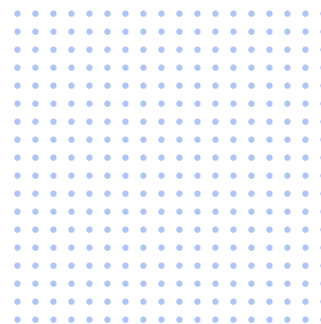




FOR KUET EXAM PREPARATION

KUET 2023 Question Paper · M.Sc. IT

EXAM	YEAR	TYPE	SUBJECT
KUET	2023	Question Paper	M.Sc. IT

Sr. No.

ENTRANCE TEST-2023**SCHOOL OF APPLIED SCIENCES & TECHNOLOGY****M.Sc. (IT)**

Question Booklet Series

A

Total Questions : 60

Time Allowed : 70 Minutes

Roll No. :

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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.

SM-29562-A

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ⓧ**[Turn over**

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

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
 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.
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.

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

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 1m, the ratio of length to breadth becomes 16:10. Find the area of the original rectangle in square metres.

- (A) 115m²
- (B) 125m²
- (C) 135m²
- (D) 145m²

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):
- The determinant of transformation matrix for rotation should be a unit.
 - The transformation matrix for rotation should be orthogonal.
 - $[T]^{-1} = [T]^T$ (where $[T]^T$ is transpose of transformation matrix)
 - All the above
29. If $2 \sin \theta + 2 \operatorname{cosec} \theta = 4$, find the value of $\sin^2 \theta + \cos^2 \theta$
- 1
 - 2
 - 468
 - 5768
30. If $\tan \theta = 8/7$, find the correct value of $(5 \sin \theta + 4 \cos \theta) / (5 \sin \theta - 4 \cos \theta) = ?$
- 83/13
 - 13/36
 - 68/11
 - 17/3
31. Choose the incorrect statement(s) among the following:
- If the degree of all the terms in an equation is the same then the equation is termed as homogeneous equation
 - 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 .
 - 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 .
 - None of the above
32. What is the degree of differential equation $\frac{dy}{dx} + \frac{y^2}{x^2} = 0$?
- 1
 - 2
 - 3
 - 6
33. Choose the correct statement among the following:
- Skewness is the measure of size of a curve and not of its shape.
 - Skewness is positive when the mean is greater than the mode or the median.
 - Skewness is positive when the mode is greater than the mean or the median.
 - 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?
- 0.0067
 - 0.2706
 - 0.1254
 - 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?
- 5/16
 - 4/11
 - 9/11
 - 9/16

36. The Poisson distribution is derived as the limit of the Binomial distribution when:
- The number of trials n is very large and the probability of success p is very large.
 - The number of trials n is very small and the probability of success p is very small.
 - The number of trials n is very large and the probability of success p is very small.
 - 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:
- $(A + B)^t = A^t + B^t + AB$
 - $(kA)^t = kA^t$ where k is a scalar
 - $(AB)^t = B^t A^t$
 - 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
- If $\rho(A) = \rho(A, D) =$ the number of unknowns, then the set is consistent and possesses a unique solution
 - If $\rho(A) = \rho(A, D) =$ the number of unknowns, then the set is consistent and possesses an infinite number of solutions
 - If $\rho(A) = \rho(A, D) =$ the number of unknowns, then the set is inconsistent and does not have any solution
 - None of the above
39. A function $f(x, y)$ is continuous at a point (a, b) for which it is defined if _____.
- $\lim_{\substack{x \rightarrow a \\ y \rightarrow b}} f(x, y) \neq f(a, b)$
 - $\lim_{\substack{x \rightarrow a \\ y \rightarrow b}} f(x, y) \neq f(ax, by)$
 - $\lim_{\substack{x \rightarrow a \\ y \rightarrow b}} f(x, y) \neq f(x, ay)$
 - All the above
40. What is the range of the function $f(x) = x^2, x \in R$?
- Set of all real numbers
 - Set of all positive real numbers
 - Set of all real numbers ≥ 0
 - None of the above
41. Hexadecimal Addition of $(AA8)_{16}$ and $(3B9)_{16}$ will give :
- EA1
 - 3E5
 - E61
 - 9E6
42. Which of the following mapping techniques does not allow each memory block to be loaded into any line of the cache ?
- Direct Mapping
 - Associative Mapping
 - Set Associative Mapping
 - None of the above
43. In 2s complement arithmetic the representation for “-0” (negative zero) is
- 10000000
 - 01111111
 - 00000000
 - 11111111

44. Choose the incorrect statement among the following:
- A 1-byte instruction is always 1-address instruction.
 - Use of program counter enables shorter instruction size.
 - “MOV A, A” is a valid instruction
 - 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);
}
```
- Compile error
  - 84
  - 54
  - 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);
}
```
- Abdul
 - Mannan
 - Abdul Mannan
 - Error
47. $O(n \log n)$ is the complexity of which searching and sorting algorithm?
- Linear search
 - Binary search
 - Bubble sort
 - Merge sort
48. A _____ graph is a connected graph that is not broken into disconnected pieces by deleting any single vertex (and incident edges)
- Bi-connected
 - Directed Acyclic
 - Complete
 - Tree
49. Which of the following is not volatile ?
- DRAM
 - SDRAM
 - MRAM
 - None of the above
50. The data received from user is converted into computer understandable format by _____.
- Output Unit
 - Input Unit
 - Memory Unit
 - 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 _____.
- Distortion
 - Attenuation
 - Noise
 - Decibel

52. The rate at which we can send data over a noisy channel can be calculated using :
- (A) Nyquist Bit Rate formula
(B) $\text{BitRate} = 2 \times \text{Bandwidth} \times \log_2 L$
(C) Shannon Capacity formula
(D) All the above
53. The concurrency control protocol(s) that ensure both conflict serializability 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:
- $$\star_{\text{empId}}(\text{employee}) - \star_{\text{empId}}(\text{employee} \bowtie_{\text{empId} \neq \text{eId}} \rightarrow (\text{empAge} \geq \text{depAge}) \text{dependent})$$
- 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**SM-29562–A****11**
☐**38**