BITSAT 2025 MAY 30 Question Paper

Time Allowed :3 Hours	**Maximum Marks :**390	**Total questions :**130

General Instructions

Read the following instructions very carefully and strictly follow them:

1. **Exam Mode**: Computer Based Test
2. **BITSAT exam duration**: 3 hours
3. **Medium of Exam**: English
4. **BITSAT exam Sections**:
   - Part I - Physics (30 questions)
   - Part II - Chemistry (30 questions)
   - Part III - English Proficiency (10 questions) and Logical Reasoning (20 questions)
   - Part IV - Mathematics/Biology (40 questions)
5. **Type of Questions**: Multiple Choice Questions (MCQ)
6. **BITSAT Total Questions**: 130 Questions
7. **BITSAT Exam Pattern Total Marks**: 390 Marks

1. The 5th term of an AP is 20 and the 12th term is 41. Find the first term.

(A) 7

(B) 8

(C) 9

(D) 10

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2. The value of $\sin^2 30^\circ + \cos^2 60^\circ$ is:

(A) $\frac{1}{2}$

(B) 1

(C) $\frac{3}{4}$

(D) $\frac{1}{4}$

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3. The sum of the infinite geometric series $S = \frac{a}{1-r}$ is 24, and the sum of the first three terms is 21. Find a and r.

(A) $a = 12, r = \frac{1}{2}$

(B) $a = 8, r = \frac{2}{3}$

(C) $a = 6, r = \frac{3}{4}$

(D) $a = 10, r = \frac{4}{5}$

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4. Find the value of $\sin 75^\circ \cos 15^\circ + \cos 75^\circ \sin 15^\circ$.

(A) 1

(B) $\frac{\sqrt{3}}{2}$

(C) $\frac{1}{2}$

(D) $\frac{\sqrt{2}}{2}$

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5. Given the sets $A = \{x \mid |x - 2| < 3\}$ and $B = \{x \mid |x + 1| \leq 4\}$, find $A \cap B$.

(A) $(-1, 3]$

(B) $(-2, 3)$

(C) $(-1, 4)$

(D) $(-2, 4)$

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6. The area of a triangle with vertices at points $A(1, 2)$, $B(4, 6)$, and $C(k, 8)$ is 5. Find the value of k.

(A) 1

(B) 2

(C) 3

(D) 4

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7. A block of mass 5 kg is placed on a frictionless incline of angle $30°$. What is the acceleration of the block down the incline? (Take $g = 9.8\, m/s^2$)

(A) $9.8\, m/s^2$

(B) $4.9\, m/s^2$

(C) $5.6\, m/s^2$

(D) $3.2\, m/s^2$

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8. Two resistors, 4 Ω and 6 Ω, are connected in parallel to a 12 V battery. What is the total current drawn from the battery?

(A) 3 A

(B) 5 A

(C) 4 A

(D) 6 A

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9. The work function of a metal is 2 eV. What is the threshold frequency for the photoelectric emission? (Take Planck's constant $h = 6.63 \times 10^{-34}$ Js, $1\,\text{eV} = 1.6 \times 10^{-19}$ J)

(A) 4.8×10^{14} Hz

(B) 5.2×10^{14} Hz

(C) 6.2×10^{14} Hz

(D) 7.4×10^{14} Hz

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10. A 2 kg object is moving with a velocity of 5 m/s on a frictionless surface. It collides elastically with a stationary object of mass 3 kg. Find the velocity of the 3 kg object after the collision.

(A) 3 m/s

(B) 4 m/s

(C) 5 m/s

(D) 2 m/s

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11. The number of moles of CO_2 produced when 2 moles of C_2H_6 are completely burnt is:

(A) 6

(B) 8

(C) 12

(D) 4

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12. What volume of CO_2 gas at STP is produced by the reaction of 10 g of $CaCO_3$ with excess HCl?

(A) 4.48 L

(B) 2.24 L

(C) 8.96 L

(D) 11.2 L

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13. How many grams of $Al_2(SO_4)_3$ are required to produce 10 L of a 0.5 M solution?

(Molar mass = 342 g/mol)

(A) 1710 g

(B) 342 g

(C) 68.4 g

(D) 85.5 g

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14. Calculate the empirical formula of a compound containing 40% carbon, 6.7% hydrogen, and 53.3% oxygen by mass.

(A) CH_2O

(B) C_2H_4O

(C) $C_3H_6O_3$

(D) CH_4O
