

BITSAT 2025 June 22 Shift 2 Question Paper

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

1. The **BITSAT 2025** (Birla Institute of Technology and Science Admission Test) is conducted in **Computer-Based Test (CBT)** mode.
2. The duration of the test is **3 hours (180 minutes)**.
3. The question paper consists of **130 multiple-choice questions (MCQs)** divided into four sections:
 - **Physics – 30 Questions**
 - **Chemistry – 30 Questions**
 - **English Proficiency and Logical Reasoning – 20 Questions**
 - **Mathematics/Biology – 50 Questions**
4. Each correct answer carries **3 marks**, and each incorrect answer leads to a **penalty of 1 mark**.
5. After attempting all 130 questions, candidates can attempt up to **12 additional questions** (4 each from Physics, Chemistry, and Mathematics/Biology) — only if time permits.
6. The language of the question paper is **English only**.
7. Candidates must reach the test center **at least 1 hour before** the commencement of the examination.
8. Candidates must carry:
 - **BITSAT 2025 Hall Ticket**
 - **Valid Photo ID Proof** (Aadhaar, Passport, PAN, Driving Licence, etc.)
9. Rough work must be done only on the provided sheets. Additional sheets will not be supplied.
10. Use of **calculators, mobile phones, smart watches, or any other electronic devices** is strictly prohibited.
11. Follow all **invigilator's instructions** carefully. Any malpractice will result in **cancellation of candidature**.

1. A radio wave travels in a medium with refractive index 1.5. What is the speed of light in this medium if the speed of light in vacuum is 3×10^8 m/s?

- (A) 2×10^8 m/s
 - (B) 1.5×10^8 m/s
 - (C) 2.5×10^8 m/s
 - (D) 1.6×10^8 m/s
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2. A concave mirror produces an image that is real, inverted, and diminished. What is the position of the object in relation to the mirror?

- (A) At the focal point
 - (B) Between the focus and the mirror
 - (C) Beyond twice the focal length
 - (D) Between the focus and twice the focal length
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3. In an isobaric process, 200 J of heat is supplied to a gas. The gas does 50 J of work. What is the change in internal energy?

- (A) 150 J
 - (B) 250 J
 - (C) 100 J
 - (D) 200 J
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4. The rate of a reaction doubles when the temperature is increased by 10°C . What is the approximate value of the activation energy?

- (A) 60 kJ/mol
 - (B) 100 kJ/mol
 - (C) 120 kJ/mol
 - (D) 150 kJ/mol
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5. What is the major product when 1-bromopropane undergoes nucleophilic substitution with OH^- ?

- (A) Propan-1-ol
 - (B) Propan-2-ol
 - (C) 1,2-Propanediol
 - (D) Propene
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6. What is the dot product of the vectors $\mathbf{a} = (2, 3, 1)$ and $\mathbf{b} = (1, -1, 4)$?

- (A) 5
- (B) 4
- (C) 7
- (D) 10

7. Find the value of the integral: $\int_0^1 \sin^{-1}(x) dx$

- (A) 0
- (B) $\frac{\pi}{2}$
- (C) 1
- (D) π

8. A box contains 5 red balls and 3 blue balls. If two balls are drawn randomly without replacement, what is the probability that one of the balls is red and the other is blue?

- (A) $\frac{15}{28}$
- (B) $\frac{15}{56}$
- (C) $\frac{1}{4}$
- (D) $\frac{3}{8}$

9. Find the angle between the vectors $\mathbf{a} = (2, 3, 1)$ and $\mathbf{b} = (1, -1, 4)$.

- (A) 45°
- (B) 60°
- (C) 90°
- (D) 120°

10. Find the determinant of the matrix $\mathbf{A} = \begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$.

- (A) 0
 - (B) 4
 - (C) 9
 - (D) 25
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