

TED (10)–1016 A

(REVISION—2010)

Reg. No. ....

Signature .....

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

APPLIED SCIENCE—II (PHYSICS)  
(Common Except DCP & CABM)

[Time : 1½ hours

(Maximum marks : 50)

Marks

PART—A

(Answer *all* questions in one or two sentences. Each question carries 2 marks.)

- I (a) State continuity equation for a fluid in flow.  
(b) Draw the symbol and write the truth table of AND gate. (2x2=4)

PART—B

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

- II (a) Explain Poiseuille's method to determine the co-efficient of viscosity of water. 4  
(b) Calculate the work done in blowing a soap bubble of diameter  $2 \times 10^{-3}$  m with a solution whose surface tension is  $0.028 \text{ Nm}^{-1}$ . 4
- III (a) An object of size 0.2 m is placed at 0.5 m in front of a concave mirror of focal length 0.1m. Where should be the image formed ? What is the image size ? 4  
(b) Distinguish between Spontaneous and Stimulated emission. 4
- IV (a) Mention some applications of ultrasonics. 4  
(b) How will you convert a galvanometer into a voltmeter ? 4

PART—C

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

UNIT – I

- V (a) Explain the parallelogram law of forces. 3  
(b) Mention the factors that affect the surface tension of a liquid. 3  
(c) Amplitude, frequency and initial phase of a simple harmonic wave are 0.8 cm, 0.25 Hz and  $\pi/6$  radian respectively. Obtain the expression for SHM. 3  
(d) Derive an expression for work done by a couple and hence deduce the equation for power. 6

OR

- |  | Marks |
|--|-------|
| VI (a) Discuss the working principle of aerofoil.  | 3     |
| (b) Explain the role of surface tension in determining the shape of a drop or a bubble.  | 3     |
| (c) Two unequal forces acting at an angle $150^\circ$ have their resultant perpendicular to the smaller force. The larger force is 30 N. Find the smaller force and the resultant. | 3     |
| (d) Distinguish between transverse and longitudinal waves. Find a relation connecting frequency, wavelength and velocity.  | 6     |

## UNIT – II

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|---|---|
| VII (a) A convex lens has radii of curvature 42 cm each and focal length 32 cm. Calculate the refractive index.                                 | 3 |
| (b) Define critical angle. How it is related to refractive index ?  | 3 |
| (c) State the law by which we can calculate the magnetic field at a point due to an elementary current carrying conductor of very small length. | 3 |
| (d) Using Kirchoff's law derive the balancing condition of a wheatstone's network.  | 6 |

OR

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|---|---|
| VIII (a) With the help of a neat diagram show a convex lens can act as a simple microscope.   | 3 |
| (b) Explain the principle of moving coil galvanometer.  | 3 |
| (c) Write a few applications of laser.  | 3 |
| (d) The threshold wave length of a metal for photoelectric emission is 600 nm. Determine the kinetic energy of the electrons emitted when the metal is exposed to radiation of wave length 300 nm. ( $h = 6.626 \times 10^{-34}$ JS). | 6 |
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