

BITSAT 2023 Question Paper May 23 Shift 2

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

1. The examination is conducted in **Computer-Based Test (CBT)** mode. All questions will appear on the computer screen.
2. The total duration of the examination is **3 hours**. No extra time will be granted under any circumstances.
3. The question paper consists of **Multiple Choice Questions (MCQs)**, each having four options with only one correct answer.
4. Candidates must read each question carefully before selecting the answer. Answers can be changed only within the allotted test duration.
5. The examination follows a **negative marking scheme**. Marks will be deducted for incorrect answers, while unattempted questions will not carry any penalty.
6. Use of **calculators, mobile phones, smart watches, Bluetooth devices, or any other electronic gadgets** is strictly prohibited inside the examination hall.
7. Rough work must be done only on the rough sheets provided at the test center. These sheets must be returned after the examination.
8. Candidates must ensure that they have logged in using the correct credentials. Any discrepancy should be reported immediately to the invigilator.
9. No candidate will be allowed to leave the examination hall before the completion of the test duration.
10. Candidates must maintain discipline and follow all **instructions given by the invigilators**.
11. Any form of **unfair means, impersonation, or misconduct** will lead to immediate disqualification.
12. In case of any technical issue during the examination, candidates should remain seated and inform the invigilator without panic.

1. Quality factor: If R is halved keeping L , C same then Q becomes?

2. Damped oscillation constant decreases then what will be the effect of resonance factor?

3. What is the dimension of the Gravitational constant?

4. What are the conditions to form an ionic bond?

5. Which named reaction contains dichlorocarbene intermediate?

- (A) Aldol condensation
 - (B) Cannizaro
 - (C) Kolbe's reaction
 - (D) Riemen-Tiemann reaction
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6. A pack of cards contains 4 a jacks. Two cards are drawn from the deck, find out the probability that at least one of them is ace.

7. Two concentric circular wire anti-clockwise current I are in two planes inclined at the θ , find B at centre.

8. Two blocks of mass m and $2m$ are connected with a light rod and are left to free fall, heavier mass is at the last end of the rod. The rod is vertical throughout the motion. Find tension in the rod.

9. Volume of a block was given. 25% of it was submerged in the water (density 10^3). Find the force required to keep the full body inside the water fully submerged.

10. A parallel plate of dimension $4\text{cm} \times 4\text{cm}$ with a distance between them 0.1mm connected with a voltage of 100V . Find the charge (in terms of ϵ_0 in SI)

11. Vapour pressure of pure A is twice that of pure B. Find the ratio of mole fractions of A to B if their Y_a/Y_b was equimolar in vapour phase.

12. Given the quadratic equation $ax^2 + bx + c = 0$, ($a > 0$, $b > 0$, $c > 0$) will have what type of roots?

- (A) Complex

- (B) Real and Positive
 - (C) Real part will be negative
 - (D) None of the above
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13. Roots of $f_1(x) = ax^2 + bx + 5$ and $f_2(x) = px^2 + qx + 10$ are same then find the value of $f_2(10)/f_1(5)$

14. Coefficient of x^{15} in $(x - 1)(x - 2)\dots(x - 16)$.
