

BITSAT 2025 June 23 Shift 1 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. Calculate the electric field at a point due to a uniformly charged spherical shell.

- (A) $\frac{Q}{4\pi\epsilon_0 r^2}$
 - (B) 0
 - (C) $\frac{Q}{2\pi\epsilon_0 r^2}$
 - (D) $\frac{Q}{4\pi r^2}$
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2. Determine the final temperature when two bodies at different temperatures are brought into thermal contact.

- (A) The temperature will always be the average of the two temperatures.
 - (B) The temperature will depend on the masses and specific heats of the bodies.
 - (C) The temperature will always be the temperature of the body with the higher initial temperature.
 - (D) The temperature will be the higher of the two initial temperatures.
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3. Find the focal length of a lens in a compound lens system.

- (A) $\frac{1}{f_{total}} = \frac{1}{f_1} + \frac{1}{f_2}$
 - (B) $\frac{1}{f_{total}} = \frac{1}{f_1} - \frac{1}{f_2}$
 - (C) $f_{total} = f_1 + f_2$
 - (D) $f_{total} = f_1 - f_2$
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4. Calculate the de Broglie wavelength of an electron moving with a given velocity.

- (A) $\lambda = \frac{h}{mv}$
 - (B) $\lambda = \frac{h}{2mv}$
 - (C) $\lambda = \frac{mv}{h}$
 - (D) $\lambda = \frac{2mv}{h}$
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5. What is the major product of the reaction of an alkene with bromine water?

- (A) Alkane
 - (B) Dibromoalkane
 - (C) Alcohol
 - (D) Bromoalkene
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6. Identify the geometry and hybridization of the central atom in SF₄.

- (A) Trigonal bipyramidal, sp³ hybridization
 - (B) Tetrahedral, sp³ hybridization
 - (C) Seesaw, sp³d hybridization
 - (D) Square planar, sp³d² hybridization
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7. What is the oxidation state of chromium in KCrO?

- (A) +6
 - (B) +3
 - (C) +2
 - (D) 0
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8. What is the molecular geometry of the water molecule (H₂O)?

- (A) Linear
 - (B) Trigonal planar
 - (C) Bent
 - (D) Tetrahedral
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9. Calculate the rate constant of a reaction with a given half-life.

- (A) $k = \frac{0.693}{t_{1/2}}$
 - (B) $k = \frac{t_{1/2}}{0.693}$
 - (C) $k = \frac{2.303}{t_{1/2}}$
 - (D) $k = \frac{0.5}{t_{1/2}}$
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10. What is a primary key in a relational database?

- (A) A unique identifier for each record in a table
 - (B) A key used for sorting records
 - (C) A key linking two tables
 - (D) A key for encrypting data
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