Reg. No…….. Name……

B. Sc. DEGREE END SEMESTER EXAMINATION - OCTOBER 2019

SEMESTER **– 1: PHYSICS (CORE COURSE)**

COURSE: **15U1CRPHY1: METHODOLOGY IN PHYSICS**

(Common for Improvement 2018/ Supplementary 2018/2017/2016 /2015 admission)

Time: Three Hours Max. Marks: 60

PART A

Answer all questions briefly. Each question caries 1 mark.

1. What is the geocentric model of the universe?
2. Explain the general theory of relativity.
3. Discuss the contribution of S. N. Bose to Physics.
4. What is Planck's hypothesis about quantum?
5. How will you define one solar second?
6. What is the principle of SONAR?
7. What are the uses of a galvanometer?
8. Calculate absolute error in measurements a_1, a_2, ----a_n. (1 x 8 = 8)

PART B

Answer any Six questions. Each question carries 2 marks.

9. State and explain the three Kepler's laws.
10. Explain the working principle of Laser Range Finder.
11. Explain the salient features of nanotechnology.
12. Define least count of an instrument. What is the least count of vernier calipers?
13. How can you convert a galvanometer into a voltmeter.
14. Explain the principle of sun dials.
15. Explain dominant and random errors.
16. Explain the errors associated with digital instruments. (2 x 6 = 12)

PART C

Answer any Four questions. Each question carries 5 marks.

17. A galvanometer has a resistance of 100 ohm. The maximum current that can be passed through it is 5 mA. How will you convert it into an ammeter that can read up to 10A?
18. The length of rod A is 3.2 ±0.01 cm and that for B is 4.19±0.01. How much the rod B is longer than A?
19. A physical quantity is related to four observables a, b, c, and d by the relation $A = a^2b^3/cd^{1/3}$. The percentage errors in the measurement of a, b, c and d are 1%,3%,2% and 2% respectively. What is the percentage error in the quantity A?

20. Give the principle of distance measurement using Radar.
21. Explain the principle of a pendulum clock for measuring time.
22. What is a histogram? Choosing a particular measurement draw its histogram. (5 x 4 = 20)

PART D

Answer any Two questions. Each question carries 10 marks.

23. Explain how small angles can be measured using scale and telescope method. How this method is used to measure the thickness of a glass plate.
24. Explain the contributions by the Albert Einstein to the world community. Write a note on theory relativity.
25. What is meant by propagation of errors? Obtain expressions for maximum possible errors when measurement involves sum, difference, product and quotient.
26. Explain the a) Big-Bang and b) Steady state theory regarding the formation of universe.

(10 x 2 = 20)

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