

Applied Physics
2K5-BS-2

Time : 3 hrs.

M.M : 100

Note :-

1. Part 'A' may be attempted in first 6 pages of Answer Sheet.
भाग 'क' के सभी उत्तर, उत्तर-पुस्तिका के प्रथम छः पृष्ठों में ही करने हैं।
2. Part 'B' in rest of the Sheets of Answer Sheet.
भाग 'ख' के उत्तर, उत्तर-पुस्तिका के अगले शेष पृष्ठों में लिखिये।
3. Answers may be given in English or Hindi.
प्रश्नों के उत्तर अंग्रेजी अथवा हिन्दी में दीजिये।

PART-A**1. Attempt any 10 questions:****10 x 2 = 20**

- (a) Deduce the dimensional formula for Planck's Constant?
- (b) What is principle of homogeneity?
- (c) What is angular acceleration?
- (d) Define scalar and vector?
- (e) Define stress and strain?
- (f) What is yielding point and breaking point?
- (g) What is viscosity?
- (h) What is the difference between heat and temperature?
- (i) Define coefficient of thermal conductivity.
- (j) What is simple harmonic motion?
- (k) What is progressive wave?
- (l) Define a black body.
- (m) What is magnifying power of a telescope?
- (n) What is simple pendulum?

2. Attempt any 5 questions:**5 x 4 = 20**

- (a) What are dimensional equations and discuss the limitations of dimensional analysis?
- (b) State and explain Newton's laws of motion.
- (c) Define Angle of contact and surface tension. How surface energy related to surface tension?
- (d) How to determine the coefficient of viscosity using Poiseuille's method?
- (e) Discuss different factors you will take into consideration before choosing a particular thermometer for a particular use?
- (f) Write a short note on stationery wave graphical method.
- (g) Describe any two defects in image formation?
- (h) Write a short note on simple microscope.

PART-B

Attempt any 3 questions:

3 X 20 = 60

- 3 (a) If the centripetal force is of the form of $m^a v^b r^c$, find the value of a, b, c.
(b) State the law of conservation of momentum and illustrate by examples?
- 4 (a) A force of 100 N acts on a 20kg roller initially at rest on a frictionless surface. The roller travels 5m while the force acts. Find the work done on the roller and also its kinetic energy?
(b) State and explain Hook's law? Describe an experiment to determine the Young's modulus of a wire?
- 5 (a) Define Young's modulus (γ), Bulk modulus (K), and Poisson's ratio (μ), and derive the relation between them.
(b) What is pyrometer? Explain the principle, construction and working of Fery's total radiation pyrometer?
- 6 (a) Explain the determination of coefficient of thermal conductivity by Searle's method?
(b) Derive an expression for time period of a simple harmonic motion. Distinguish among free forced, resonant vibrations.
7. Write short note on the following:
(a) Prevost's theory of heat exchange
(b) Superposition of waves
(c) Astronomical telescope
(d) Epidiascope projector