

# BITSAT 2025 May 26 Shift 2

## Question Paper

Conducted by Birla Institute of Technology and Science (BITS) Pilani



### General Instructions

- (i) **Duration:** The total duration of the examination is 3 hours (180 minutes).
- (ii) **Total Marks:** The complete paper carries a maximum of 200 marks.
- (iii) **Structure:** The paper has 3 Sections:
  - **Section A:** 50 Multiple Choice Questions (Physics)
  - **Section B:** 50 Multiple Choice Questions (Chemistry)
  - **Section C:** 50 Multiple Choice Questions (Mathematics)
- (iv) **Compulsory Questions:** All 150 questions are compulsory.
- (v) Each question has four options. Only **one** option is correct.
- (vi) **Right Answer:** +1 marks.
- (vii) **Incorrect Answer:** (No Negative marking).
- (viii) **Unanswered/Marked for Review:** 0 marks.

1. A particle starts from rest and moves with a constant acceleration. Find the ratio of the distance traveled in the 3rd second to that in the 4th second.

- (A)  $\frac{5}{7}$
- (B)  $\frac{3}{5}$
- (C)  $\frac{7}{5}$
- (D)  $\frac{4}{7}$

2. What is the equivalent resistance between two opposite corners of a cube made of twelve wires, each of resistance  $R$ ?

- (A)  $\frac{5R}{6}$
  - (B)  $\frac{2R}{3}$
  - (C)  $\frac{3R}{4}$
  - (D)  $\frac{5R}{8}$
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**3. Calculate the de-Broglie wavelength of an electron accelerated through a potential difference of 100 V.**

- (A) 1.227 Å
  - (B) 0.1227 Å
  - (C) 3.88 Å
  - (D) 12.27 Å
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**4. If the frequency of an incident photon is doubled, how does the maximum kinetic energy of the emitted photoelectron change?**

- (A) It becomes double
  - (B) It becomes four times
  - (C) It increases but not exactly double
  - (D) It remains unchanged
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**5. Identify the major product formed when phenol reacts with bromine water.**

- (A) Bromobenzene
  - (B) o-Bromophenol
  - (C) p-Bromophenol
  - (D) 2,4,6-Tribromophenol
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**6. What is the coordination number of the central metal atom in the complex  $[Co(en)_2Cl_2]^+$ ?**

- (A) 4
  - (B) 6
  - (C) 5
  - (D) 2
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7. Calculate the mass of urea required to prepare 2.5 kg of 0.25 molal aqueous solution.

- (A) 30 g
  - (B) 25 g
  - (C) 37.5 g
  - (D) 15 g
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8. Which of the following noble gases has the lowest boiling point?

- (A) Neon
  - (B) Argon
  - (C) Krypton
  - (D) Xenon
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9. Find the value of  $k$  if the lines  $\frac{x-1}{2} = \frac{y-2}{3} = \frac{z-3}{k}$  and  $\frac{x-2}{1} = \frac{y-3}{2} = \frac{z-4}{3}$  are coplanar.

- (A) 1
  - (B) 2
  - (C) 3
  - (D) 4
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10. Evaluate the integral

$$\int_0^{\frac{\pi}{2}} e^x (\sin x + \cos x) dx$$

- (A)  $e^{\frac{\pi}{2}} - 1$
  - (B)  $e^{\frac{\pi}{2}}$
  - (C) 1
  - (D)  $e^{\frac{\pi}{2}} + 1$
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11. If  $\alpha$  and  $\beta$  are the roots of the equation  $x^2 - 5x + 6 = 0$ , find the value of  $\alpha^3 + \beta^3$ .

- (A) 35
  - (B) 30
  - (C) 45
  - (D) 25
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12. Find the area bounded by the curve  $y = x^2$  and the line  $y = 4$ .

(A)  $\frac{16}{3}$

(B)  $\frac{32}{3}$

(C) 8

(D) 16

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