TED (10)–1016 B

Reg. No. .....

(REVISION—2010)

Signature .....

SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/ TECHNOLOGY—OCTOBER, 2013

APPLIED SCIENCE—II (CHEMISTRY)

(Common except CABM and DCP)

[*Time* : 1½ hours

(Maximum marks : 50)

Marks

PART—A

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

I 1. Give the schematic representation of Daniel cell. (commercial form) 2

2. Give the name of the monomers present in natural rubber and any one of the synthetic rubbers. 2

PART—B

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

II 1. What happens when charcoal is added to a mixture of moist gases taken in a closed vessel ? Explain the phenomenon. 4

2. With an example show that corrosion is an electrochemical process. 4

III 1. Compared with the compounds of other elements the number of organic compounds is very large. Why ? 4

2. Classify composites with examples. 4

IV 1. Explain the working of a hydrogen-oxygen fuel cell. 4

2. Give the structure of Nylon 6 and Nylon 6-6. 4

PART—C

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

V 1. What are the effects of surface area and temperature on adsorption ? 4

2. Mention any three applications of adsorption in industry. 3

3. What are electro chemical series ? What are its applications ? 4

4. Explain any two applications of electrolysis. 4

OR

			Marks
VI	1.	Distinguish between electroplating and anodizing with suitable example.	4
	2.	Explain the working of a secondary cell.	4
	3.	Classify different types of conductors.	4
	4.	Arrange the following as weak, strong and non-electrolytes : H_2SO_4, Urea, Oxalic acid, KOH, alcohol and NH_4OH.	3
VII	1.	Based on synthesis how will you classify polymers. Illustrate with examples.	4
	2.	What happens when refined petroleum is fractionally distilled ?	4
	3.	What is petrochemical smog ? Mention its harmful effects.	4
	4.	Briefly discuss green chemistry.	3
		OR	
VIII	1.	Describe Cottrell smoke precipitator.	4
	2.	Explain the following : (i) CNG (ii) BOD.	4
	3.	Distinguish between saturated and unsaturated organic compounds.	4
	4.	What are the hazards of radioactive pollution ?	3

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SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/ TECHNOLOGY—OCTOBER, 2013

APPLIED SCIENCE—II (PHYSICS)

(Common except for DCM and 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) Explain resonance.

(b) State the rule which gives the direction of force in the case of a current carrying conductor placed in a uniform magnetic field. (2×2=4)

PART—B

II Answer *any two* questions. Each question carries 8 marks.

(a) Derive the formula for the work done by couple. 4

(b) Find out the wavelength of ultrasonic wave of frequency 60kHz in air if it is propagated through air with velocity 300m/s. 4

III (a) Which are the two conditions for total internal reflection and deduce the relation between critical angle and refractive index. 4

(b) A long straight wire carries a current 75A. Find the magnitude of magnetic field intensity at a perpendicular distance 10 cm from it. 4

IV (a) State Bernoulli's principle and explain the working of atomizer. 4

(b) The energy of a photon is 3.2 eV. Calculate its wave length. 4

PART—C

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

UNIT—I

V (a) Equilibrant of a set of two forces is the negative vector of their resultants. Comment. 3

(b) Explain the term critical velocity in the case of fluid flow and state the factors on which it depends. 3

(c) When hair brush is taken out of water, spread out hairs come close together. Why? 3

(d) Deduce the expressions for magnitude and direction of resultant force using parallelogram law of forces. Discuss the cases for $\theta=0^\circ$ and 180°. 6

OR

Marks

VI (a) Define moment of force about a point. State the conditions of equilibrium of a body under the action of coplanar parallel forces. 3

(b) Find out the excess pressure inside a drop of radius 2mm. Surface tension of water is 7.3×10^{-2} N/m. 3

(c) Explain any one method to produce ultrasonic sound. 3

(d) Describe the motion of a small sphere through a viscous fluid and deduce the expression for coefficient of viscosity of a highly viscous liquid. 6

UNIT—II

VII (a) During sunset and sun rise sky appears red in colour. Why ? 3

(b) How will you convert a galvanometer into a voltmeter and ammeter ? 3

(c) Write down truth table, logic symbol and Boolean equation for AND gate. 3

(d) State Biot-Savart Law. Write down the expression for magnetic field intensity due to a current carrying circular coil at the axial point and deduce magnetic field at its centre. 6

OR

VIII (a) A convex lens has radii of curvature 10cm and 15cm. If the refractive index of material of the lens is 1.5, find out the focal length. 3

(b) Explain the principle of moving coil galvanometer. 3

(c) List three applications of photo electric effect. 3

(d) What is the essential condition for lasing action ? With the help of a diagram explain the working of ruby laser. 6