

BITSAT 2025 May 26 Question Paper

Time Allowed :3 Hours	Maximum Marks :390	Total questions :130
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General Instructions

Read the following instructions very carefully and strictly follow them:

1. Duration of Exam: 3 Hours
2. Total Number of Questions: 130 Questions
3. Section-wise Distribution of Questions:
 - Physics - 40 Questions
 - Chemistry - 40 Questions
 - Mathematics - 50 Questions
4. Type of Questions: Multiple Choice Questions (Objective)
5. Marking Scheme: Three marks are awarded for each correct response
6. Negative Marking: One mark is deducted for every incorrect answer.
7. Each question has four options; only one is correct.
8. Questions are designed to test analytical thinking and problem-solving skills.

1. If $\vec{a} = \hat{i} + 2\hat{j} - \hat{k}$, $\vec{b} = 2\hat{i} - \hat{j} + 3\hat{k}$, and $\vec{c} = -\hat{i} + 3\hat{j} + 2\hat{k}$, find $\vec{a} \cdot (\vec{b} \times \vec{c})$.

- (1) 15
 - (2) -30
 - (3) 20
 - (4) -20
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2. If the word "GIFT" is coded using A=1, B=2, ..., Z=26, and each letter's value is squared, what is the sum of the coded values?

- (1) 166
 - (2) 216
 - (3) 234
 - (4) 252
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3. From the top of a 60 m high building, the angles of depression to two points on the ground on the same side of the building are 30° and 60° . What is the distance between the two points?

- (1) $40\sqrt{3}$ m
 - (2) $20\sqrt{3}$ m
 - (3) 60 m
 - (4) 80 m
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4. Maximize $z = 3x + 4y$ subject to $x + y \leq 4$, $x \geq 0$, $y \geq 0$. What is the maximum value of z ?

- (1) 12
 - (2) 16
 - (3) 14
 - (4) 10
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5. Find the sum of the series $1 + 3 + 5 + \dots + 99$.

- (1) 2500
- (2) 2400

(3) 2600

(4) 2300

6. If $\vec{p} = 3\hat{i} - \hat{j} + 2\hat{k}$, $\vec{q} = \hat{i} + 4\hat{j} - \hat{k}$, and $\vec{r} = 2\hat{i} - 3\hat{j} + 5\hat{k}$, find $\vec{p} \cdot (\vec{q} \times \vec{r})$.

(1) 36

(2) -36

(3) 65

(4) -65

7. If the word "BITS" is coded using $A = 1, B = 2, \dots, Z = 26$, and the code is the sum of the squares of each letter's value, what is the code for the word?

(1) 846

(2) 854

(3) 864

(4) 874

8. Maximize $z = 5x + 2y$ subject to $2x + y \leq 8, x \geq 0, y \geq 0$. What is the maximum value of z ?

(1) 40

(2) 30

(3) 25

(4) 20

9. From the top of a 50 m tall building, the angles of depression to two points on the ground are 45° and 30° . Find the distance between the two points.

(1) $20(\sqrt{3} - 1)$ m

(2) $25(\sqrt{3} - 1)$ m

(3) $30(\sqrt{3} - 1)$ m

(4) $50(\sqrt{3} - 1)$ m

10. A projectile is launched with an initial velocity of 20 m/s at an angle of 30° with the horizontal. What is the maximum height reached by the projectile? (Take $g = 10 \text{ m/s}^2$)

- (1) 5 m
 - (2) 10 m
 - (3) 15 m
 - (4) 20 m
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11. How much heat is required to raise the temperature of 2 kg of water from 25°C to 75°C ? (Specific heat capacity of water $c = 4200 \text{ J/kg}^{\circ}\text{C}$)

- (1) $4.2 \times 10^5 \text{ J}$
 - (2) $5.0 \times 10^5 \text{ J}$
 - (3) $3.5 \times 10^5 \text{ J}$
 - (4) $4.8 \times 10^5 \text{ J}$
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12. Which of the following is the correct electronic configuration of Cr (Chromium, atomic number 24)?

- (1) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^4 4s^2$
 - (2) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$
 - (3) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^6 4s^0$
 - (4) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^3 4s^3$
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13. For the reaction $A + B \rightarrow C$, the rate law is found to be $\text{rate} = k[A]^2[B]$. If the concentration of A is doubled and B is halved, by what factor does the rate change?

- (1) 2
 - (2) $\frac{1}{2}$
 - (3) 4
 - (4) 1
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14. In the reaction $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \leftrightarrow 2\text{NH}_3(\text{g})$, if the equilibrium constant $K_c = 4 \times 10^{-3}$ at a certain temperature, which of the following is true about the reaction at equilibrium?

- (1) Reactants are favored over products
- (2) Products are favored over reactants

- (3) Reactants and products are equally favored
 - (4) Reaction does not reach equilibrium
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15. In the electrolysis of molten NaCl , what is produced at the cathode?

- (1) Chlorine gas
 - (2) Sodium metal
 - (3) Hydrogen gas
 - (4) Oxygen gas
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