

BITSAT 2023 Question Paper May 24 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. Why did the time period of rotation of Earth decrease by microseconds after the Japan 2011 earthquake?

- (A) The oceanic floor and land disturbances caused the effect of rate of rotation of Earth.
(B) Redistribution of mass caused MOI to increase.
(C) Redistribution of mass caused MOI to decrease.

(D) The kinetic energy of Earth increased due to earthquakes.

2. The potential energy of a body is given by $U(x)$ and it has mechanical energy is E . Then its potential energy when its velocity is zero is given by?

3. Gibbs free energy formula is.

4. Ratio of time periods of electrons in 1st and 2nd orbits of Hydrogen is?

5. A planet of radius 8000 km transforms into a star of radius 8 km. If the initial time period is 15h then what is the new time period?

6. 1, 0, 0, 3, 20, what is the next number in the sequence?

7. A block is pushed up a frictionless incline with velocity v . It comes down with which velocity?

8. $dy/dx = \sin x / \sin(x + 2)$. Find y in terms of x .

9. Find the sum of all 4 digit numbers using digits 1,2,3,4,5,6 with no repetition.

10. $\int \frac{\tan^{-1} x \cdot e^{\tan^{-1} x}}{1+x^2} dx$

11. Find the focus of the ellipse $(x - 3)^2/25 + (y - 7)^2/16 = 1$.

12. Equation of tangent to the circle is given by $x^2 + y^2 - 12x + 16y + 19 = 0$ which is parallel to the straight line $4x + 3y = 5$.

13. If the line $y = mx + 1$ is tangent to parabola $y^2 = 4x$, then find the value of m .

14. A compound X gives 6.6 g CO_2 and 1.35 g of H_2O on complete combustion. Find the formula of X.
