

TED (10)-1016

Reg. No.....

(REVISION—2010)

Signature

SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/
TECHNOLOGY—MARCH, 2011

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

[Time : 3 hours

(Maximum marks : 100)

[Note : Section-I Physics and Section-II Chemistry to be answered
in separate answer books.]

SECTION — I

Physics

(Maximum marks : 50)

PART—A

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

- | | Marks |
|--|-------|
| I (a) With the help of a neat diagram show a convex lens can act as a simple microscope. | 2 |
| (b) State the two conditions for a periodic motion to be simple harmonic. | 2 |

PART— B

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

- | | |
|--|---|
| II (a) Explain Poiseuille's method to determine surface tension of water. | 4 |
| (b) Determine the wavelength of ultrasonic waves of frequency 50 KHz in air, if they are travelling at a speed of 350 m/sec. | 4 |
| III (a) A galvanometer of resistance 50 ohms gives full scale deflection for 5 mA. How can it be converted to a voltmeter to read upto 10 V. | 4 |
| (b) Discuss the working principle of optical fibre and write two uses of optical fibre. | 4 |
| IV (a) Explain forced vibration and resonance. | 4 |
| (b) With the help of a figure, explain the working of Ruby laser. | 4 |

PART - C

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

UNIT - I

- V (a) Explain Lami's theorem.
- (b) Distinguish between stream line flow and turbulent flow and write continuity equation.
- (c) Two unequal forces act at 150° . The larger force is 60 N and the resultant of the forces is perpendicular to the smaller force. Determine the value of the smaller force.
- (d) Derive an expression for work done by a couple and hence deduce the equation for power.

OR

- VI (a) Discuss the working principle of a foil.
- (b) Explain the magnetostriction method to produce ultrasonics.
- (c) What are the factors depending the viscous force acting between two parallel plates separated by a liquid film?
- (d) A large drop of water of radius r is split into 1000 small droplets of equal size. Calculate the work done in doing so, if the surface tension of water is 72×10^{-3} N/m.

UNIT - II

- VII (a) Find out the focal length of a convex lens of refractive index 1.5 and radii of curvature 12 cm each.
- (b) Explain the blue colour of the sky.
- (c) Write down the expression for magnetic field at any point on the axial line of a current carrying circular coil. Produce the expression for magnetic field at the centre of the circular coil.
- (d) Applying Kirchoff's laws to find the balancing condition of Wheatstone's bridge.

OR

- VIII (a) Draw the symbol and write the truth table of AND gate.
- (b) Explain the principle of moving coil galvanometer.
- (c) Write down the characteristic of laser.
- (d) Photoelectrons are emitted with maximum speed of 7×10^5 m/sec from a surface, when light of frequency 3×10^{14} Hz incident on it. Find the threshold frequency of this surface.

