TED (10) 1016A
(Revision – 2010)

A21 – 01469

Reg. No……
Signature …….

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2021

APPLIED SCIENCE-II (PHYSICS)

[Maximum Marks: **50**] [Time: **1½** Hours]

(PART-A)
(Maximum Marks: **4**)

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

(i) State Lami's theorem.

(ii). Write the symbol and truth table of NOR gate. (2 x 2 = 4)

(PART-B)
(Maximum Marks: **16**)

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

(i) Explain the different energies associated with fluid flow and state Bernoulli's theorem. (4)

(ii) What are ultrasound waves? List three of its applications. (4)

III. (i) The excess pressure inside the soap bubble of radius 4mm is 24 N/m^2. Calculate the surface tension of soap solution. (4)

(ii) A galvanometer coil has a resistance of 15Ω and it shows full scale deflection for 2 mA. How can it be converted to an ammeter of range 4A? (4)

IV. (i) On what factors does the magnetic field intensity produced by a small current carrying element of a conductor depend? (4)

(ii) Find out the magnitude and resultant of two forces P and Q acting at an angle θ, using parallelogram law of forces. (4)

(PART-C)
(Maximum Marks: **30**)
(Answer ***one*** full question from each Unit. Each full question carries **15** marks)

UNIT – I

V. (i) Find the maximum and minimum values of two forces of 15N and 10N. (3)

(ii) The radii of two ends of a water pipe are 2cm and 4cm. The speed of flow in the wider portion is 1cm/s. Find the speed at the narrow portion. (6)

(iii) Using Stoke's law. Obtain the expression of terminal velocity of a sphere falling through a viscous liquid. (6)

OR

VI. (i) Define surface tension. What is its unit? (3)

(ii) Derive the expression for power of a couple. (6)

(iii) Distinguish between longitudinal and transverse waves. Derive the relation connecting wave velocity, wave length and frequency. (6)

UNIT – II

VII. (i) Give the formula for the force experienced by a conductor carrying a current when it is placed in uniform magnetic field. (3)

(ii) Explain the working principle of ruby laser with diagram. (6)

(iii) With the help of a diagram explain the principle of a simple microscope. (6)

OR

VIII. (i) List three characteristics of laser. (3)

(ii) A metal has a photoelectric work function of 2.5eV. Find the maximum kinetic energy of the ejected electrons when the metal is irradiated with light of wavelength 400nm.
($1\ eV = 1.6 \times 10^{-19}\ J$) (6)

(iii) State and explain Kirchoff's laws. Using these laws derive the balancing condition of a Wheatstone's network. (6)

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/ COMMERCIAL PRACTICE, APRIL - 2021

APPLIED SCIENCE – II (CHEMISTRY)

[Maximum marks: 50] (Time: 1 ½ Hours)

PART – A

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

I 1. Distinguish between homo polymer and co-polymer 2

2. Give two advantages of fuel cell 2

PART-B

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

II (a) Explain electrochemical theory of corrosion 4

(b) Compare solid, liquid, gaseous fuels 4

III (a) What is meant by green house effect. Name two green house gases 4

(b) Distinguish between physisorption and chemisorption 4

IV (a) What are composites ? How are they classified 4

(b) Explain the uniqueness of carbon atom 4

PART-C

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

UNIT-I

V (a) What is meant by adsorption? Write any two applications of adsorption 4

(b) Explain the mechanism of electrolysis taking molten NaCl as an example 4

(c) Define electro chemical series? Give two of its applications 4

(d) What is chemically rust? Write two conditions of rusting 3

OR

VI (a) Explain the working of Daniel cell with figure 4

(b) Which is the method suitable for protecting underground iron pipes? Explain 4

(c) The E^0 of copper and silver are +0.34 V and +0.8V respectively. Calculate the emf of the cell formed from these electrodes? Write the reactions at the anode and cathode 4

(d) Write the factors influencing adsorption 3

Unit II

VII (a) Write the monomers of 1) PVC 2) Polythene 3) Bakelite 4) natural rubber 4

(b) Explain the terms,1) cracking 2) calorific value of a fuel 4

(c) Give the constituents of 1) water gas 2) natural gas 3) LPG 4) producer gas 4

(d) Ozone is toxic, but its depletion causes harm to mankind. Account for this. 3

OR

VIII (a) Distinguish between thermoplastics and thermosetting plastics 4

(b) What is meant by vulcanization? Write two properties of vulcanized rubber 4

(c) Write the functional group of 1) aldehyde 2) amine 3) alcohol 4) ester 4

(d) What is the relevance of green chemistry in the modern world 3

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