Total No. of printed pages = 7

RETEST EXAMINATION – 2019

Semester : 2nd (Old)

Subject Code : Sc-204

APPLIED PHYSICS – II

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

PART – A

Marks – 25

Instructions :

1. *All* the questions of PART – A are compulsory.
2. Answer any *five* questions from PART – B.

1. Fill in the blanks : 1×10=10

   (a) Second law of refraction is also known as ———.

   (b) A uniform magnetic field is represented by a set of lines of force are ———.

[Turn over

(c) A pure semiconductor has ——— resistance of 0°C.

(d) Phenomenon of radio activity is due to the disintegration of ———.

(e) Energy of photon can be represented by ———.

(f) "The emf produced in a circuit opposes the cause to which it is due." This is ——— law.

(g) Electrical conductivity is the ——— of resistivity.

(h) A diode is used to convert ——— into ———.

(i) Two condensers of capacity in 2μf each are connected in series with each other. The resultant capacity in μf is ———.

(j) ——— law deals with the process of electrolysis.

2. Write true or false : 1×10=10

(a) A triode can be used as a full wave rectifier.

(b) Fleming's left-hand rule gives the direction of force acting on a charge moving in a magnetic field.

(c) Potential is a vector quantity.

(d) The force between two charged particles was given by Coulomb.

(e) Angle of dip at pole is 900.

(f) Colour of light is determined by frequency.

(g) Emf is always less than PD.

(h) A concave mirror produces a virtual image when object is placed between F and pole.

(i) Charge carrier in conductor are positron.

(j) Thermopile is based upon the principle of Peltier effect.

3. Choose the correct answer : 1×5=5

(a) If velocity of light in vacuum is 3×10^8 m/s and that of glass is 1.5×10^8 m/s, then refractive index of a glass is

(i) 2 (ii) 3/2

(iii) 1/2 (iv) 2/5

(b) Electric current is given by

(i) Charge per unit area

(ii) Charge per unit volume

(iii) Charge per unit time

(iv) None of the above.

(c) Ohm's law deals with the relation between

(i) Current and P.D.

(ii) Capacity and charge

(iii) Capacity and potential

(iv) Charge and potential difference.

(d) The magnitude of induced emf depends upon

(i) change in magnetic flux

(ii) rate of change of magnetic flux

(iii) rate of change of electric field

(iv) change of electric field

(e) Two parallel conduction wires carrying current in the same direction

(i) attracts one another

(ii) repel one another

(iii) exerts no force

(iv) may attract or repel

PART – B

Marks – 45

4. (a) State the laws of refraction. Define refractive index. 3

(b) With a neat ray diagram show the formation of virtual image by a concave mirror. 2

(c) A lens has a power of –2.5D. What is the focal length and nature of the lens ? What is meant by angle of minimum deviation ? 2+2=4

5. (a) State and explain inverse square law of magnetism. 3

(b) Define magnetic lines of force and magnetic intensity. Write two properties of magnetic lines of force. 2+2=4

(c) What is terrestrial magnetism ? 2

6. (a) Find an expression for electric potential at a point due to a point charge. 3

Or

Find an expression for equivalent capacitance of a parallel plate capacitor.

(b) Explain the defects of a simple voltaic cell. 3

(c) Write two differences between primary and secondary cell. What is a standard cell ? 2+1=3

7. (a) What is electrolysis ? State Faraday's law of electrolysis. Define Faraday constant. 1+2+1=4

(b) Define co-efficient of self and mutual induction. 2

(c) State and explain Kirchhoff's law. 3

8. (a) Write down Einstein photo-electric equation. Define threshold frequency and work function of a metal. 1+1+1=3

(b) What is mass-energy equivalence ? Define atomic mass unit and binding center. 2+1+1=4

(c) Write two properties of α and γ. 2

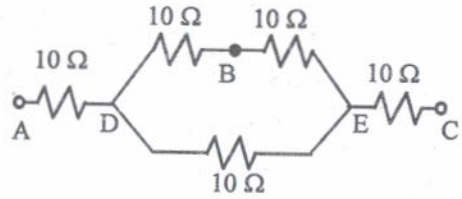
9. (a) Write two differences between N type and P type semiconductor. 2

(b) Explain the working of a diode. Why a diode is called a valve ? 3+1=4

(c) Write three industrial uses of x-ray. 3

10. (a) State Ohm's law. Define resistance, conduction and conductivity. Write their SI unit. 1+3=4

(b) Find the equivalent resistance of the circuit shown in the figure : 3



(c) What do you understand by the term internal resistance of a cell ? 2