A) <table>
(B) <group>
(C) <data>
(D) All of the above

55. An eight bit byte is capable of representing how many different characters ?
(A) 64
(B) 128
(C) 256
(D) None of the above

56. Which of the following is non-linear data structure ?
(A) Trees
(B) Linked List
(C) Array
(D) All of the above

57. The complexity of linear search algorithm is :
(A) O(n)
(B) O(log n)
(C) O(n2)
(D) None of the above

58. The complexity of Bubble sort algorithm is :
(A) O(n)
(B) O(log n)
(C) O(n2)
(D) None of the above

59. Data about data is termed as :
(A) Meta Data
(B) Directory
(C) Data Bank
(D) All of the above

60. The candidate key that you choose to identify each row uniquely is called :
(A) Alternate Key
(B) Primary Key
(C) Foreign Key
(D) None of the above

602

Sr. No. .....

ENTRANCE TEST-2017

SCHOOL OF APPLIED SCIENCES & TECHNOLOGY

M.Sc. I.T. (Information Technology)

Total Questions : 60

Time Allowed : 70 Minutes

Question Booklet Series B

Roll No. : | | | | | | |

Instructions for Candidates :

1. Write your Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
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5. Use only blue/black ball point pen to darken the circle of correct/most appropriate response. In no case gel/ink pen or pencil should be used.
6. Do not darken more than one circle of options for any question. A question with more than one darkened response shall be considered wrong.
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10. Calculators and mobiles shall not be permitted inside the examination hall.
11. Rough work, if any, should be done on the blank sheets provided with the question booklet.
12. OMR Answer sheet must be handled carefully and it should not be folded or mutilated in which case it will not be evaluated.
13. Ensure that your OMR Answer Sheet has been signed by the Invigilator and the candidate himself/herself.
14. At the end of the examination, hand over the OMR Answer Sheet to the invigilator who will first tear off the original OMR sheet in presence of the Candidate and hand over the Candidate's Copy to the candidate.

SEAL

Qn: 11

1. Statements: In a one day cricket match, the total runs made by a team were 200. Out of these 160 runs were made by spinners.

Conclusions:

I. 80% of the team consists of spinners.

II. The opening batsmen were spinners.

(A) Only conclusion I follows

(B) Only conclusion II follows

(C) Either I or II follows

(D) Neither I nor II follows

2. Statements: Prime age school-going children in urban India have now become avid as well as more regular viewers of television, even in households without a TV. As a result there has been an alarming decline in the extent of readership of newspapers.

Conclusions:

I. Method of increasing the readership of newspapers should be devised.

II. A team of experts should be sent to other countries to study the impact of TV on the readership of newspapers.

(A) Only conclusion I follows

(B) Only conclusion II follows

(C) Either I or II follows

(D) Neither I nor II follows

3. Statements: Any student who does not behave properly while in the school brings bad name to himself and also for the school.

Conclusions:

I. Such student should be removed from the school.

II. Stricter discipline does not improve behaviour of the students.

(A) Only conclusion I follows

(B) Only conclusion II follows

(C) Either I or II follows

(D) Neither I nor II follows

4. Statements: Until our country achieves economic equality, political freedom and democracy would be meaningless.

Conclusions:

I. Political freedom and democracy go hand in hand.

II. Economic equality leads to real political freedom and democracy.

(A) Only conclusion I follows

(B) Only conclusion II follows

(C) Either I or II follows

(D) Neither I nor II follows

5. Statements: This world is neither good nor evil; each man manufactures a world for himself.

Conclusions:

I. Some people find this world quite good.

II. Some people find this world quite bad.

(A) Only conclusion I follows

(B) Only conclusion II follows

(C) Either I or II follows

(D) Both I and II follow

6. Statements: Water supply in wards A and B of the city will be affected by about 50% on Friday because repairing work of the main lines is to be carried out.

Conclusions:

I. The residents in these wards should economise on water on Friday.

II. The residents in these wards should store some water on the previous day.

(A) Only conclusion I follows

(B) Only conclusion II follows

(C) Either I or II follows

(D) Both I and II follow

Each question (Q. 7 to 9) has an underlined word followed by four answer choices. You will choose the word that is a necessary part of the underlined word:

7. guitar

(A) band (B) teacher

(C) songs (D) strings

8. shoe

(A) sole (B) leather

(C) laces (D) walking

9. school

(A) student (B) report card

(C) test (D) learning

10. If a, b, c are positive integers, then the determinant

$$\Delta = \begin{vmatrix} a^2 + x & ab & ac \\ ab & b^2 + x & bc \\ ac & bc & c^2 + x \end{vmatrix}$$ is divisible by

(A) x^3 (B) x^2

(C) $(a^2 + b^2 + c^2)$ (D) None of these

11. If $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ a & b & -1 \end{bmatrix}$, then $A^2 =$

(A) Unit matrix (B) Null matrix

(C) A (D) –A

12. If the coefficient of x in the expansion of $\left(x^2 + \frac{k}{x}\right)^5$ is 270, then k =

(A) 1 (B) 2

(C) 3 (D) 4

13. The digit in the unit place of the number $(183!) + 3^{183}$ is

(A) 7 (B) 6

(C) 3 (D) 0

14. The angle between a pair of tangents drawn from a point P to the circle $x^2 + y^2 + 4x - 6y + 9\sin^2\alpha + 13\cos^2\alpha = 0$ is 2α The equation of the locus of the point P is :

(A) $x^2 + y^2 + 4x - 6y + 4 = 0$

(B) $x^2 + y^2 + 4x - 6y - 9 = 0$

(C) $x^2 + y^2 + 4x - 6y - 4 = 0$

(D) $x^2 + y^2 + 4x - 6y + 9 = 0$

15. For the circle $x^2 + y^2 + 6x - 8y + 9 = 0$, which of the following statements is true?

(A) Circle passes through the point (–3, 4)

(B) Circle touches x-axis

(C) Circle touches y-axis

(D) None of these

16. The equation of a line passing through the point (–3, 2, – d) and equally inclined to the axes are

(A) $x - 3 = y + 2 = z - 4$

(B) $x + 3 = y - 2 = z + 4$

(C) $\frac{x+3}{1} = \frac{y-2}{2} = \frac{z+4}{3}$

(D) None of these

17. The projection of a line on a co-ordinate axes are 2, 3, 6. Then the length of the line is

(A) 7 (B) 5

(C) 1 (D) 11

18. If $\sin^{-1} a + \sin^{-1} b + \sin^{-1} c = \pi$, then the value of $a\sqrt{(1-a^2)} + b\sqrt{(1-b^2)} + c\sqrt{(1-c^2)}$ will be :

(A) 2abc (B) abc

(C) $\frac{1}{2}abc$ (D) $\frac{1}{3}abc$

19. If $\sec 4\theta - \sec 2\theta = 2$, then the general value of θ is :

(A) $(2n+1)\frac{\pi}{4}$

(B) $(2n+1)\frac{\pi}{10}$

(C) $n\pi + \frac{\pi}{2}$ OR $\frac{n\pi}{5} + \frac{\pi}{10}$

(D) None of these

20. A die is thrown three times. Getting a 3 or a 6 is considered success. Then the probability of at least two successes is

(A) $\frac{2}{9}$ (B) $\frac{7}{27}$

(C) $\frac{1}{27}$ (D) None of these

21. If the probability of X to fail in the examination is 0.3 and that for Y is 0.2, then the probability that either X or Y fail in the examination is

(A) 0.5 (B) 0.44

(C) 0.6 (D) None of these

22. A bag contains 3 red, 4 white and 5 black balls. Three balls are drawn at random. The probability of their being different colours is

(A) $\frac{3}{11}$ (B) $\frac{2}{11}$

(C) $\frac{8}{11}$ (D) None of these

23. The chances of throwing a total of 3 or 5 or 11 with two dice is :

(A) $\frac{5}{36}$ (B) $\frac{1}{9}$

(C) $\frac{2}{9}$ (D) $\frac{19}{36}$

24. $\tanh(x+y)$ equals

(A) $\frac{\tanh x + \tanh y}{1 - \tanh x \tanh y}$

(B) $\frac{\tanh x + \tanh y}{1 + \tanh x \tanh y}$

(C) $\frac{\tanh x - \tanh y}{1 - \tanh x \tanh y}$

(D) $\frac{\tanh x - \tanh y}{1 + \tanh x \tanh y}$

25. In how many ways can 5 keys be put in a ring?

(A) $\frac{1}{2}4!$ (B) $\frac{1}{2}5!$

(C) 4! (D) 5!

26. If the coefficients of x^7 and x^8 in $\left(2 + \frac{x}{3}\right)^n$ are equal, then n is :

(A) 56 (B) 55

(C) 45 (D) 15

27. W The register that stores the bits required to mask the interrupts is _____.

(A) Status Register

(B) Interrupt Service Register

(C) Interrupt Mask Register

(D) Interrupt Request Register

28. 8086 architecture has _____ bit data bus and _____ bit address bus.

(A) 16, 20 (B) 8, 16

(C) 8, 8 (D) 16, 16

29. Which of the following binary system has two zeroes ?

(A) Signed magnitude (B) l's complement

(C) 2's complement (D) Both (A) & (B)

30. Which of the following represents one billion characters ?

(A) Mega Byte (B) Giga Byte

(C) Tera Byte (D) Kilo Byte

31. The addition of two binary numbers without carries is same as _____ operation of the numbers.

(A) AND (B) OR

(C) XOR (D) NOR

32. A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as:

(A) Queue (B) Stack

(C) Tree (D) Linked List

33. What is the value of the postfix expression?

a, b, c, d + – * (where a = 8, b = 4, c = 2 and d = 5)

(A) – 3/8 (B) – 8/3

(C) 24 (D) – 24

34. Suppose you want to delete the name that occurs before "Vivek" in an alphabetical listing. Which of the following Data Structures shall be most efficient for this operation ?

(A) Circular Linked List (B) Doubly Linked List

(C) Linked List (D) DeQueue

35. The in-order traversal of the tree will yield a sorted listing of elements of tree in :

(A) Binary Tree (B) Binary Search Tree

(C) Heaps (D) None

36. The number of different trees with 8 nodes is

(A) 256 (B) 255

(C) 248 (D) None

37. An SRS

(A) Establishes the basis for agreement between the client and the supplier

(B) Provides a reference for validation of the final product

(C) Is a prerequisite to high quality Software

(D) All of the above

38. Which Model is the simplest model in Software Development ?

(A) Waterfall Model (B) Prototyping

(C) Iterative (D) None of them

39. Emergency fixes known as patches are result of :

(A) Adaptive Maintenance

(B) Perfective Maintenance

(C) Corrective Maintenance

(D) None of them

40. Linear Sequential Model is :

(A) Waterfall Model (B) Prototyping

(C) Spiral (D) Incremental

41. The DFD depicts :

(A) Flow of data (B) Flow of control

(C) Both (A) & (B) (D) None of them

42. Context Diagram explains :

(A) The overview of the system

(B) The internal view of the system

(C) The entries of the system

(D) None of them

43. Which Layer adds both header and trailer?

(A) Transport (B) Data link

(C) Physical (D) Transport

44. TCP is :

(A) Connection oriented and reliable

(B) Connection less and unreliable

(C) Connection oriented and unreliable

(D) Connection less and reliable

45. Loss in energy of signal is known as :

(A) Attenuation (B) Noise

(C) Distortion (D) None

46. The _____ measures the relative strengths of two signals or a signal at two different points.

(A) Frequency (B) Attenuation

(C) Throughput (D) Decibel

47. Which level of abstraction describes what data are stored in the database ?

(A) Physical level (B) View level

(C) Abstraction level (D) Logical level

48. An Entity Set that does not have sufficient attributes to form a primary key is

(A) Strong Entity Set (B) Weak Entity Set

(C) Simple Entity Set (D) Primary Entity Set

49. A network schema :

(A) Restricts to one to many relationship

(B) Permits many to many relationship

(C) Stores data in a database

(D) Stores data in a relation

50. Which of the following is not a type of Database Management System ?

(A) Hierarchical (B) Network

(C) Relational (D) Sequential

51. Ten new television shows appeared during the month of September. Five of the shows were sitcoms, three were hour-long dramas, and two were news-magazine shows. By January, only seven of these new shows were still on the air. Five of the shows that remained were sitcoms.

(A) Only one of the news-magazine shows remained on the air

(B) Only one of the hour-long dramas remained on the air

(C) At least one of the shows that was cancelled was an hour-long drama

(D) Television viewers prefer sitcoms over hour-long dramas

52. Sara lives in a large city on the East Coast. Her younger cousin Marlee lives in the Mid-west in a small town with fewer than 1,000 residents. Marlee has visited Sara several times during the past five years. In the same period of time, Sara has visited Marlee only once.

(A) Marlee likes Sara better than Sara likes Marlee

(B) Sara thinks small towns are boring

(C) Sara is older than Marlee

(D) Marlee wants to move to the East Coast

53. Tim's commute never bothered him because there were always seats available on the train and he was able to spend his 40 minutes comfortably reading the newspaper or catching up on paperwork. Ever since the train schedule changed, the train has been extremely crowded, and by the time the doors open at his station, there isn't a seat to be found.

(A) Tim would be better off taking the bus to work

(B) Tim's commute is less comfortable since the train schedule changed

(C) Many commuters will complain about the new train schedule

(D) Tim will likely look for a new job closer to home

54. Choose the missing term out of the given alternatives.

AZ, GT, MN, ?, YB

(A) KF (B) RX

(C) SH (D) TS

55. A man can cover a distance in 1 hr 24 min by covering 2/3 of the distance at 4 km/h and the rest at 5 km/h. The total distance is :

(A) 5 km (B) 6 km

(C) 7 km (D) 8 km

56. Excluding stoppages, the speed of a bus is 54 kmph and including stoppages, it is 45 kmph. For how many minutes does the bus stop per hour?

(A) 8 min (B) 5 min

(C) 10 min (D) 14 min

57. A and B together have Rs. 1210. If $\frac{4}{15}$ of A's amount is equal to $\frac{2}{5}$ of B's amount, how much amount does B have?

(A) Rs. 460 (B) Rs. 484

(C) Rs. 550 (D) Rs. 664

58. In a mixture 60 litres, the ratio of milk and water 2 : 1. If this ratio is to be 1 : 2, then the quantity of water to be further added is:

(A) 20 litres (B) 30 litres

(C) 40 litres (D) 60 litres

59. Salaries of Ravi and Sumit are in the ratio 2 : 3. If the salary of each is increased by Rs. 4000, the new ratio becomes 40 : 57. What is Sumit's salary?

(A) Rs. 17,000 (B) Rs. 20,000

(C) Rs. 25,500 (D) Rs. 38,000

60. When they heard news of the hurricane, Maya and Julian decided to change their vacation plans. Instead of traveling to the island beach resort, they booked a room at a fancy new spa in the mountains. Their plans were a bit more expensive, but they'd heard wonderful things about the spa and they were relieved to find availability on such short notice.

(A) Maya and Julian take beach vacations every year

(B) The spa is overpriced

(C) It is usually necessary to book at least six months in advance at the spa

(D) Maya and Julian decided to change their vacation plans because of the hurricane

Sr. No. 047

ENTRANCE TEST-2016

FACULTY OF APPLIED SCIENCE & TECHNOLOGY

M.Sc. INFORMATION TECHNOLOGY

Question Booklet Series **A**

Total Questions : 60
Time Allowed : 70 Minutes

Roll No. : | | | | | | |

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12. OMR Answer sheet must be handled carefully and it should not be folded or mutilated in which case it will not be evaluated.
13. Ensure that your OMR Answer Sheet has been signed by the Invigilator and the candidate himself/herself.
14. At the end of the examination, hand over the OMR Answer Sheet to the invigilator who will first tear off the original OMR sheet in presence of the Candidate and hand over the Candidate's Copy to the candidate.

SEAL

1. The brain of any computer system is :

   (A) ALU
   (B) CPU
   (C) Control unit
   (D) Memory

2. A term associated with the comparison of processing speeds of different computer systems is :

   (A) EFTS
   (B) MIPS
   (C) MPG
   (D) CPS

3. What is the number of bit patterns provided by a 7-bit code ?

   (A) 128
   (B) 64
   (C) 256
   (D) 512

4. Which gate is best used as a basic comparator ?

   (A) NOR
   (B) OR
   (C) Exclusive-OR
   (D) AND

5. In which of the following base systems is 123 not a valid number ?

   (A) Base 10
   (B) Base 16
   (C) Base 8
   (D) Base 3

6. What is the octal equivalent of the binary number $(10111101)_2$?

   (A) 675
   (B) 275
   (C) 572
   (D) 573

7. The time that elapses between the initiation of an operation and completion of that operation is called :

   (A) Throughput
   (B) Memory response time
   (C) Memory access time
   (D) Execution time

8. What is the control unit's function in the CPU ?

(A) To transfer data to primary storage

(B) To store program instruction

(C) To perform logic operations

(D) To decode program instruction

9. A simple way of performing I/O tasks is to use a method known as :

(A) program-controlled I/O

(B) program-controlled input

(C) program-controlled output

(D) I/O operation

10. What will be the values of x, m and n after execution of the following statements ?

```
Void main (){
int x, m, n;
m = 10;
n = 15;
x = ++m + n++;
}
```

(A) x = 25, m = 10, n = 15

(B) x = 27, m = 10, n = 15

(C) x = 26, m = 11, n = 16

(D) x = 27, m = 11, n = 16

11. Which of the following is user defined data type ?

(A) Public

(B) Class

(C) Private

(D) (A) & (C) Both

12. The mechanism which allows a class A to inherit properties of a class B is known as :

(A) Data abstraction
(B) Encapsulation
(C) Inheritance
(D) Polymorphism

13. On which principle does a stack work ?

(A) LIFO
(B) FIFO
(C) LILO
(D) All of the above

14. Which of the following is not a limitation of binary search algorithm ?

(A) must use a sorted array
(B) requirement of sorted array is expensive when a lot of insertions and deletions are needed
(C) there must be a mechanism to access middle element directly
(D) binary search algorithm is not efficient when the data elements are more than 1000

15. The number of swappings needed to sort numbers 8, 22, 7, 9, 31, 19, 5, 13 in ascending order using bubble sort is :

(A) 11
(B) 12
(C) 13
(D) 14

16. Linked lists are not suitable data structure of which one of the following problems ?

(A) Insertion sort
(B) Binary search
(C) Radix sort
(D) Polynomial manipulation

17. The _____ operator preserves unmatched rows of the relations being joined.

(A) Inner join
(B) Outer join
(C) Union
(D) Union join

18. A _____ normal form normalization will be needed where all attributes in a relation tuple are not functionally dependent only on the key attribute.

(A) First
(B) Second
(C) Third
(D) Fourth

19. The number of attributes in relation is called as its _____ .

(A) Cardinality
(B) Degree
(C) Tuples
(D) Entity

20. Which of the following statements is false with respect to a Data Dictionary ?

(A) It is a repository of the elements in a system
(B) Data dictionary and data store both are same
(C) It manages detail
(D) It communicates the common meanings for system elements and activities

21. Structured Programming involves :

(A) functional modularization
(B) localization of errors
(C) decentralized programming
(D) stress on analysis

22. Cost-Benefit Analysis is performed during :

(A) Analysis phase
(B) Design phase
(C) Feasibility study phase
(D) Implementation phase

23. In a LAN network every system is identified by :

(A) Name
(B) MAC address
(C) IP address
(D) Serial number given by the manufacturer

24. Telephone systems may be classified as :

(A) simplex and symmetrical
(B) duplex and asymmetrical
(C) simplex and asymmetrical
(D) duplex and symmetrical

25. What are the uses of subnetting ?

(A) It divides one large network into several smaller ones
(B) It divides network into network classes
(C) It speeds up the speed of network
(D) None of the above

26. A network that provides a constant bandwidth for the complete duration of a message transfer is a:

(A) cell switched network
(B) circuit switched network
(C) packet switched network
(D) none of the above

27. Baseband transmission may be defined as the transmission of a signal over a link :

(A) without any change in frequency
(B) by means of wires
(C) at a different band of frequencies
(D) which is relatively short

28. Microsoft FrontPage is an example of a(n) :

(A) authorizing streaming program
(B) graphical map editor
(C) web page editor
(D) robotics authoring program

29. The creation of a storyboard is essential to the development of the project. This is the _____ step of development.

(A) planning
(B) designing
(C) creating
(D) supporting

30. Vector images are :

(A) composed of pixels

(B) composed of thousands of dots

(C) slightly more difficult to manipulate than other images

(D) composed of objects such as lines, rectangles, and ovals

31. A candidate appearing for an examination has to secure 40% marks to pass paper I. But he secured only 40 marks and failed by 20 marks. What is the maximum mark for paper I ?

(A) 100 (B) 150

(C) 180 (D) 200

32. If FRIEND is coded as HUMJTK, how can CANDLE be written in that code ?

(A) DEQJQM (B) DCQHQK

(C) EDRIRL (D) ESJFME

33. In the following question, various terms of an alphabet series are given with one or more terms missing as shown by (?). Choose the missing terms out of the given alternatives :

(A) KSU (B) LMN

(C) SOV (D) SOW

34. FLEXIBLE : RIGID :: CONFIDENCE : ?

(A) Diffidence (B) Indifference

(C) Cowardice (D) Scare

35. Find the odd one out :

(A) Mother (B) Friend

(C) Sister (D) Brother

36. A told B that C is his father's nephew. D is A's cousin but not the brother of C. What relationship is there between D and C ?

(A) Father (B) Sisters

(C) Aunt (D) Mother

37. Choose the correct alternative that will continue the same pattern and complete the series. 6, 11, 21, 36, 56, ?

(A) 51 (B) 71

(C) 81 (D) 41

38. A man covers a distance on scooter. Had he moved 3 kmph faster he would have taken 40 min less. If he had moved 2 kmph slower, he would have taken 40 min more. The distance is :

(A) 30 km (B) 40 km

(C) 45 km (D) 50 km

39. 12 men can complete a work in 18 days. Six days after they started working, 4 more men joined them. In how many days will all of them together complete the remaining work ?

(A) 10 days (B) 18 days

(C) 11 days (D) 9 days

40. Speed of a boat in still water is 9 km/hr. It goes 12 km down stream and comes back to the starting point in three hours. What is the speed of water in the stream?

(A) 3.5 km/hr (B) 3 km/hr

(C) 5 km/hr (D) 5.5 km/hr

41. In a class of 100 students, 50 students passed in Mathematics and 70 passed in English, 5 students failed in both Mathematics and English. How many students passed in both the subjects?

(A) 50 (B) 40

(C) 35 (D) 25

42. A mobile set is marked at Rs. 3880 cash or for Rs. 840 cash down payment followed by three equal monthly installments. If the rate of interest charged under the installment plan is 16% per annum, find the monthly installment.

(A) 1080 (B) 1200

(C) 1040 (D) 1100

43. The area of a grassy plot is 480 metres. If each side had been 5m longer, the area would have been increased by 245 square metres. Find the length of the fence to surround it.

(A) 87 (B) 88

(C) 90 (D) 92

44. 20 men can finish a piece of work in 30 days. When should 5 men leave the work so that it may be finished in 35 days ?

(A) 10 days (B) 20 days

(C) 25 days (D) 15 days

45. A man gains 10% by selling a certain article for a certain price. If he sells it at double the price then the profit made is :

(A) 120% (B) 60%

(C) 100% (D) 80%

46. Find the y-intercept of $y = x^2 + 6x + 9$:

(A) 6 (B) 9

(C) 12 (D) 16

47. What is the slope of the line passing through the points (4, 6) and (–1, –2) ?

(A) 4/3 (B) 3/4

(C) 8/5 (D) 5/8

48. The roots of the quadratic equation $ax^2 + bx + c = 0$ will be reciprocal to each other if:

(A) $a = \frac{1}{c}$ (B) $a = c$

(C) $b = ac$ (D) $a = b$

49. A lady gives a dinner party to six guests. The number of ways in which they may be selected from among ten friends, if two of the friends will not attend the party together is :

(A) 112
(B) 140
(C) 164
(D) None of these

50. 3, x, 27 are the first three terms of a sequence. Determine the value of x if the sequence is geometric :

(A) 6
(B) ±9
(C) 12
(D) None of these

51. The average monthly production of a factory for the first 8 months is 2500 units, the next 4 months 1200 units, the average monthly production of the year will be :

(A) 2066.55 units
(B) 5031.10 units
(C) 4021.12 units
(D) 3012.11 units

52. A number a is to be chosen at random from the set (1, 2, 3, 4, 5, 6). A number b is then to be chosen from the remaining five numbers, what is the probability that a/b is an integer?

(A) 4/15
(B) 2/9
(C) 1/5
(D) 1/6

53. The number of functions from a 'm' element set to a 'n' element set is :

(A) $m+n$
(B) mn
(C) m^n
(D) $m-n$

54. Which of the following is not binomial ?

(A) $m+n$
(B) mn
(C) $m-n$
(D) m^2-n^2

55. The height of cuboid whose volume is 200 cm^3 and base area is 20 cm^2 is :

(A) 220 cm
(B) 100 cm
(C) 10 cm
(D) 20 cm

56. If

$$A = \begin{bmatrix} 5 & 3 & 2 \\ 0 & 4 & 1 \\ 0 & 0 & 3 \end{bmatrix}$$

then $|A| = ?$

(A) 30 (B) 40

(C) 50 (D) 60

57. If A and B are matrices, then which from the following is true ?

(A) $A + B \neq B + A$

(B) $(A^t)^t \neq A$

(C) $AB \neq BA$

(D) All are true

58. The function $g(x) = \sin x - \cos x$ and $f(x) = \log\left(\frac{1-x}{1+x}\right)$ are :

(A) both odd

(B) f(x) is odd and g(x) is neither even nor odd

(C) f(x) is neither even nor odd and g(x) is odd

(D) f(x) is odd and g(x) is even

59. A solution of the differential equation $\left[\frac{dy}{dx}\right]^2 - x\frac{dy}{dx} + y = 0$ is :

(A) $y = 2$ (B) $y = 2x$

(C) $4y = x^2 + c$ (D) $y = 2x^2 - 4$

60. Degree of the differential equation $\left[\frac{d^2y}{dx^2}\right]^5 + \frac{4\left[\frac{d^2y}{dx^2}\right]^3}{\left[\frac{d^3y}{dx^3}\right]} + \frac{d^3y}{dx^3} = x^2 - 1$, then :

(A) $m = 3, n = 3$ (B) $m = 3, n = 2$

(C) $m = 3, n = 5$ (D) $m = 3, n = 1$

ROUGH WORK

SEAL

Masters of Information Technology (IT)/A

1. The smallest addressable element on display device is called :
   (A) Bit
   (B) Byte
   (C) Pixel
   (D) None of the above

2. Which of the following is not a type of data storage ?
   (A) RAM
   (B) Magnetic disc
   (C) Optical disc
   (D) Magnetic Tape

3. In paged memory systems, if the page size is increased, then the internal fragmentation generally :
   (A) becomes less
   (B) becomes more
   (C) remains constant
   (D) None of these

4. Which of the following is valid IP address ?
   (A) 10.1.0.256
   (B) 10.70.199.106
   (C) 100.255.256.01
   (D) None of the above

5. The capacity of a memory unit is defined by the number of words multiplied by the number of bits per word. How many separate address and data line are needed for a memory of 4 k × 16 ?
   (A) 10 address lines 16 data lines
   (B) 12 address lines 12 data lines
   (C) 12 address lines 16 data lines
   (D) 12 address lines 8 data lines

6. The maximum length in bytes of an IPV4 datagram is :
   (A) 256
   (B) 1024
   (C) 65535
   (D) None of the above

7. The reverse address resolution protocol (RARP) in the IP protocol family is used to find out :
   (A) The Ethernet address that corresponds to a given IP address
   (B) The subnet mask that corresponds to a given Ethernet address
   (C) The IP address that corresponds to a given Ethernet address
   (D) None of the above

SEAL

CN

8. A device that has the capability to determine the best path and transmit data packets over that path in a network is called a :

(A) repeater
(B) router
(C) hub
(D) None of the above

9. In Class C type IP address, what is the maximum number of (hosts per network) machines which we can use it for, if a unique number is allocated for each machine ?

(A) 512
(B) 250
(C) 254
(D) 256

10. A system program that combines the separately compiled modules of a program into a form suitable for execution :

(A) Assembler
(B) Linking loader
(C) Compiler
(D) None of the above

11. The address of the next instruction to be executed by the current process is provided by the :

(A) Cache
(B) Program counter
(C) Process stack
(D) Pipe

12. Suppose that a process is in "Blocked" state waiting for some I/O service. When the service is completed, it goes to the :

(A) Running state
(B) Ready state
(C) Terminated state
(D) None of the above

13. A binary system based on Two's Complement arithmetic gives the answer 10101011. The decimal equivalent of this answer is :

(A) 171
(B) 45
(C) −85
(D) None of the above

14. Which one of the following is a synchronization tool ?

(A) Thread
(B) Pipe
(C) Semaphore
(D) Socket

15. Data Manipulation Language enables users to :

(A) Insert, Retrieve, Delete, Update information stored in database

(B) Creation of tables

(C) Alteration of tables

(D) All of the above

16. In the relational model, relationships between relations or tables are created by using :

(A) Composite keys

(B) Candidate keys

(C) Foreign keys

(D) All of the above

17. A data structure where elements can be added or removed at either end :

(A) Deque

(B) Stacks

(C) Queues

(D) None of the above

18. A tuple is a (n) :

(A) Column of a table

(B) Two dimensional table

(C) Row of a table

(D) Key of a table

19. In an Entity-Relationship Diagram oval represents :

(A) Entity

(B) Attribute

(C) Database

(D) Table

20. The postfix expression for *+ab – cd is :

(A) a b + c d – *

(B) a b c d + – *

(C) a b + c d* –

(D) None of the above

21. If the sequence of operations on stack are as follows push (3), push (2), push (3), push (3), pop, pop pop push (3), push (2), pop, push (2), pop, pop, pop the sequence of popped out values are :

(A) 3, 3, 2, 2, 2, 3, 3

(B) 3, 3, 2, 2, 3, 3, 2

(C) 3, 2, 2, 2, 3, 3, 3

(D) None of the above

SEAL

28. What result is in the variable x after execution of the following statements ?

```
main()
{
    int x = 3, y = 8;
    while(++x<=15)
    {
        y++;
    }
    printf("%d",y);
}
```

(A) 10
(B) 15
(C) 20
(D) None of the above

29. The binary equivalent of the decimal number 4.875 is :

(A) 100.111
(B) 001.100
(C) 010.111
(D) None of the above

30. What is the output ?

```
main()
{
    int x = 3, y = 6, z = 12;
    printf("%d", x+=(x+=3, 6, y));
}
```

(A) 11
(B) 12
(C) 13
(D) None of the above

31. If $\begin{bmatrix} 1 & 0 \\ 3 & -4 \end{bmatrix} + \begin{bmatrix} a & 1 \\ -1 & b \end{bmatrix} = \begin{bmatrix} 2 & 1 \\ 2 & -2 \end{bmatrix}$, then value of a, b are :

(A) 1, –2
(B) –1, 2
(C) –1, –2
(D) 1, 2

32. If $\begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 5 \\ 4 \end{bmatrix}$, then :

(A) x = 2, y = 1
(B) x = 1, y = 2
(C) x = 3, y = 2
(D) x = 2, y = 3

SEAL

33. If $\Delta = \begin{vmatrix} a & b & c \\ x & y & z \\ p & q & r \end{vmatrix}$, then $\begin{vmatrix} ka & kb & kc \\ kx & ky & kz \\ kp & kq & kr \end{vmatrix}$ equals :

(A) $k\Delta$
(B) $3\,k\Delta$
(C) $k^3\Delta$
(D) $k\Delta^3$

34. If $A = \begin{bmatrix} 1 & -6 & 2 \\ 0 & -1 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 2 \\ 2 \\ 1 \end{bmatrix}$ then AB equals :

(A) $[-8 \quad 3]$
(B) $\begin{bmatrix} -8 \\ 3 \end{bmatrix}$
(C) $\begin{bmatrix} 2 & -12 & 2 \\ 0 & -2 & 5 \end{bmatrix}$
(D) $\begin{bmatrix} 2 & 12 & 4 \\ 0 & -2 & -10 \end{bmatrix}$

35. If $A = \begin{bmatrix} 2 & -1 \\ -2 & 1 \end{bmatrix}$, then $A^{10} =$

(A) $3A$
(B) $3^5 A$
(C) $3^{10} A$
(D) $3^9 A$

36. $\dfrac{\sin 2\theta}{1+\cos\theta}$ equals :

(A) $\cot\theta$
(B) $\sin\theta$
(C) $\operatorname{cosec}\theta$
(D) $\tan\theta$

37. Which of the following is incorrect ?

(A) $2\sin A \sin B = \cos(A-B) - \cos(A+B)$
(B) $2\sin A \cos B = \sin(A+B) + \sin(A-B)$
(C) $2\cos A \sin B = \sin(A+B) + \sin(A-B)$
(D) $2\cos A \cos B = \cos(A+B) + \cos(A-B)$

38. $\tan 20^\circ + \tan 40^\circ + \sqrt{3}\tan 20^\circ \tan 40^\circ$ is equal to :

(A) $\sqrt{3}/2$
(B) $\sqrt{3}/4$
(C) $\sqrt{3}$
(D) 1

39. If $A = \tan^{-1} x$ then $\sin 2A$ is equal to :

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

(C) $\frac{2x}{1-x^2}$ (D) None of these

40. The angle of elevation of the top of a tower from the top and bottom of a building of height 'a' are 30° and 45° respectively. If the tower and the building stands at the same level, the height of the tower is :

(A) $\frac{a(3+\sqrt{3})}{2}$ (B) $a(3+\sqrt{3})$

(C) $a\sqrt{3}$ (D) $a(\sqrt{3}-1)$

41. If the elevation of the sun is 30°, then the length of the shadow cast by a tower of 150 ft height is :

(A) $75\sqrt{3}$ sft (B) $200\sqrt{3}$ sft

(C) $150\sqrt{3}$ sft (D) None of these

42. If the areas of three adjacent faces of a cuboid are x, y and z respectively, then the volume of the cuboid is :

(A) xyz (B) 2xyz

(C) $\sqrt{xyz}$ (D) $3\sqrt{xyz}$

43. A spherical shell whose outer radius is 4 cm and inner radius is 3 cm, then the vol. of spherical shell is :

(A) 45 cm^3 (B) 46.3 cm^3

(C) 51.5 cm^3 (D) 49.3 cm^3

44. If lines are parallel, then :

(A) $a_1/a_2 = b_1/b_2$ (B) $a_2/a_1 = b_1/b_2$

(C) $a_1 + a_2 = b_1 + b_2$ (D) $a_1 - a_2 = b_1 - b_2$

45. If length of major axis is two times the length of minor axis, then eccentricity is :

(A) 1/2 (B) $2\sqrt{2}/3$

(C) 2 (D) $\sqrt{3}/2$

SEAL

CN

46. The volume of a cube is 2744 cm^3. Its surface area is :

(A) 196 cm^2 (B) 1176 cm^2

(C) 784 cm^2 (D) 588 cm^2

47. If the following words are arranged in an alphabetical order, which word will appear at the end ?

(A) Olympic (B) Olympia

(C) Oval (D) Ovulet

48. "Bull" is related to "Cow" in the same way as "Horse" is related to :

(A) Animal (B) Mare

(C) Stable (D) Meat

49. If TEMPLE is coded as VHQURL, how would you code CHURCH ?

(A) EKYWIO (B) EKUWIO

(C) EKYWIN (D) EKYWJO

50. Find the word that cannot be formed from the letters used in the word EXAMINATION :

(A) MAINTAIN (B) MAXIMUM

(C) NOMINATION (D) TAXATION

51. Pointing to a man in a photograph, a man said to a woman, "His mother is the only daughter of your father". How is the woman related to the man in the photograph ?

(A) Sister (B) Mother

(C) Wife (D) Daughter

52. Introducing a man, a woman said, "He is the only son of my mother's mother". How is the woman related to the man ?

(A) Mother (B) Cousin

(C) Niece (D) Aunt

53. The number of boys in a class are three times the number of girls. Which one of the following numbers cannot represent the total number of children in the class ?

(A) 48 (B) 44

(C) 40 (D) 42

54. 60 men can cut 60 trees in 8 hrs. If 18 men leave the job, how many trees will be cut by 42 men in 12 hrs. ?

(A) 72 (B) 32

(C) 63 (D) 66

55. If x : y = 2 : 3, find the value of (3x + 2y) : (2x + 5y) :

(A) 12/25 (B) 11/27

(C) 11/23 (D) 12/19

56. A train speeds post a pole in 15 s and a platform 100 m long in 25 sec. Find the length of the train :

(A) 150 m (B) 350 m

(C) 250 m (D) 100 m

57. If A's income is 20% more than that of B, then how much percent is B's income less than that of A ?:

(A) $16\frac{2}{3}\%$ (B) $3\frac{16}{5}\%$

(C) $16\frac{1}{3}\%$ (D) $16\frac{5}{3}\%$

58. Rama travels a distance of 5 km from a place A towards North, turns left and walks 3 km again turns right and walks 2 km. Finally turns right and walks 3 kms, to reach the place B. What is the distance between A and B ?

(A) 13 kms (B) 2 kms

(C) 7 kms (D) 10 kms

59. Four of the following five are alike in a certain way and so form a group. Which one does not belong to that group ?

(A) Ears (B) Eyes

(C) Hands (D) Fingers

60. Six persons are sitting in a circle facing the centre of the circle. Parikh is between Babita and Narinder. Ashu is between Chunni and Poorab. Chunni is to the immediate left of Babita. Who is to the immediate right of Babita ?

(A) Parikh (B) Poorab

(C) Narinder (D) Chunni

SEAL

CN

M.Sc. Information Technology/A

1. File extensions are used in order to :
   (A) Name a file
   (B) Identify the file type
   (C) Ensure file is not lost
   (D) All of these

2. Computer Monitor is a/an :
   (A) Input Device
   (B) Input and Output Device
   (C) Output Device
   (D) None of these

3. Which of the following statement(s) is/are correct in explaining the hard disk technology ?
   (A) The capacity of a cylinder is the same as that of track
   (B) A sector can have few cylinders
   (C) The boot record is in the first Sector
   (D) None of these

4. A capability of a PC speaker can be expressed in :
   (A) Watts
   (B) Inches
   (C) Bits per Second
   (D) Tracks

5. The use of IC in a computer has :
   (A) Increased amount of Heating
   (B) Reduced Peripheral devices to be used
   (C) Reduced Cost of Computers
   (D) All of above

6. How many transistors does 8086 have ?
   (A) 2900
   (B) 29000
   (C) 290000
   (D) 2900000

7. Who designed VAX 11 Architecture ?
   (A) DEC
   (B) IBM
   (C) Compaq
   (D) Dell

8. During the first generation of Computers, programming was a complicated task because :

(A) The computer was very big

(B) Program and instructions were in binary code

(C) There was no hard disk

(D) Use of Vacuum Tubes

9. Convert the binary number 1001.0010_2 to decimal :

(A) 9.325 (B) 9.125

(C) 9.105 (D) 9.625

10. What is the one disadvantage of an SR Flip Flop ?

(A) It has no enable input (B) It has an invalid state

(C) It has no Clock input (D) It has only single output

11. A MOD-16 counter is holding the count 1001_2. What will the count be after 31 clock pulses ?

(A) 1000_2 (B) 1001_2

(C) 1010_2 (D) 1100_2

12. A collection of lines that connects several devices is called :

(A) Bus (B) Peripheral Connection wires

(C) Both (A) and (B) (D) Internal Wires

13. PC Program counter is also called as :

(A) Memory Pointer (B) Instruction Pointer

(C) Data Counter (D) Process Pointer

14. A micro program written as string of 0's and 1's is :

(A) Symbolic Microinstruction

(B) Binary Microinstruction

(C) Binary Micro Program

(D) Symbolic Macroinstruction

15. Which of the header file is used for malloc( ) and calloc( ) functions ?

(A) pointer.h
(B) stdlib.h
(C) memory.h
(D) conio.h

16. Comment on the expression : const int*ptr :

(A) You cannot change the value pointed by the pointer
(B) You cannot change the pointer ptr itself
(C) Both (A) and (B)
(D) Neither (A) nor (B)

17. In how many ways is polymorphism achieved in C++ ?

(A) 2
(B) 3
(C) 4
(D) 1

18. In C++ a Class can have how many destructor(s) ?

(A) 1
(B) 2
(C) 3
(D) Depends on number of constructors

19. Which of the following mode declaration is used in C++ to open a file for input ?

(A) ios :: app
(B) in :: ios
(C) ios :: in
(D) ios :: file

20. Which of the following is not a hash function ?

(A) Division
(B) Folding
(C) Coupling
(D) Mid Square

21. Minimum number of queue(s) to implement priority queue :

(A) 1
(B) 2
(C) 3
(D) 4

22. How many trees are possible with 10 nodes ?

(A) 1000
(B) 1024
(C) 1014
(D) 1028

23. The postfix equivalent of the prefix * + ab – cd is :

(A) ab + cd – *
(B) abcd + – *
(C) ab + cd * –
(D) ab + – cd *

24. The way a card game player arranges his cards as he picks them up one by one, is an example of :

(A) bubble sort
(B) selection sort
(C) insertion sort
(D) merge sort

25. A client of the Domain Name System (DNS) application is called :

(A) A name server
(B) A name client
(C) A name of resolver
(D) A name inquirer

26. A transmitted signal over a communications link could be distorted by :

(A) The limited bandwidth of the transmission channel
(B) External Electromagnetic interferences
(C) The use of transmission channel beyond the recommended distance
(D) All of the above

27. Primitive operations common to all record management systems include :

(A) Print
(B) Sort
(C) Look up
(D) All of the above

28. Information can be transferred between the DBMS and a :

(A) Spread sheet program
(B) Word processor program
(C) Graphics program
(D) All of the above

29. What does a Markup tag tell the web browser ?

(A) How to organize the page
(B) How to display message box on page
(C) How to display the page
(D) None of these

30. A Web document is broken into sections. What are the tags called that create these sections ?

(A) HTML tags
(B) Body tags
(C) Structure tags
(D) Heading tags

31. Look at this series : 5.2, 4.8, 4.4, 4, ... What number should come next ?

(A) 3
(B) 3.5
(C) 3.3
(D) 3.6

32. Look at this series : 8, 6, 9, 23, 87, ... What number should come next ?

(A) 128
(B) 226
(C) 324
(D) 429

33. Marathon is to race as hibernation is to :

(A) Winter
(B) Sleep
(C) Dream
(D) Bear

34. Window is to pane as book is to :

(A) Novel
(B) Glass
(C) Cover
(D) Page

35. Pointing to a photograph of a boy Suresh said, "He is the son of the only son of my mother." How is Suresh related to that boy ?

(A) Brother
(B) Uncle
(C) Father
(D) Cousin

36. If A is the brother of B; B is the sister of C; and C is the father of D, how is D related to A ?

(A) Brother
(B) Sister
(C) Nephew
(D) Cannot be determined

37. If P + Q means P is the brother of Q; P × Q means P is the father of Q and P – Q means P is the sister of Q, which of the following relations shows that I is the niece of K ?

(A) A.K + Y + X – I
(B) B.K + Y + I – Z
(C) C.Z – I × Y + K
(D) D.K × Y + I – Z

38. In a certain code, TOGETHER is written as RQEGRJCT. In the same code, PAROLE will be written as :

(A) RYPQJG
(B) RCPQJG
(C) NCPQJG
(D) NCPQJC

39. If JOSEPH is coded as FKOALD, then GEORGE will be coded as :

(A) CAKNCA
(B) HAKNCA
(C) CBKNCA
(D) CALNCA

40. If FRIEND is coded as HUMJTK, how is CANDLE written in that code ?

(A) EDRIRL
(B) DCQHQK
(C) DEQJQM
(D) FYOBOC

41. If a person walks at 14 km/hr instead of 10 km/hr, he would have walked 20 km more. The actual distance travelled by him is :

(A) 50 km
(B) 56 km
(C) 70 km
(D) 80 km

42. It takes eight hours for a 600 km journey, if 120 km is done by train and the rest by car. It takes 20 minutes more, if 200 km is done by train and the rest by car. The ratio of the speed of the train to that of the car is :

(A) 2 : 3
(B) 3 : 2
(C) 3 : 4
(D) 4 : 3

43. The ratio between the speeds of two trains is 7 : 8. If the second train runs 400 km in 4 hours, the speed of the first train is :

(A) 70 km/hr
(B) 75 km/hr
(C) 84 km/hr
(D) 87.5 km/hr

44. A, B and C can do a piece of work in 20, 30 and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every third day ?

(A) 12 Days (B) 15 Days

(C) 16 Days (D) 18 Days

45. Solution of $|3-x| = x-3$ is :

(A) $x < 3$ (B) $x > 3$

(C) $x \geq 3$ (D) $x = 3$

46. Let $f(x) = ax^2 + bx + c = 0, a \neq 0$ Suppose $f(-1) < 1$, $f(1) > -1$ and $f(3) < -4$ then :

(A) It cannot be discussed (B) $b + 1 > 0$

(C) a is negative real (D) b is positive real

47. If first 3 terms in the expansion of $(1+\alpha x)^n$ $(n \neq 0)$ are 1, 6x, and $6x^2$. Then the value of α and n are respectively :

(A) 2 and 9 (B) 3 and 2

(C) 2/3 and 9 (D) 3/2 and 6

48. Sum of all the quotients of all the coefficients in the binomial expansion of $(x^2 + x - 3)^{310}$:

(A) 1 (B) 2

(C) –1 (D) 0

49. For solving $dy/dx = (4x + y + 1)$, suitable substitution is :

(A) $y = vx$ (B) $y = 4x + v$

(C) $y = 4x$ (D) $y + 4x + 1 = v$

50. The order of differential equation whose solution is $y = a\cos x + b\sin x + ce^{-x}$, is :

(A) 3 (B) 2

(C) 1 (D) None of these

51. If the straight line $y = mx$ is outside the circle $x^2 + y^2 - 20y + 90 = 0$, then :

(A) $m > 3$ (B) $m < 3$

(C) $|m| \geq 3$ (D) $|m| < 3$

52. The equation of the circle with origin as center and passing the vertices of an equilateral triangle whose median is of length 3a is :

(A) $x^2 + y^2 = 9a^3$ (B) $x^2 + y^2 = 16a^2$

(C) $x^2 + y^2 = \alpha^2$ (D) None of these

53. The polar of focus of parabola :

(A) x-axis (B) y-axis

(C) directrix (D) latus rectum

54. If $\sin x + \text{cosec } x = 2$ then $\sin^n x + \text{cosec}^n x$ is equal to :

(A) 2 (B) 2^n

(C) 2^{n-1} (D) 2^{n-2}

55. $\tan \alpha + 2 \tan 2\alpha + 4 \tan 4\alpha + 8 \cot 8\alpha$ is equal to :

(A) $\tan \alpha$ (B) $\tan 2\alpha$

(C) $\cot \alpha$ (D) $\cot 2\alpha$

56. What is the possible number of permutations of 5 things taking two at a time ?

(A) 10 (B) 20

(C) 30 (D) 40

57. In an Equilateral Triangle ABC :

(A) Incenter lies on circumcenter (B) Incenter lies on orthocenter

(C) Circumcenter lies on orthocenter (D) All centers lie on single point

58. Perimeter of parallelogram is :

(A) $2a + b$ (B) $2a$

(C) $2(a+b)$ (D) $2ab$

59. Volume of Hemisphere is given by :

(A) $(2/3)\pi r^3$ (B) $(1/3)\pi r^3$

(C) πr^3 (D) $2\pi r^3$

60. The percentage increase in the surface area of a cube when each side is doubled is :

(A) 25% (B) 50%

(C) 150% (D) 300%

1. Which of the following data structure can't store the non-homogeneous data elements ?

   (A) Arrays (B) Records

   (C) Both of the above (D) None of the above

2. If the sequence of operations-push(1), push(2), pop, push(1), push(2), pop, pop, pop, push(2), pop are performed on a stack, the sequence of popped out values are ?

   (A) 2, 2, 1, 1, 2 (B) 2, 2, 1, 2, 2

   (C) 2, 1, 2, 2, 1 (D) None of the above

3. A trigger is :

   (A) A statement that enables to start any DBMS

   (B) A statement that is executed by the user when debugging an application program

   (C) A condition the system tests for the validity of the database user

   (D) A statement/s that is executed automatically by the system as a side effect of modification to the database

4. In the client / server model, the database :

   (A) is downloaded to the client upon request

   (B) is shared by both the client and server

   (C) resides on the client side

   (D) resides on the server side

5. DLL stands for :

   (A) Dynamic Level Library (B) Direct Link Library

   (C) Dynamic Layout Library (D) Dynamic Link Library

6. The development is supposed to proceed linearly through the phases in :

(A) Spiral model (B) Waterfall model

(C) Both of the above (D) None of the above

7. What is the term for a temporary storage area that compensates for differences in data rate and data flow between devices ?

(A) Buffer (B) Bus

(C) Channel (D) Modem

8. A computer can directly understand only its own :

(A) Machine Language (B) Assembly Language

(C) High Level Language (D) All of the above

9. The location of the resource on the internet is given by its :

(A) Protocol (B) E-mail address

(C) URL (D) All of the above

10. Which term refers to the speed at which information is telecomputed ?

(A) Interface Speed (B) Cycles

(C) Baud rate (D) Megabyte Load

11. The fastest and most expensive type of storage device is a :

(A) Electronic Disk (B) Register

(C) Cache (D) Magnetic tape

12. How do the components of computer system communicate with each other ?

(A) System Bus (B) Mouse

(C) Key Board (D) Monitor

13. An byte is capable of representing how many different characters ?

(A) 64 (B) 128

(C) 256 (D) 512

14. Which of the following memory allocation scheme suffers from External fragmentation ?

(A) Segmentation (B) Demand paging

(C) Swapping (D) All of the above

15. Information about a process in maintained in a :

(A) Stack (B) Translation Lookaside Buffer

(C) Process Control Block (D) Program Control Block

16. The real roots of the equation $_7\log_7(x^2-4x+5) = x-1$ are :

(A) 1 and 2 (B) 2 and 3

(C) 3 and 4 (D) 4 and 5

17. Solution of $dy/dx = e^{y+x} + e^{y-x}$ is :

(A) $e^x(x+1) = y$ (B) $e^x(x+1)+1 = y$

(C) $e^x(x-1)+1 = y$ (D) $-e^{-y} = e^x - e^{-x} + c$

18. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 4 \\ 1 & 6 \end{bmatrix}$ then $(AB)^T$ equals :

(A) $\begin{bmatrix} 5 & 16 \\ 9 & 16 \end{bmatrix}$ (B) $\begin{bmatrix} 5 & 9 \\ 16 & 12 \end{bmatrix}$

(C) $\begin{bmatrix} 5 & 9 \\ 4 & 3 \end{bmatrix}$ (D) None of these

19. If $\begin{vmatrix} -a^2 & ab & ac \\ ab & -b^2 & bc \\ ac & bc & -c^2 \end{vmatrix} = \lambda a^2b^2c^2$, then the value of λ is :

(A) 1 (B) 2

(C) 4 (D) 3

20. If x and y are two matrices such that $x - y = \begin{bmatrix} 3 & 2 \\ -1 & 0 \end{bmatrix}$ and $x + y = \begin{bmatrix} 1 & -2 \\ 3 & 4 \end{bmatrix}$, then matrix y is :

(A) $\begin{bmatrix} 2 & 0 \\ 1 & 2 \end{bmatrix}$ (B) $\begin{bmatrix} -1 & -2 \\ 3 & 4 \end{bmatrix}$

(C) $\begin{bmatrix} -1 & -2 \\ 2 & 2 \end{bmatrix}$ (D) None of these

21. The angle of depression of a point situated at a distance of 70 m from the base of a tower is 45°, the height of the tower is :

(A) 70 m (B) $70\sqrt{2}$ m

(C) $\frac{70}{\sqrt{2}}$ m (D) 35 m

22. If $\sin(A + B + C) = 1$, $\tan(A - B) = \frac{1}{\sqrt{3}}$ and $\sec(A + C) = 2$, then :

(A) $A = 90°, B = 60°, C = 30°$ (B) $A = 120°, B = 60°, C = 0°$

(C) $A = 60°, B = 30°, C = 0°$ (D) None of the above

23. The general solution of $\sin 2\theta = 0$ is :

(A) $n\pi; n \in I$ (B) $\frac{n\pi}{2}; n \in I$

(C) $(2n + 1)\frac{\pi}{2}; n \in I$ (D) $2n\pi; n \in I$

24. The most general value of θ satisfying the equation $\cos\theta = \frac{1}{\sqrt{2}}$ and $\tan\theta = -1$ is :

(A) $n\pi + \frac{7\pi}{4}; n \in I$ (B) $n\pi + (-1)^n \frac{7\pi}{4}; n \in I$

(C) $2n\pi + \frac{7\pi}{4}; n \in I$ (D) None of these

25. A and B are two events such that $P(A) > 0$, $P(B) \neq 1$, then $P(\overline{A}/\overline{B})$ is equal to :

(A) $1 - P(A/B)$ (B) $1 - P(\overline{A}/B)$

(C) $\frac{1 - P(A \cup B)}{P(\overline{B})}$ (D) $\frac{P(\overline{A})}{P(\overline{B})}$

26. A and B are two independent events. The probability that both A and B occurs is 1/6 and the probability that none of them occurs is 1/3. The minimum value of probability of occurrance of A is :

(A) 1/2 (B) 1/3

(C) 1/4 (D) None of these

27. For a normal curve the value of greatest ordinate is :

(A) $\sigma\sqrt{2\pi}$ (B) $\frac{1}{\sigma\sqrt{2\pi}}$

(C) $\frac{1}{\sqrt{\sigma\pi}}$ (D) None of these

28. The distance between $P\left(2, \frac{-\pi}{6}\right)$ and $Q\left(3, \frac{\pi}{6}\right)$ is :

(A) 3 (B) 1/2

(C) $\sqrt{5}$ (D) $\sqrt{7}$

29. Length of major axis is three times the length of minor axis, then eccentricity is :

(A) $\frac{2\sqrt{2}}{3}$ (B) 1/3

(C) $1/\sqrt{3}$ (D) $1/\sqrt{2}$

30. Total number of permutations of 'K' different things, in a row, taken not more than 'r' at a time (each thing may be repeated any number of times) is equal to :

(A) $K^r - 1$ (B) K^r

(C) $\frac{K^r - 1}{K - 1}$ (D) $\frac{K(K^r - 1)}{(K - 1)}$

31. "Seismograph" is related to "Earthquake" in the same way as "Thermometer" is related to :

(A) Fever (B) Doctor

(C) Temperature (D) Mercury

32. If ROSE is coded 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, what will be the code for SEARCH ?

(A) 246173 (B) 214673

(C) 214763 (D) 216473

33. If PICTURE is coded as tuvwxyz, then PATCH would be coded as :

(A) wtzyv (B) twxyz

(C) tqwvm (D) myuvw

34. Pointing to a man in a photograph, a woman said, "The father of his brother is the only son of my grandfather". How is the women related to the man in the photograph ?

(A) Sister (B) Mother

(C) Aunt (D) Daughter

35. Akash said to Mohit, "That boy in blue shirt is younger of the two brothers of the daughter of my father's wife". How is the boy in blue shirt related to Akash ?

(A) Brother (B) Uncle

(C) Father (D) Grandfather

36. A told B, "Yesterday, I met the only brother of the daughter of my grand mother'. Whom did A meet ?

(A) Cousin (B) Father

(C) Brother (D) Son

37. A×B means A is the sister of B, A ÷ B means A is the daughter of B, A – B means A is the son of B. On the basis of this information, how is P related to S in the relationship P – Q × R ÷ S ?

(A) Daughter's son (B) Brother

(C) Son (D) Cousin

38. Study the information and answer the question given below :

On a playing ground Dev, Kumar, Nilesh, Ankur and Pintu are standing as directed below facing the north :

(i) Kumar is 40 m to the right of Ankur.

(ii) Dev is 60 m to the South of Kumar.

(iii) Nilesh is 25 m to the West of Ankur.

(iv) Pintu is 90 m to the North of Dev.

Who is to the North-East of the person, who is to the left of Kumar ?

(A) Nilesh (B) Pintu

(C) Dev (D) None of these

39. B is to the South-West of A, C is to the East of B and South-East of A and D is to the North of C in line with B and A. In which direction of A is D located ?

(A) North (B) East

(C) South-East (D) North-East

40. Facing towards South, Ram started walking and turned left after walking 30 m, he walked 25 m and turned left and walked 30 m. How far is he from his starting position and in which direction ?

(A) 25 m West (B) 25 m East

(C) 30 m East (D) None of these

41. Six persons are sitting in a circle facing the centre of the circle. Parikh is between Babita and Narinder. Asha is between Chitra and Pankaj. Chitra is to the immediate left of Babita. Who is to the immediate right of Babita ?

(A) Parikh (B) Pankaj

(C) Narinder (D) Chitra

42. In a class of students, Ravi occupies fifth position from the top and 25th from the bottom in a test. How many students are there in the class ?

(A) 29 (B) 30
(C) 28 (D) 25

43. The sum of the ages of a son and father is 56 yrs. After four years, the age of father will be three times that of the son. Their ages respectively are :

(A) 12 yrs, 44 yrs (B) 16 yrs, 42 yrs
(C) 16 yrs, 48 yrs (D) 18 yrs, 36 yrs

44. In a group of 15 people, 7 read French, 8 read English while 3 of them read none of these two. How many of them read French and English both ?

(A) 0 (B) 3
(C) 4 (D) 5

45. Find the word that cannot be formed from the letters used in the word "STRANGE".

(A) GANGSTER (B) RANGES
(C) ANGELS (D) GRANTS

46. A gigabyte is equal to :

(A) 1024 bytes (B) a million megabytes
(C) a thousand kilobytes (D) 1024 megabytes

47. Which one of the following groups contains graphical file extensions ?

(A) JPG, CPX, IP (B) GIF, UDP, WMF
(C) TCP, JPG, BMP (D) JPG, GIF, BMP

48. Which one of the following is not a type of data storage media ?

(A) Magnetic Disc (B) Optical Disc
(C) Magnetic Tape (D) RAM

49. SCSI stands for :

(A) Standard Computer Systems Interface
(B) Small Computer Standards Interface
(C) Super Computer Systems Interface
(D) Small Computer Systems Interface

50. Parity bits are used for which of the following purpose ?

(A) Encryption of Data
(B) Faster Data Transmission
(C) Error Detection
(D) User Identification

51. What IP address class allocates 8 bits for the host identification part ?

(A) Class A
(B) Class B
(C) Class C
(D) Class D

52. The length of IPV6 address is :

(A) 32 bits
(B) 64 bits
(C) 128 bits
(D) 256 bits

53. The concept of virtual memory is :

(A) allows one user to use all the memory available
(B) allows Virtual Reality program to run
(C) allows a user programs to run on another computer which is connected on a network
(D) provides a user program with an address space larger than the amount of physical memory

54. What happens to files deleted from the Recycle Bin ?

(A) Clusters are flushed
(B) The files are moved to C:\Windows\Temp.
(C) Sectors of hard drive are blanked/erased
(D) Associated entries in FAT are removed

55. Micro-Program is :

(A) name of the source program in micro computers
(B) the set of instructions indicating the primitive operations in a system.
(C) primitive form of macros
(D) a program of very small size

56. Decimal equivalent of the binary number 101.101 is :

(A) 5.6249 (B) 5.625

(C) 5.5 (D) 5.25

57. x –= y +1; means :

(A) x = x – y +1 (B) x = – x – y – 1

(C) x = x + y + 1 (D) x = x – y – 1

58. printf("%f",11/6); what will it print :

(A) 1.8 (B) 1.0

(C) 2.0 (D) None of the above

59. From the following code :

```
for (i=3;i< 15;i+=3)
        {
              printf("%d", i);
              ++i;
         }
```

(A) 3 6 9 12 (B) 3 6 9 12 15

(C) 3 7 11 (D) 3 7 11 15

60. A constructor for a class must have :

(A) no parameters (B) a different name to the class

(C) the same name as the class (D) a return value

1. Adding 70 to 70% of a number result in 70% of 150. What is the number ?

   (A) 70 (B) 30

   (C) 100 (D) 50

2. In a certain code *PLAY* is coded as 8123 and *RHYME* as 49367. How *MALE* will be coded in this code ?

   (A) 6217 (B) 6712

   (C) 6172 (D) 6271

3. Average age in a class of 26 students is 14 years which increased by 4 months after joining of a new student. What is the age of the new student ?

   (A) 22 (B) 23

   (C) 21 (D) 20

4. In a mixture of 60 liters, the ratio of Milk and Water is 2 : 1. If the ratio of Milk and Water is to be 1 : 2, then what is to be further added :

   (A) 30 Liters of Water (B) 30 Liters of Milk

   (C) 60 Liters of Milk (D) 60 Liters of Water

5. The ratio between two numbers is 3 : 4 and their sum is 420. The smaller of the two numbers is :

   (A) 200 (B) 180

   (C) 175 (D) 125

6. A man travelled a distance of 90 KM in 5 hours partly on foot at the rate of 10 KMPH and partly on bicycle at the rate of 20 KMPH. Find the total distance travelled on foot ?

   (A) 5 KM (B) 6 KM

   (C) 7 KM (D) 10 KM

7. First six terms of a series are 7, 9, 12, 14, 17, 19. What will be the next two term in this series ?

   (A) 21, 24 (B) 22, 25

   (C) 22, 24 (D) 21, 25

8. James is brother of John. Julie is sister of John. How is James related to Julie ?

(A) Uncle (B) Inadequate Data

(C) Sister (D) Brother

9. Facing towards south, Akbar and Aamir walked 25 meters and 20 meters respectively. Akbar then turned to his right and walked 13 meters. Aamir turned to his left and walked 3 meters. Akbar then turned to his right and walked 25 meters. Aamir turned to his left and walked 20 meters. How far is Akbar from Aamir ?

(A) 16 Meters (B) 10 Meters

(C) 23 Meters (D) 17 Meters

10. If A : B = 5 : 9 and B : C = 3 : 8, then what is A : B : C ?

(A) 5 : 9 : 24 (B) 5 : 9 : 8

(C) 5 : 9 : 32 (D) 5 : 9 : 16

11. What will be the number X in the series : 1, 1, 2, X, 24, 120, 720 ?

(A) 5 (B) 6

(C) 4 (D) 7

12. Which one of the following is different from others ?

(A) COBOL (B) Visual Basic

(C) Fortran (D) SQL

13. If R, S, T, U, V, W and X stand respectively for addition, subtraction, multiplication, division, equal to, greater than and less than then which of the following equations is correct ?

(A) 15 R 5 U 3 V 2 R 3 (B) 15 U 5 R 3 V 2 T 3

(C) 15 S 5 T 3 X 2 R 3 (D) 15 U 5 W 3 R 2 T 3

14. In a queue Alice is at position 15 from the front end and Bob is at position 7 from rear end. If they interchange positions, Bob becomes 15th from rear end. How many persons are there in the queue ?

(A) 30 (B) 29

(C) 22 (D) Inadequate Data

15. A cube is painted RED on two adjacent faces, YELLOW on two opposite faces and GREEN on the remaining faces. It is cut into 64 smaller cubes of equal size. How many cubes will have 3 faces painted ?

(A) 4 (B) 8

(C) 16 (D) 32

16. The equation $|z+1-i|=|z-1+i|$ represents a :

(A) Straight Line (B) Circle

(C) Hyperbola (D) Parabola

17. In how many ways a committee consisting of 2 teachers and 2 students can be chosen from 5 teachers and 7 students :

(A) 190 (B) 210

(C) 220 (D) 200

18. Two lines $ax + by = c$ and $a'x + b'y = c'$ are perpendicular if :

(A) $a'b = ba'$ (B) $aa' + bb' = 0$

(C) $ab + a'b' = 0$ (D) $ab' + ba' = 0$

19. What is the locus of a point for which $x = 0, z = 0$?

(A) Equation of x-axis (B) Equation of y-axis

(C) Equation of z-axis (D) None of the above

20. The solution of the differential equation $y\,dx + (x + xy)dy = 0$ is :

(A) $xy = Ae^{-x}$ (B) $xy = Ae^{+y}$

(C) $xy = Ae^{+x}$ (D) $xy = Ae^{-y}$

21. The solution of the differential equation $\cot y\,dx = x\,dy$ is :

(A) $x = c \sec y$ (B) $x = c \cot y$

(C) $x = \sec y$ (D) None of the above

22. If $\sin\theta$ and $\cos\theta$ are the roots of the equation $ax^2 - bx + c = 0$ then a, b and c satisfy the relation :

(A) $a^2 + b^2 + 2ac = 0$ (B) $a^2 - b^2 + 2ac = 0$

(C) $a^2 + c^2 + 2ac = 0$ (D) $a^2 - b^2 - 2ac = 0$

23. The greatest values of $\sin x \cos x$ is :

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

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

24. If a random variable X~B(10, 0.5) then variance is :

(A) 0.5 (B) 1.5

(C) 2.5 (D) 3.5

25. The standard deviation of series 4, 4, 4, 4, 4 is :

(A) 4 (B) Zero

(C) 5 (D) 1

26. Two finite sets have m and n elements respectively. The total number of subsets of first set is 120 more than the total number of subsets of the second set. The values of m and n respectively are :

(A) 5, 2 (B) 7, 4

(C) 7, 3 (D) 8, 7

27. A boiler is in the form of cylinder 2m long with hemispherical ends each of 2m diameter. What will be the volume of the boiler ?

(A) 9.1 m^3 (B) 8.0 m^3

(C) 10.4m^3 (D) 11.4 m^3

28. If the radii of the circular ends of a bucket, 45 cm high, are 28 cm and 7 cm, what will be the capacity of the bucket ?

(A) 48510 cm^3 (B) 4810 cm^3

(C) 4850 cm^3 (D) 4510 cm^3

29. Find the value of X, if the following matrix is singular :

$$\begin{bmatrix} -4 & 2 \\ -6 & X \end{bmatrix}$$

(A) -3 (B) $+3$

(C) $\frac{1}{3}$ (D) $-\frac{1}{3}$

30. If the determinant of a 5×5 matrix A is 6 and that of another 5×5 matrix B is 4 then what will be the determinant of matrix AB ?

(A) $\frac{4}{6}$ (B) 10

(C) 24 (D) $\frac{6}{4}$

31. Which of the following HDD head mechanism/s is/are most preferred ?

(A) Contact (B) Aerodynamic

(C) Fixed Gap (D) Both (A) and (C)

32. What is the primarily protocol used in e-mail ?

(A) FTP (B) UTP

(C) SMTP (D) Telnet

33. Which of the following is not a function of Operating System ?

(A) Memory Management (B) I/O Management

(C) File Management (D) Database Management

34. What is the binary equivalent of decimal number 786.50 ?

(A) 1100010010.01 (B) 1100010010.1

(C) 1100010110.1 (D) 1100010011.1

35. What is the number of representations for zero in 2's complement representation of numbers ?

(A) One (B) Two

(C) Three (D) None of the Above

36. Sequential Logic Circuits :

(A) have feedback and memory

(B) have feedback but no memory

(C) have no feedback but memory

(D) have no feedback and no memory

37. An 8 : 1 MUX has :

(A) 2 Selection Lines (B) 3 Selection Lines

(C) No Selection Lines (D) 8 Selection Lines

38. Race around condition can be eliminated by using :

(A) Master Slave JK Flip Flop

(B) Edge Triggered JK Flip Flop

(C) Both (A) and (B)

(D) None of the Above

39. In the Boolean Function $F(A, B, C) = 1$:

(A) All Minterms are present (B) All Maxterms are present

(C) Both (A) and (B) (D) None of the Above

40. Microinstructions are stored in :

(A) Video Memory (B) Control Memory

(C) Primary Memory (D) Secondary Memory

41. Which of the Mapping function/s is/are suitable for cache momories ?

(A) Direct Mapping (B) Associative Mapping

(C) Set Associative Mapping (D) All of the Above

49. The Highest level of abstraction of a database is :

(A) Internal View
(B) External View
(C) Conceptual View
(D) None of the above

50. If two relations have the same arity and one-to-one correspondence of the attributes with the corresponding attributes defined over the same domain, then they are :

(A) Union compatible
(B) Not Union compatible
(C) Not Relation compatible
(D) None of the above

51. Which of the following is not a facility under Structured Query Language ?

(A) Data definition
(B) Data manipulation
(C) Data control
(D) Data transmission

52. Accessing the estimated time of completion of a project falls under which study ?

(A) Technical Feasibility
(B) Time Feasibility
(C) Management Feasibility
(D) Social Feasibility

53. A diagram describing a system's data and how the data interact with the system is :

(A) Data Flow Diagram
(B) Flow Chart
(C) ER Diagram
(D) None of the above

54. Project Management involves :

(A) Planning and Organizing
(B) Securing
(C) Managing
(D) All of the Above

55. Which of the following is not a valid project type in Visual Basic 6 ?

(A) ActiveX EXE
(B) ActiveX Document EXE
(C) Standard EXE
(D) None of the above

56. A control that displays a hierarchical list of node objects, each of which has a label and an optional bitmap is :

(A) Image Combo Control
(B) CoolBar Control
(C) Tabbed Dialog Control
(D) TreeView Control

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57. Which of the following is not a raster graphics format ?

(A) JPG (B) SVG

(C) BMP (D) GIF

58. The Fiber Optic Cable is example of :

(A) Digital Data, Digital Signal

(B) Analog Data, Digital Signal

(C) Digital Data, Analog Signal

(D) Analog Data, Analog Signal

59. The maximum number of Hosts in Class C network using IP Version 4 addressing is :

(A) 255 (B) 254

(C) 256 (D) None of the Above

60. Bandwidth of a channel is spilt for :

(A) Half Duplex Operation (B) Full Duplex Operation

(C) Simplex Operation (D) All of the above