TED (10)–1016 A

(REVISION—2010)

Reg. No. .....

Signature .....

SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/ TECHNOLOGY—OCTOBER, 2012

APPLIED SCIENCE–II

Physics

(Common–except DCP and CABM)

[*Time* : 1½ hours

(Maximum marks : 50)

PART—A

(Answer the following questions in one or two sentences. Each question carries 2 marks)

Marks

I (a) State Bernoulli's theorem. 2

(b) Write the symbol and truth table of NOR gate. 2

PART—B

(Answer *any two* questions. Each question carries 8 marks)

II (a) Explain the experimental determination of coefficient of viscosity of a liquid by stoke's method. 4

(b) Energy required to blow a bubble of radius 3 cm is 6.782×10^{-4} J. Calculate the workdone in blowing the bubble to a radius 4 cm. 4

III (a) What should be the focal length of a magnifying glass to have a magnification 10 if the least distance of distinct vision is 25 cm ? 4

(b) Explain the principle of laser action and write its uses. 4

IV (a) How can a galvanometer be converted to an ammeter. 4

(b) Explain free vibration and forced vibration. 4

Marks

PART—C

(Answer *one* full question from each unit. Each question carries 15 marks)

UNIT—I

V (a) Explain Lami's theorem. 3

(b) Show that the surface energy of a liquid is numerically equal to surface tension. 3

(c) Two forces 10 N and 15 N act at an angle 60° between them. Find the magnitude of the resultant. 3

(d) Distinguish between transverse and longitudinal waves. Find a relation connecting frequency, wavelength and velocity. 6

OR

VI (a) Explain the magnetostriction method to produce ultrasonics. 3

(b) Calculate the volume of water that will flow per minute through a pipe of diameter 4 cm and length 200 m when a pressure of 5 Pa is applied, assuming that the flow is streamlined. Viscosity of water = 0.001 SI unit. 3

(c) Distinguish between stream line flow and turbulent flow. 3

(d) Derive an expression for work done by a couple and hence deduce the equation for power. 6

UNIT—II

VII (a) State the laws of refraction. How is refractive index related to velocity of light ? 3

(b) Calculate the value of the magnetic field at the centre of a semicircular wire carrying a current 5 A. Radius of the semi circle is 10 cm. 3

(c) State Einstein's photo electric equation. 3

(d) Describe the construction, principle and working of moving coil galvanometer. 6

OR

VIII (a) Threshold wavelength for sodium is 540 nm. Calculate the photoelectric work function. 3

(b) Explain population inversion. 3

(c) Discuss the blue colour of sky. 3

(d) Applying Kirchoff's laws, find the balancing condition of Wheatstone's bridge. 6
