

E 8349

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Reg. No.....

Name.....

**B.Sc. DEGREE (CBCS) EXAMINATION, JANUARY/FEBRUARY 2018**

**First Semester**

Core Course—**METHODOLOGY AND PERSPECTIVES OF PHYSICS**

(Common to B.Sc. Physics Model I, II and III)

[2017 Admissions]

Time : Three Hours

Maximum Marks : 60

**Part A**

*Answer any ten questions.  
Each question carries 1 mark.*

1. What is Chandrasekhar limit ?
2. Write down the year and the contribution for which Albert Einstein was awarded Nobel Prize.
3. What is Photo electric effect ?
4. Who is the author of "two new Sciences" ?
5. How many bits constitute a nibble ?
6. The decimal number corresponding to the BCD code 111010101 is :
7. Find the gradient of the function  $f(x, y, z) = x^2 y^3 z^4$ .
8. Convert  $(D8)_{10}$  to decimal.
9. What is a vernier calipers ?
10. What is SONAR ?
11. What is one astronomical unit ?
12. What is parallax error ?

(10 × 1 = 10)

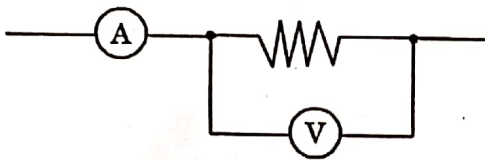
**Part B**

*Answer any six questions.  
Each question carries 5 marks.*

13. Write a brief note on Lord Rayleigh.
14. What are the three laws formulated by Newton to develop mechanics ?
15. What is piezo electricity ? Write a brief note on the scientist who invented it.

**Turn over**

16. How can you differentiate BCD from straight number system? Encode each of the following decimal numbers to their BCD equivalent.
- (a) 1235. (b) 118.  
(c) 915.
17. Check whether the force  $F = (2xy + z^2)i + x^2j + 2xz k$  is conservative. If so calculate the work done on a particle in moving it from (0, 1, 2) to (5, 6, 8).
18. How are fractions taken into Account in Binary system? How can binary fraction be converted into decimal fraction and vice versa.
19. In the given figure below, the ammeter reads 5A and V reads 40 V. Calculate the actual value of the resistance R.



20. What is the perimeter of a soccer field if its length and width are measured to be 95.82 m and 71.836 m respectively?
21. What is the distance in km. of a quasar from which light takes 3.0 billion years to reach us?

(6 × 5 = 30)

### Part C

*Answer any two questions.  
Each question carries 10 marks.*

22. Briefly explain the contributions of any *three* famous Indian Scientists towards Science and Technology.
23. What are the rules of binary addition and multiplication? Add and multiply the following decimal numbers after converting to binary equivalent?
- (a) 25 and 78.  
(b) 34 and 89.
24. Describe the working principle of ammeter and voltmeter.
25. Explain how the angle of a prism can be measured using a spectrometer?

(2 × 10 = 20)