



QP CODE: 19101031

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Reg :
No :
Name :

B.Sc.DEGREE (CBCS) EXAMINATION, DECEMBER 2018

First Semester

Core Course - PH1CRT01 - METHODOLOGY AND PERSPECTIVES OF PHYSICS

(Common to B.Sc Physics Model I, B.Sc Physics Model II Applied Electronics, B.Sc Physics Model II Computer Applications, B.Sc Physics Model III Electronic Equipment Maintenance)

2017 Admission (Reappearance)

66BDC16F

Maximum Marks: 60

Time: 3 Hours

Part A

Answer any **ten** questions.

Each question carries **1** mark.

1. Write down the year and the contribution for which Albert Einstein was awarded Nobel prize.
2. Who explained the blue colour of the sky successfully for the first time?
3. Define Planck's Constant
4. What is the major contribution of Heisenberg towards atomic nucleus?
5. What is the biggest binary number you can write with n bits?
6. Write the 2's complement form of the following decimal numbers a) 31 b) 25
7. Convert the following hexadecimal numbers 1C and 2B to binary and find their difference in the 2's complement subtraction.
8. What is the resultant of two vectors acting at an angle θ
9. What is meant by least count of an instrument?
10. What is meant by pitch of a screw?
11. Write down two different sources of errors?
12. What is the order of magnitude of 7×10^8 ?

(10×1=10)

Part B

Answer any **six** questions.

Each question carries **5** marks.

13. What are the significant contributions of Galileo to astronomy?





14. What is piezo electricity? Write a brief note on the scientist who invented it.
15. How are fractions taken into account in binary system? With an example explain how can binary fraction be converted into decimal fraction and vice versa?
16. Explain the difference between binary system and BCD system. Where is BCD system used?
17. i) Find the equation of the line $y = 5x + 3$ in polar coordinates. ii) Find the equation of the circle $x^2 + y^2 = 4$ in polar coordinates.
18. What is the distance in km of a quasar from which light takes 3.0 billion years to reach us?
19. The resistance R is the ratio of potential difference V and I . What is the percentage error in R if V is (200 ± 3) volt and $I = 12 \pm 0.1$ ampere?
20. The radius of a sphere is measured with an error of 2%. What would be the error in volume of the sphere?
21. A basketball team played ten games and scored 8, 4, 6, 6, 7, 7, 9, 4, 8, 5. Calculate the mean and standard deviation.

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **10** marks.

22. Write an essay on the contributions made by Indian Scientists in the field of physics.
23. What is the decimal number range that can be represented with an 8-bit sign- magnitude binary number?
Subtract the following using 1's complement arithmetic: a) 95-23 b) 68-15
24. If $p = x^2 y z$ and $q = x y - 3 z^2$, find
 - i) $\nabla[(\nabla p) \cdot (\nabla q)]$
 - ii) $\nabla \cdot [(\nabla p) \times (\nabla q)]$
 - iii) $\nabla \times [(\nabla p) \times (\nabla q)]$

25. Explain how a galvanometer can be converted into an ammeter and a voltmeter.

(2×10=20)

