

- Instructions :**
- (1) All questions are compulsory.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.

1. Attempt any **NINE** of the following. [18]

- (a) State any two factors affecting elasticity.
- (b) Define compressibility. State its SI unit.
- (c) Define the two specific heats of gas.
- (d) State relation between °C, °F and K.
- (e) State Hooke's law of elasticity.
- (f) A 100 ml of air is measured at 20 °C. If the temperature of air is raised to 50 °C, calculate its volume as pressure remains constant.
- (g) Define : (i) Adhesive force (ii) Cohesive force
- (h) What is absolute scale of temperature?
- (i) Define velocity gradient and state its unit.
- (j) The wave travels with speed of 3×10^8 m/s and frequency 90 MHz. Calculate its wavelength.
- (k) A radio wave of frequency 91.1 MHz travels with speed of 3×10^8 m/s. Find its wavelength.
- (l) Define Resonance. State its one example.

2. Attempt any **FOUR** of the following : [16]

- (a) Differentiate between streamline and turbulent flow of liquid.
- (b) State and explain law of thermal conductivity. Define coefficient of thermal conductivity.
- (c) A wire of diameter 4 mm and length 2 m extends by 2 mm when a force of 10 N is applied. Find Young's modulus of the wire.
- (d) State Newton's law of viscosity. Define coefficient of viscosity and state its SI unit.
- (e) Explain Laplace's molecular theory of surface tension of liquid.
- (f) Explain stress-strain diagram for a wire under continuously increasing load.

3. Attempt any **FOUR** of the following : [16]

- (a) State law of thermal conductivity. Define coefficient of thermal conductivity.
- (b) Derive an equation for prism formula using neat labelled diagram.
- (c) (i) A particle performing SHM has period of 3 sec. Calculate its acceleration at 2 cm from mean position.
(ii) A tuning fork of frequency 512 Hz resonates with an air column of length 14 cm. Calculate the velocity of sound in air, if end correction is 26 mm.
- (d) Differentiate between isothermal and adiabatic process.
- (e) Define transverse wave and longitudinal wave with example.
- (f) State any four characteristics of stationary waves.

Paper Discussion Schedule for FY Diploma Sem-I

Date	Day	Timing	Centres
20 Nov. 2016	Sunday	9 a.m. to 11 a.m.	Dadar, Ghatkopar
20 Nov. 2016	Sunday	12 a.m. to 2 p.m.	Andheri, Chembur Nerul, Panvel
20 Nov. 2016	Sunday	3 p.m. to 5 p.m.	Borivali, Thane, Kalyan