



QP CODE: 21102430

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Reg No :

Name :

B.Sc DEGREE (CBCS) EXAMINATIONS, OCTOBER 2021

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 Onwards

9727D405

Time: 3 Hours

Max. Marks : 60

Part A

*Answer any **ten** questions.*

*Each question carries **1** mark.*

1. What is principle of equivalence?
2. Who won the Nobel prize for his work on the conduction of electricity in gases?
3. Which are the two elements discovered by Marie Curie?
4. What is the major contribution of C V Raman to diffraction of light?
5. What is the base of the decimal number system and how many digits are there in the system?
6. Perform using binary multiplication: **a.** 110×11 **b.** 1010×100
7. Add the numbers 16 and 22 by converting to binary.
8. Define Stokes theorem.
9. What do you understand by resting point of a common balance?
10. What is a shunt resistance?
11. What are fundamental units?
12. Define standard deviation.

(10×1=10)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Write a brief note on the contributions of Rayleigh.





14. Write a note on the contributions of Max Plank.
15. Perform the binary subtraction: **i)** $10011 - 11001$ **ii)** $11.01 - 10.11$ **iii)** $10001.11 - 100.1101$
iv) $100 - 110.11$ **v)** $110011 - 1011.11$
16. How can you differentiate BCD from straight binary number system? Encode each of the following decimal numbers to their BCD equivalent **a)** 1235 **b)** 118 **c)** 915
17. Find grad r^m where r is the distance of any point from the origin.
18. A ship sends a pulse of ultrasound and receives an echo 0.3 seconds later. If the speed of sound in water is 1500 m/s calculate its depth.
19. Describe the working of a pendulum clock.
20. How can you convert a galvanometer of internal resistance 75 ohms and showing full scale deflection at 5mA current to (i) An ammeter to measure a maximum current of 500mA (ii) A voltmeter to measure a voltage of 10V.
21. How many significant figures are quoted in each of the following measurements?
a) 783.9 kJ **b)** 0.035 cm **c)** 90.24 kg **d)** 86,400 s **e)** 0.0060 m **f)** 6.07×10^7 m

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **10** marks.

22. Describe Galileo's contributions in the fields of astronomy and mechanics.
23. Show the 8-bit addition of these decimal numbers in 1's complement representation:
a. +50, +23 **b.** +35, -42 **c.** -11, -88 **d.** -44, -12
24. Discuss the scalar and vector product of two vectors in terms of its rectangular components, together with its properties and one of its physical applications.
25. Let Δx and Δy are the errors associated with variable x and y . Find the propagated error associated with variable z , Δz , for (i) $z = ax + by$, (ii) $z = xy$, (iii) $z = x / y$ and (iv) $z = cx$, where a, b, c are constants.

(2×10=20)

