

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 20kgms^{-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 :

$$E = mc^2 \quad 4$$
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