

NEC-2024

Student Name: _____ **Mobile No:** _____

College Name: _____

Stream/Semester/Year _____

E-mail: _____

Test ID: NEC-2024-Sample

Duration: 30 minutes

Maximum Marks:30

Please read the following instructions carefully:

1. This question paper is fully objective type consisting of 30 questions for a total of 30 marks.
2. Each question has four choices for the answer. **Only one choice is correct.**
3. Wrong answers carry **NEGATIVE** marks. For all 1-mark questions, 1/4thmark will be deducted for each wrong answer.
4. Students will be provided OMR sheets to mark the correct answer. Each question has only one correct answer. In case you wish to change an answer, erase the old answer completely using a good soft eraser.
5. More than one answer marked against a question will be deemed as incorrect response & will be negatively marked.
6. Un-attempted Questions will carry zero marks.
7. No charts or tables are provided in the examination hall.
8. Calculator/Mobile is not allowed in the examination hall.
9. Choose the closest numerical answer among the choices given.
10. Please report if there is any discrepancy in the question paper.
11. Student has to fill details mentioned above.

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NEC-2024**Answer the following Questions:****Negative Marks: 0.25**

- Given a 2×2 real matrix A with Eigen values i and $-i$. Then A can be _____?
(A) Orthogonal (B) Symmetric
(C) Skew - symmetric (D) Invertible
- The HCF and LCM of the two numbers are 12 and 600 respectively. If one of the numbers is 24, then the other number will be _____.
(A) 300 (B) 400
(C) 1500 (D) None of these
- Which of the following is Eigen vector of the matrix $\begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}$
(A) (4, 1) (B) (3, 4)
(C) (1, -5) (D) (-7, 1)
- If the price of petrol is increased by 20%, by what percentage should the consumption be decreased by the consumer, if the expenditure on petrol remains unchanged?
(A) $16\frac{2}{3}\%$ (B) $6\frac{2}{3}\%$
(C) 8% (D) 15%
- If DELHI is written as EDHIL, then PARIS is written as
(A) APRIS (B) SARIP
(C) SAPIR (D) APISR
- The average of 9 numbers is 11. If each of these 9 numbers is multiplied by 5 and then 5 is added to each of these resultant numbers, then the new average is
(A) 65 (B) 60
(C) 77 (D) 80
- Person X can solve 80% of the ISRO question paper and person Y can solve 60%. The probability that at least one of them will solve a problem from the question paper, selected at random is _____.
(A) 0.48 (B) 0.70
(C) 0.88 (D) 0.92
- There are 6 pups and 4 cats. In how many ways can they be seated in a row so that no cat sits together?
(A) 64 (B) $\frac{10!}{4!} \cdot (6!)$
(C) $6! \times 7P_4$ (D) None of these

9. The probability that A speaks truth is $\frac{4}{5}$ while that of B is $\frac{3}{4}$. The probability that they contradict each other when asked to speak on a fact is _____
 (A) $\frac{3}{20}$ (B) $\frac{7}{20}$
 (C) $\frac{1}{5}$ (D) $\frac{4}{5}$
10. In an election, there are 3 candidates and the successful candidate received five times as many votes as the bottom candidate and 2000 votes more than the second candidate. The total number of votes was 6800. How many votes did the successful candidate obtain?
 (A) 3540 (B) 4000
 (C) 2348 (D) 5675
11. City D is to the West of the city M. City R is to the South of city D. If city K is to the East of city R, then in which direction is city K located in respect of city D?
 (A) North (B) East
 (C) North-East (D) South-East
12. Choose the correct answer:
 (A) Every identity matrix is a scalar matrix.
 (B) Every diagonal matrix is an identity matrix.
 (C) A square matrix whose each element is 1 is an identity matrix
 (D) Every scalar matrix is an identity matrix.
13. What is the sum of following series

$$\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \dots + \frac{1}{99 \times 100}$$

 (A) $\frac{101}{100}$ (B) $\frac{99}{100}$
 (C) $\frac{100}{99}$ (D) None of these
14. $\int_{-1}^1 \frac{x^9}{x^4 + 2|x| + 1} dx =$ _____
 (A) 0 (B) 1
 (C) 9 (D) 10
15. If the length of the train is 700 m and length of platform is 500 m, find the time taken by the train moving at 54 km/h to cross platform?
 (A) 75 sec (B) 80 sec
 (C) 85 sec (D) 90 sec
16. How many times do the hands of a clock coincide in a day?
 (A) 24 (B) 22
 (C) 21 (D) 20

17. If three dice are thrown simultaneously, then the probability of getting a sum of 5 is
 (A) $\frac{1}{36}$ (B) $\frac{1}{6}$
 (C) $\frac{5}{216}$ (D) $\frac{7}{216}$
18. If A and B are together, they can complete a work in 18 days. A and C together in 12 days, and B and C together in 9 days, then B alone can do the work in
 (A) 18 days (B) 24 days
 (C) 30 days (D) 40 days
19. For what real value of 'x' the determinant $\begin{vmatrix} 1 & x & x^2 \\ x^2 & 1 & x \\ x & x^2 & 1 \end{vmatrix} = 0$?
 (A) 0 (B) 2
 (C) 1 (D) -1
20. In how many ways can the letters of the word PATNA be rearranged?
 (A) 60 (B) 120
 (C) 119 (D) 59
21. In a certain code, TEACHER is written as VGCEJGT. How is CHILDREN written in that code?
 (A) EJKNEGTP (B) EGKNFITP
 (C) EJKNFGTO (D) EJKNFTGP
22. If $\vec{F} = (2x + 3y - az)\hat{i} + (bx - 4y + z)\hat{j} + (x - cy - 2z)\hat{k}$ is Irrotational than a, b, c is_____.
 (A) $a = -1, b = -3, c = -1$ (B) $a = 1, b = 3, c = 1$
 (C) $a = -1, b = 3, c = -1$ (D) $a = 1, b = -3, c = -1$
23. If a gift pack is sold at a gain of 6% instead of at a loss of 6%, then the seller gets Rs. 6 more. The cost price of the article is
 (A) Rs. 60 (B) Rs. 66
 (C) Rs. 50 (D) Rs. 36
24. A bag contains eight white and six red marbles. The probability of drawing two marbles of same colour is_____
 (A) $\frac{{}^8C_2 \cdot {}^6C_2}{{}^{14}C_2}$ (B) $\frac{{}^8C_2}{{}^{14}C_2} + \frac{{}^6C_2}{{}^{14}C_2}$
 (C) $\frac{{}^8C_2 \cdot {}^6C_2}{{}^{14}C_2 \cdot {}^{14}C_2}$ (D) $\frac{{}^8C_2}{{}^{14}C_2} + \frac{{}^6C_2}{{}^{12}C_2}$
25. There is an AP 11, 13, 15, Which term of this AP is 65?
 (A) 25th (B) 26th
 (C) 27th (D) 28th

26. A man showed a boy next to him and said, "He is the son of my wife's sister-in-law, but I am the only child of my parents." How is his son related to that boy?
(A) Cousin (B) Brother
(C) Uncle (D) Nephew
27. If Rs. 510 be divided among A, B, C in such a way that A gets $\frac{2}{3}$ of what B gets and B gets $\frac{1}{4}$ of what C gets, then their shares are respectively.
(A) Rs. 120, Rs. 240, Rs. 150 (B) Rs. 60, Rs. 90, Rs. 360
(C) Rs. 150, Rs. 300, Rs. 60 (D) Rs. 70, Rs. 90, Rs. 350
28. Aditya's salary was increased by 40% and then decreased by 25%. Find out the net effect in Aditya's salary.
(A) 4% increase (B) 3% increase
(C) 5% increase (D) 6% increase
29. How many numbers of four digits can be formed with the digits 0, 1, 2, 3 (repetition of digits being allowed)?
(A) 12 (B) 108
(C) 256 (D) 192
30. In a city 45% of the people read English and Hindi newspapers. 15% read only Urdu newspapers and 75% read Hindi newspapers. If nobody reads all the three newspapers and everybody read atleast one newspaper out of English, Hindi, and Urdu newspapers, how many read Urdu newspaper?
(A) Max 45% (B) Max 55%
(C) Min 25% (D) Min 30%