



TED (10) – 1016 A

Reg. No. ....

(REVISION – 2010)

Signature .....

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018**

**APPLIED SCIENCE - II (Physics)**

[Time : 1½ hours]

(Maximum marks : 50)

**PART — A**

(Maximum marks : 4)

**Marks**

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

I (a) Why liquid drops and bubbles appear spherical in shape ?

(b) Draw the symbol of NOR gate.

(2×2 = 4)

**PART — B**

(Maximum marks : 16)

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

II (a) What is a couple ? Derive the formula for the work done by a couple.

4

(b) State continuity equation for a fluid in flow. The radius of a water pipe decreases from 4cm to 2 cm. If the velocity of water in the wider portion is 2m/s, calculate the velocity in the narrow portion.

4

III (a) Explain an experiment to determine coefficient of viscosity of a highly viscous liquid.

4

(b) Define surface tension. Show that surface tension is numerically equal to surface energy.

4

IV (a) Explain total internal reflection. Describe an optical fiber. How light is transmitted in an optical fiber ?

4

(b) What are the characteristics that made the LASER light different from ordinary light ? List any four applications of laser.

4



PART — C  
(Maximum marks : 30)

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

UNIT — I

- V (a) Define moment of force about a point. State the conditions of equilibrium of a body under the action of co-planar parallel forces. 3
- (b) With a neat diagram, explain the working of an atomizer. 3
- (c) Discuss the variation of viscosity of liquid and gas with temperature. 3
- (d) State parallelogram law of forces. Derive an expression for the magnitude and direction of the resultant of two forces using parallelogram law of forces. 6

OR

- VI (a) Explain the factors that affect the surface tension of a liquid. 3
- (b) Distinguish between free vibration and forced vibration. What is resonance ? 3
- (c) Derive the relation between velocity, wavelength and frequency of a wave. 3
- (d) Explain a method to produce ultrasonic sound and give four applications of it. 6

UNIT — II

- VII (a) Why during sunset and sun rise sun appears red in colour ? 3
- (b) A concave lens made of a transparent material has a refractive index 1.5. Find its focal length, if the radii of curvature are 10 cm and 30 cm. 3
- (c) Give the formula for the force experienced by a conductor carrying a current when it is placed in uniform magnetic field. At what conditions the force on a current carrying conductor placed in a magnetic field is minimum ? 3
- (d) State Kirchhoff's laws. Using these laws derive the balancing condition of a Wheatstone's bridge. 6

OR

- VIII (a) Draw the symbol and write the truth table of XOR gate. 3
- (b) Distinguish between spontaneous emission and stimulated emission. 3
- (c) Explain the working and use of a photoelectric cell. 3
- (d) State the laws of photoelectric emission. The threshold wavelength for photoelectric emission in a metal is 600nm. Find the maximum Kinetic energy of the electrons emitted when it is exposed to the radiation of wavelength 200nm. 6
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