

I/II Semester Diploma Examination, Nov./Dec., 2012

SCIENCE BOARD APPLIED SCIENCE

Max. Marks : 100

Hours]

Ans : Answer any 5 subdivisions in Section A, 7 subdivisions in Section B and 8 subdivisions in Section C.

SECTION - A

(Answer any five subdivisions)

Write Vernier principle. Write the dimensions of acceleration. What is the SI unit of velocity ? 2 + 2 + 1

State and prove the law of conservation of momentum. 2 + 3

What is friction ? Write 3 advantages of friction. 2 + 3

Write a neat diagram of screw gauge and name its parts. 3 + 2

Describe an experiment to verify the law of triangle of forces. 5

Define Impulse. The resultant of two equal forces acting at right angle to each other is 1414 N. Find the magnitude of each force. 2 + 3

Obtain an expression for magnitude of resultant of two forces acting at a point. 5

SECTION - B

(Answer any 7 subdivisions)

a) Differentiate between elasticity and plasticity with examples. 5

b) Define stress. Write its SI unit. Define Young's modulus. 2 + 1 + 2

c) Obtain an expression for the pressure at a point inside a liquid. 5

a) State Boyle's law. Write 3 applications of capillarity. 2 + 3

b) Define Viscosity of liquid. What is the effect of temperature on viscosity of liquids ? Write two applications of viscosity. 5

c) Derive $PV = mRT$ with usual notations. 5

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6. (a) What is Absolute scale of temperature ? Two litres of air at 20°C if it is heated to 80°C . What will be the new volume, if the pressure remains constant ?
(b) Describe an experiment to determine the frequency of a tuning fork by comparison method.
(c) Define frequency of a vibrating body. Deduce $v = n\lambda$ with usual notation.

7. (a) What is resonance ? Write 3 practical examples of resonance.
(b) Describe an experiment to determine velocity of sound in air at room temperature using Resonance Air Column method.

SECTION - C

(Answer any 8 subdivisions)

8. (a) What is diffraction ? Distinguish between Fresnel and Fraunhofer diffraction.
(b) Give the expression for resolving power of a microscope. Mention two methods of achieving high resolving power of microscope.
(c) Write a note on corpuscular theory and wave theory of light.
9. (a) What is polarization ? Describe a simple experiment to prove that light is a transverse wave.
(b) State Brewster's Law.
(c) Prove that $i_p + r = 90^{\circ}$ with usual notations.
(c) Write a note on any two types of electronic emission.
10. (a) What is threshold frequency ? Write any three applications of photoelectric effect.
(b) What is an electron microscope ? Mention the applications of electron microscope.
(c) What is Raman effect ? Write any three applications of Raman effect.
11. (a) What is air pollution ? What are the causes for it ?
(b) Define pH of a solution. Explain pH scale.
(c) What is an acid rain ? Write any three methods of controlling water pollution.