

Section A: (Mathematics)

Q1. The number of ways in which 6 Men and 5 Women can dine at a round table if two Women are to sit together is give by:

- a) 30
- b) $5! \times 4!$
- c) $7! \times 5!$
- d) $6! \times 5!$

Q2. If ${}^n C_r = 84$, ${}^n C_{r-1} = 36$ and ${}^n C_{r+1} = 126$ then $n = ?$

- a) 8
- b) 9
- c) 10
- d) 12

Q3. The number of 7 digit numbers which can be formed using the digits 1, 2, 3, 2, 3, 3, 4, is:

- a) 420
- b) 840
- c) 2520
- d) 5040

Q4. If A, B, C are any three sets, then $A \times (B \cap C)$ is:

- a) $(A \times B) \cup (A \times C)$
- b) $(A \times B) \cap (A \times C)$
- c) $(A \cup B) \times (A \cup C)$
- d) $(A \cap B) \times (A \cap C)$

Where X is Cartesian product

Q5. If A, B, C are three sets such that $A \cup B = A \cup C$ and $A \cap B = A \cap C$, then

- a) $A = B$
- b) $B = C$
- c) $C = A$
- d) $A = B = C$

Q6. In a city 20% of the population travels by car, 50% travel by bus and 10% travel both by car and bus, then persons traveling by car or bus is:

- a) 80%
- b) 40%
- c) 60%
- d) 70%

Q7. Let $R = \{(1, 3), (4, 2), (2, 4), (2, 3), (3, 1)\}$ be a relation defined on the set $A = \{1, 2, 3, 4\}$.

The relation R is:

- a) A Function
- b) Transitive
- c) Not Symmetric
- d) Reflexive

Q8. Let function $f: \mathbb{R} \rightarrow \mathbb{R}$ be defined by $f(x) = 2x + \sin x$ for $x \in \mathbb{R}$, then f is:

- a) one to one and onto
- b) one to one but not onto
- c) onto but not one to one
- d) neither one to one not onto

Q9. If Z_1 and Z_2 are two non-zero complex numbers such that $|Z_1 + Z_2| = |Z_1| + |Z_2|$, then $\text{Arg}(Z_1) - \text{Arg}(Z_2)$ equals to:

- a) $-\pi$
- b) $\pi/2$

c) $-\pi/2$

d) 0

Q10. If Z_1, Z_2, Z_3 are complex numbers such that $|Z_1| = |Z_2| = |Z_3| = |1/Z_1 + 1/Z_2 + 1/Z_3| = 1$, then $|Z_1 + Z_2 + Z_3|$ equals to:

a) 1

b) Less than 1

c) Greater than 1

d) Equal to 3

Q11. What is the value of x if?

$$\begin{vmatrix} 8 & -5 & 1 \\ 5 & x & 1 \\ 6 & 3 & 1 \end{vmatrix} = 2$$

a) 4

b) 5

c) 8

d) 9

Q12. Given $2x - y + z = 2$, $x - 2y + z = -4$, $x + y + \lambda z = 4$, then the value of λ such that the given system of equations has no solution is:

a) 3

b) 1

c) 0

d) -3

Q13. Let $A = \begin{pmatrix} 0 & 0 & -1 \\ 0 & -1 & 0 \\ -1 & 0 & 0 \end{pmatrix}$ then only correct statement about the matrix A is:

a) A is zero matrix

b) $A = (-1) \times I$, where I is a unit matrix.

c) A^{-1} does not exist

d) $A^2 = I$

Q14. If $A^2 - A + I = 0$, then the value of A is:

a) A

b) $A + I$

c) $I - A$

d) $A - I$

Q15. The differential coefficient of $f(x) = \log(\log x)$ is:

a) $x/\log x$

b) $(x \log x)^{-1}$

c) $\log x / x$

d) $x \log x$.

Q16. If $x \sin y + y \cos x = \pi$, then the value of $y''(0)$ is:

a) π

b) $-\pi$

c) 1

d) 0

Q17. 10π

$\int_0^{\pi} (|\sin x|) dx$ is:

0

- a) 20
- b) 8
- c) 10
- d) 18

Q18. The value of $\int_{-2}^3 (1 - x^2) dx$ is:

- a) 28/3
- b) 14/3
- c) 7/3
- d) 1/3

Q19. A triangle with vertices (4, 0), (-1, -1), (3, 5) is:

- a) Isosceles and right angled
- b) Isosceles but not right angled
- c) Right angled but not isosceles
- d) Neither isosceles nor right angled

Q20. If $(x + y)(dx - dy) = dx + dy$, then

- a) $y = e^{x+y} + c$
- b) $y = \log(x + y) + c$
- c) $y + x + \log(x - y) = c$
- d) $y - x + \log(x + y) = c$

Section B: (Reasoning and Logical Aptitude)

Q21. Find out the missing group of letters:

BEHK: CGKO: DGJM: ?

- a) EIMR
- b) EFMQ
- c) EIMQ
- d) EIMP

Q22. A works twice as fast as B. Working together, they can complete a job in 4 days. In how many days would same job be done if B worked alone?

- a) 4
- b) 6
- c) 8
- d) 12

Q23. Which one number will complete the series?

4, 11, 7, 14, 10, 17, ?

- a) 24
- b) 13
- c) 20
- d) 21

Q24. If BEAT is written as GIDV in a certain code, how will SOUP be written in the same code?

- a) XSYS
- b) YSXR
- c) XSXR
- d) XSYR

Q25. Two numbers are in the ratio of 5:8, if 12 be added to each, then they are in the ratio 3:4, the value of first number is:

- a) 15

- b) 10
- c) 5
- d) None of the above

Q26. Circumference of a circle is 44 meters, what is the area of another circle whose radius is three times that of first one (take $\pi = 22/7$)

- a) 132 Sq meters
- b) 1200 Sq meters
- c) 1386 Sq meters
- d) 1368 Sq meters

Q27. If P is the brother of Q, R is the daughter of Q, S is the sister of P and T is the brother of R. who is the uncle of T:

- a) P
- b) R
- c) S
- d) Q

Q28. Tea: Leaves:: Coffee: ?

- a) Leaves
- b) Beverages
- c) Stimulant
- d) Seeds

Q29. Ravi traveled 4 km straight towards south. He turned left and traveled 6 km straight, and then turned right and traveled 4 km straight. How far is he from the starting point?

- a) 8km
- b) 10km
- c) 12km
- d) None of the above

Q30. Statements: I. Some chairs are windows.

II. No window is sky.

Conclusions: I. No window is chair.

II. No chair is window.

III. Some windows are skies.

IV. Some chairs are skies.

- a) Either III or IV follows.
- b) Either II or III follows.
- c) Either II or IV follows.
- d) None of the above.

Q31. Statements: I. All cups are roads.

II. Some roads are hammers.

Conclusions: I. Some hammers are roads.

II. Some roads are cups.

III. All roads are cups.

IV. Some hammers are cups.

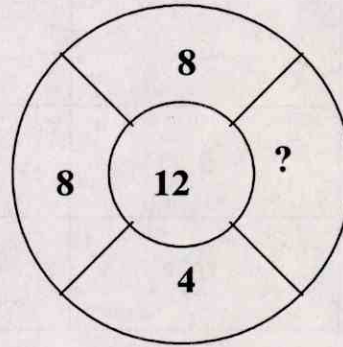
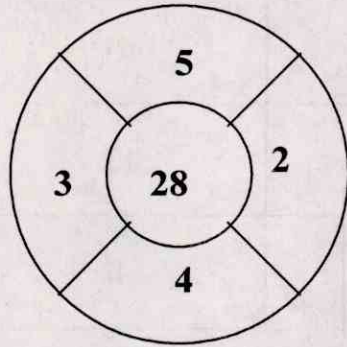
- a) Only I and II follows.
- b) Only III and IV follows.
- c) Only I, II and IV follows.
- d) None of the above.

Q32. What was the day on 1st January 1901?

- a) Monday
- b) Wednesday
- c) Sunday

d) Tuesday

Q33. Find the missing number?



- a) 3
- b) 9
- c) 1
- d) 2

Q34. A quantity of 30 ml of 20% alcohol is mixed with 20 ml of 25% alcohol. What is the strength of the alcohol in the mixture?

- a) 20%
- b) 25%
- c) 22%
- d) 22.5%

Q35. If A takes 4 hrs to cover a distance and he is 2 times faster than B, what time will B take to cover the same distance?

- a) 6hr
- b) 8 hr
- c) 9 hr
- d) None of the above

Q36. Two trains are running on parallel lines in the same direction at speed of 40 km/hr and 20 km/hr respectively. The faster train crosses a man in the second train in 36 seconds. The length of the faster train is:

- a) 200m
- b) 185m
- c) 225m
- d) 210m

Q37. A tap can fill a cistern in 8 hrs and another can empty it in 16 hrs. If both taps are opened simultaneously, the time (in hrs) required to fill the tank is:

- a) 8
- b) 10
- c) 16
- d) 24

Q38. The monthly salary of A, B, C are in the ratio of 2 : 3 : 5. if C's monthly salary is Rs. 1200 more than that of A, then B's annual salary is:

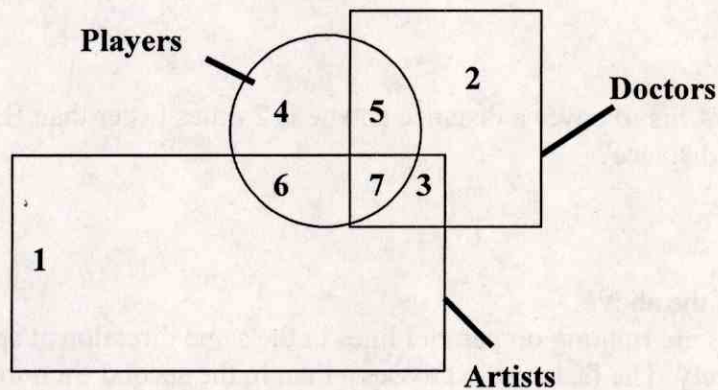
- a) 14400
- b) 24000
- c) 1200
- d) 2000

Q39. Find the missing number?

6	8	?
9	3	13
10	4	1

- a) 11
- b) 9
- c) 7
- d) 5

Q40. Which numbered space in the figure represents doctors who are players as well as artists?



- a) 2
- b) 3
- c) 6
- d) 7

Section C: (English Comprehension)

Q41. Choose the one which best expresses the meaning of word 'OBLIGATORY'

- a) Useful
- b) Required
- c) Stubborn
- d) Agreeable

Q42. Choose the word similar in meaning to the word 'FRAGILE'

- a) Valid
- b) Delicate
- c) Frank
- d) Incapable

Q43. Choose the word which is most nearly the opposite in meaning to the word ILLUSORY

- a) Deceptive

- b) Real
- c) Imaginary
- d) Certain

Q44. Choose the word which is most nearly the opposite in meaning to the word **SPARSE**

- a) Expensive
- b) Heavy
- c) Lavish
- d) Scattered

Q45. She seems offended.....my remarks

- a) upon
- b) at
- c) for
- d) with

Q46. We The family after expressing our grief over the tragedy

- a) Mourned
- b) Condoled
- c) Consoled
- d) Cheered

Read the following passage carefully and choose the most appropriate answer to each question given below among the four options.

One simple physical concept lies behind the formation of the stars: gravitational instability. The concept is not new. Newton first perceived it late in the 17th century. Imagine a **uniform**, static cloud of gas in space; imagine then that the gas is somehow disturbed so that one small spherical region becomes a little denser than the gas around it so that the small region's gravitational field becomes slightly stronger. It now attracts more matter to it and its gravity increases further, causing it to begin to contract. As **it** contracts, its density increases, which increases its gravity even more, so that it picks up even more matter and contracts even further. The process continues until the small regions of gas finally form a gravitationally bound object.

Q47. The primary purpose of the passage is to:

- a) Describe a static condition
- b) Support a theory considered outmoded
- c) Depict the successive stages of a phenomenon
- d) Demonstrate the evolution of the meaning of a term

Q48. It can be inferred from this passage that the author views the information contained within it as:

- a) Lacking in elaboration
- b) Original but obscure
- c) Speculative and unprofitable
- d) Uncomplicated and traditional

Q49. With which of the following words can you replace the word 'uniform, as given in bold type in this passage?

- a) Uniting
- b) Varying
- c) Gaseous
- d) Unvarying

Q50. What does the word 'it' in bold type stand for in the passage?

- a) Gravitational instability

- b) Cloud of gas
- c) Small spherical denser region
- d) Matter

Section D: (Computer Science)

Q51. A relation produced from an ER model will always be in:

- a) 1NF
- b) 2NF
- c) 3NF
- d) 4NF

Q52. Disadvantage of normalization is:

- a) Elimination of anomalies
- b) Increase in execution time because of join
- c) Overall reduction of space
- d) Minimal redundancy.

Q53. Index part and data part are part of:

- a) B+ tree
- b) ISMA
- c) B- tree
- d) Hashing.

Q54. Which of the following feature of windows XP professional operating system protects the data of user, even if computer is shared between users?

- a) Passwords
- b) Network access control
- c) Firewalls
- d) Encrypting file system

Q55. A 20 bit address bus allows access to a memory of capacity of:

- a) 1MB
- b) 2 MB
- c) 32 MB
- d) 64 MB

Q56. Cache memory enhances:

- a) Memory capacity
- b) Memory access time
- c) Secondary storage capacity
- d) Secondary storage access time.

Q57. Pipelining improves CPU performance due to

- a) Reduced memory access time
- b) Increased clock speed
- c) The introduction of parallelism
- d) Additional functional units.

Q58. A class in C++ can have:

- a) One destructor
- b) Many destructors
- c) Number of destructors is computer dependent
- d) None of the above

Q59. Radio transmission is an example of:

- a) Full duplex communication
- b) Half duplex communication

- c) Simplex communication
- d) None of the above

Q60. Which of the following process models delivers a software product in a span of 60 to 90 days?

- a) Spiral
- b) RAD
- c) Waterfall
- d) None of the above

Q61. The IP address 193.108.7.205 belongs to class:

- a) A
- b) B
- c) C
- d) D

Q62. What will be the output of the following c++ program segment?

```
void main ()  
{  
    int i;  
    clrscr ();  
    for( int j=0; j<=200;j++)  
    {  
    }  
    printf ("%d", i);  
}
```

- a) Error
- b) 0
- c) Infinite loop
- d) None of the above

Q63. A complete binary tree having 5 levels will have number of nodes.

- a) 16
- b) 31
- c) 32
- d) 15

Q64. In SDLC, DFD and ERD model are part of:

- a) Feasibility Study
- b) System Analysis
- c) System Design
- d) System Study

Q65. The prerequisite to perform binary search on a list is:

- a) Sorted
- b) Compacted
- c) Random access
- d) All the above

Q66. The solution to Critical Section Problem is: Mutual Exclusion, Progress and Bounded waiting.

- a) The statement is false
- b) The statement is true.
- c) The statement is contradictory.
- d) None of the above

- Q67. Switching the CPU to another Process requires to save state of the old process and loading new process state is called as _____.
- a) Process Blocking
 - b) Context Switch
 - c) Time Sharing
 - d) None of the above
- Q68. A process is:
- a) Group of statements.
 - b) A program in execution
 - c) A program
 - d) None of the above
- Q69. Which of the following is not a layer in the TCP/IP stack?
- a) Application
 - b) Internet
 - c) Session
 - d) None of the above
- Q70. The system program that makes an object program ready for execution is:
- a) Translator
 - b) Interpreter
 - c) Compiler
 - d) Loader

-----PAPER END-----