QP CODE: 18103630

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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)

2018 Admission only

4DB2699D

Maximum Marks: 60 **Time: 3 Hours**

Part A

Answer any **ten** questions.

Each question carries **1** mark.

1. Through the famous Leaning Tower of Pisa experiment, Galileo was able to prove what?
2. Who authored the book "The Theory of Sound"?
3. What is the significance of Schrodinger equation?
4. What is a crescograph?
5. Convert the binary number 1110010_2 to hexadecimal number.
6. Explain whether 1010 is a BCD.
7. Find the gradient of the function $F(x,y,z) = x^2 y^3 z^4$
8. Represent the Cartesian coordinates x, y, z in spherical polar coordinates.
9. How do you define one kilogram in SI units?
10. What is the difference in the measurement of one division on the main scale and that of vernier scale in the case of a vernier calliper?
11. Name the two elements used for measuring time in atomic clocks.
12. Which has more resistance – a galvanometer or a milli ammeter?

(10×1=10)

Part B

Answer any **six** questions.

Each question carries **5** marks.

13. What was the purpose of J J Thomson's cathode ray experiment and what was his conclusion?
14. What are the major discoveries of Madam Curie?

15. Subtract the decimal number 125 from 200 using 2's complement binary operation. Express the numbers in hexadecimal.

16. Perform the indicated operation i) 110 + 011 ii) 11010 + 0111 iii) 110 -010 iv) 11011 x 101 v) 101 x 11

17. Vector a = -3i +4j -μk, b = 2i -j +k and c = I -4j -3μk, find the value of μ, if the vectors are coplanar.

18. A current of 3.5 ± 0.5 ampere flows through metallic conductor when a potential difference of 21 ± 1 volt is applied. Find the resistance of the wire?

19. The original length of a wire is 153.7 ± 0.6 cm. It is stretched to 155.3 ± 0.2 cm.. Calculate the elongation in the wire with error limits.

20. A physical quantity x is calculated from the relation $x = \frac{a^3b^2}{\sqrt{cd}}$. Calculate the percentage error in x if a,b,c,d are measured respectively with an error of 1%,3%,4%and 2%.

21. A student scores 85, 100, 92, 96, 87, 94, 75. in his examinations. Find the mean and standard deviation. Another student scores 56, 58, 55, 56, 57,61,60 for the same test. Who is more consistant?, explain the reason mathematically.

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **10** marks.

22. Discuss the contributions of Issac Newton in starting a new era in physics.

23. What are the rules for binary addition and multiplication? Add and multiply the following decimal numbers after converting to binary equivalent a) 25 and 78 b) 34 and 89. Check your answer in decimal system.

24. i) Write down the procedure to convert hexadecimal number to binary numbers. ii) Discuss the steps involved in subtracting smaller number from bigger number and vice versa in 1's compliment form. Iii) subtract the following hexadecimal numbers using 2's complement method after converting to binary: a)F - 4 b) 1C -20 c) AA - 11

25. Explain how angle of a prism can be measured using a spectrometer?

(2×10=20)