

B.Sc. DEGREE END SEMESTER EXAMINATION OCTOBER/NOVEMBER 2017**SEMESTER –1: PHYSICS (CORE COURSE)****COURSE: 15U1CRPHY1: METHODOLOGY IN PHYSICS**

(Common for Regular 2017 admission and Supplementary/Improvement 2016 & 2015 admission)

Time: Three Hours

Max. Marks: 60

PART AAnswer **all** questions briefly. Each question carries **1** mark.

1. What are the main contributions of C V Raman towards physics?
2. Mention Einstein's theory of relativity.
3. What is meant by nanotechnology?
4. Give the working of a water clock.
5. Calculate the least count of a screw gauge.
6. How does a galvanometer work?
7. Explain absolute errors and relative errors.
8. What is calibration? Explain its importance. (1 x 8 = 8)

PART B (Brief Answer Questions.)Answer **any Six** questions. Each question carries **2** marks.

9. State and explain Keplers Laws of planetary motion.
10. Explain the Geocentric model of Ptolemy.
11. How did Maxwell unify electricity and magnetism?
12. What is the principle of SONAR?
13. How can we use a scale and telescope arrangement to measure angle?
14. How does an ammeter work?
15. How we can obtain the true value from a number of observations?
16. Give the relevant rules for calculating significant figures in a number. (2 x 6 = 12)

PART C (Problems/Derivations.)Answer **any Four** questions. Each question carries **5** marks.

17. Explain with a neat diagram how a galvanometer can be converted to a voltmeter.
18. The angle subtended by moon at a point on earth is $0^{\circ}31'$. If the distance of moon from Earth is $3.84 \times 10^8 \text{m}$, find the diameter of the moon.
19. How the errors can be obtained if two numbers appear as a sum and a product?
20. A galvanometer of resistance 100Ω gives a full scale deflection for a current of 10^{-5}A . Calculate the resistance required to convert the galvanometer in to an ammeter that reads 1A.
21. Describe the working of a pendulum clock.

22. In an experiment physical quantity X is related to variables a, b and c as $X=ab^2/c^3$.if the percentage errors in a, b, c are 1%, 3% and 2% respectively, what is the percentage error in X. (5 x 4 = 20)

PART D (Long Answer Questions.)

Answer **any Two** questions. Each question carries **10** mark.

23. Explain in detail the different parts of a spectrometer. How it can be used to measure the angle of a prism. Give the ray diagram.
24. Explain the contributions by S. N.Bose, M.N Saha and S.Chandrasekhar towards physics.
25. Discuss in detail the working of Laser Range Finder and GPS. Give the various applications of the devices also.
26. Explain the calculation of Standard Deviation in a sequence of measurements. Comment on Error bars and Graphical Representation. (10 x 2 = 20)
