Exam. Code : 108203
Subject Code : 2066

B.Sc. Home Science 3rd Semester
BASIC PHYSICS
Paper—VI

Time Allowed—3 Hours]   [Maximum Marks—50

Note :— Attempt **FIVE** questions in all. Question No. 1 is compulsory.

1. (a) Derive the SI unit of joule in terms of fundamental units.

    (b) Differentiate uniform motion and non-uniform motion.

    (c) Calculate the force acting on a body whose linear momentum changes by $20 kgms^{-1}$ in 10s.

    (d) What is simple machine ? Give examples of simple machine.

    (e) Why do we slip on a muddy road ? 5×2

2. (a) What do you understand by the dimensions of a physical quantity ? Discuss the principle of homogeneity of dimensions with an example.   6

    (b) Using the dimensional analysis, check the accuracy of following relation : http://www.gnduonline.com

    $E = mc^2$ 4

3. (a) Define and explain the term acceleration. What is retardation ?   5

    (b) Derive the formula :

    $v = u + at$

    where the symbols have usual meanings.   5

4. What is force ? What are the absolute and gravitational units of force in cgs system and SI ? How are these different units related to each other ?   10

5. What is friction ? What is cause of friction ? What are the laws of friction ? Give a method for determination of the coefficient of friction between two given surfaces.   10

6. (a) What is principle of a lever and mechanical advantages ? Assign the position to fulcrum, load and effort in all three kinds of levers   6

    (b) Explain the use of wheel and pulley in daily life.   4

7. (a) Explain surface tension and give its illustrations.   5

    (b) Define coefficient of viscosity. State its units in CGS system and in SI. Also find its dimensions.   5

8. How is work defined and measured ? Give its units both absolute and gravitational ones. Give two examples of a force that does no work.   10

9. (a) What is surface tension ? Discuss molecular theory of surface tension.   5

    (b) State the Archimedes Principle. What are the laws of floatation of bodies ?   5

10. Explain, what is meant by the coefficient of linear, superficial and cubical expansion of a solid. Find the relations between them.   10