Reg. No...Name................................

B.Sc. DEGREE END SEMESTER EXAMINATION OCTOBER 2016
SEMESTER - 1: PHYSICS (CORE COURSE)
COURSE - **U1CRPHY1: METHODOLOGY IN PHYSICS**
For Supplementary (2014 Admission)

Time: Three Hours   Max Marks: 60

PART A
(Very Short Answer Questions. Answer **all** questions briefly.
Each question carries 1 mark.)

1. What is the importance of Chandrasekhar limit?

2. What is corroboration and falcification?

3. What is least count? How it is determined?

4. Can we use laser beam of light to determine accurately the position of an object which is far away. Justify your answer?

5. The pendulum clock was invented by ---------------------

6. What is the importance of calibration?

7. What is the order of magnitude of (a) 47 (b) 74.

8. National Science Day is celebrated on --------------------.

(1 x 8 = 8)

PART B
(Brief Answer Questions. Answer **any six** questions.
Each question carries 2 mark.)

9. State and explain Kepler's laws.

10.   Explain the working of an atomic clock.

11.   Explain the fundamental interactions in nature.

12.   What is the significance of Peer Review?

13.   What are the differences between a theory and a hypothesis?

14.   Explain how Radar technique is used to locate the position of an aero plane in air?

15.   Write short note on GPS.

16. Discuss the graphical representation of error bars.

(2 x 6 = 12)

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

17. A galvanometer of resistance 100Ω gives full scale deflection with 0.01A current. How much resistance to be connected in parallel with it, to convert it into an ammeter of range 10A.

18. The maximum error in the measurement of mass and length of the side of a cube are 3% and 2% respectively. What would be the maximum error in the measurement of density?

19. The moon is observed from two diametrically opposite points A and B on the earth. The angle subtended at the moon by the two directions of observation is 1° 54'. Compute the distance of the moon from the earth. (Radius of the earth is 6400 km.).

20. Briefly explain the geocentric model of the universe.

21. The work function of potassium is 2.3ev.If the photoelectrons are emitted with maximum velocity of 10^4m/s; calculate the frequency of the incident radiation on the metal. (mass of electron is $9.1x10^{-31}$kg.Planck's constant is $6.62x10^{-34}$ J s)

22. Explain how an inclinometer is used to measure height of trees.

(5 x 4 = 20)

PART D
(Long Answer Questions. Answer **any two** questions.
Each question carries 10 mark.)

23. Explain the contributions of C. V. Raman, Newton and Einstein towards Physics.

24. Explain the main parts of a spectrometer. How it is used to determine the angle of a prism. Draw the ray diagram.

25. a) Discuss the propagation of errors.

b) With an example explain the importance of significant digits.

26. a) Briefly explain the semiconductor revolution.

b) List and explain the features of nanotechnology.

(10 x 2 = 20)

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