Total No. of printed pages = 7

RETEST EXAMINATION – 2019

Semester : 2nd (Old)

Subject Code : Sc-204

PHYSICS – II

Full Marks – 70

Time – Three hours

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

PART – A

Marks – 25

All questions of PART – A are compulsory.

1. Write true or false : $1 \times 10 = 10$

   (a) Real images can be formed by a mirror in its both front and back sides.

   (b) At critical angle, ray of light reflects back in to the same medium.

   (c) Magnetic lines of force never intersect each other.

   (d) 1 farad is 10^6.μF.

[Turn over

(e) Conductivity of semi-conductor decreases with the increase of heat.

(f) Photo-electrons are removed from metal surface by applying light energy.

(g) Beta ray is the electron emitted by thermionic process.

(h) At pole angle of dip is 90°.

(i) Electric charge possess by an electron is -1.6×10^{19} Coulomb.

(j) 300 Volt = 1e.s.u. of potential.

2. Fill in the blanks : $1\times10=10$

(i) The relation between refractive index and critical angle is _____.

(ii) Light is transmitted through optical fibre using _____ principle.

(iii) Alpha ray carries _____ charge.

(iv) The process of dissociation of a compound into positive ion and negative ion by using electric current is known as _____.

(v) Charge carries by X-ray is _____.

(vi) To generate electric current in a coil of conductor, the magnetic flux linked with the coil must _____.

(vii) _____ cells are known as secondary cell.

(viii) The unit of specific resistance is _____.

(ix) With the increase _____ of a semi-conductor, free electrons and holes of the semi-conductor increases.

(x) _____ is the unit of power of a lens.

3. Choose the most correct answer : $1\times5=5$

(a) Convex mirror produces

(i) real and magnified image

(ii) real and diminished image.

(iii) virtual and magnified image

(iv) virtual and diminished image

(b) In non-uniform magnetic field magnetic intensity is

(i) same in all points

(ii) not same in all points

(iii) zero in all points

(iv) infinity in all points of the magnetic field

(c) To produce current in a coil by induction process

(i) magnet moves while coil is at rest

(ii) coil moves while magnet is at rest

(iii) coil and magnet must have relative motion

(iv) (i), (ii) and (iii) are correct

(d) Capacitor

(i) can store positive charge

(ii) can store negative charge

(iii) can store both positive and negative charges

(iv) can store can't store charges

(e) Order of penetrating power of α-ray, β-ray and γ-ray is as follows

(i) α-ray > γ-ray > β-ray

(ii) β-ray > α-ray > γ-ray

(iii) γ-ray > β-ray > α-ray

(iv) α-ray > β-ray > γ-ray.

PART – B

Marks – 45

Answer any *five* questions.

4. (a) Define real and virtual image. Draw a clear ray diagram showing image formation by a convex mirror. 2+3=5

(b) What is terrestrial magnetism ? Discuss about the elements of terrestrial magnetism. 2+2=4

5. (a) State Coulomb's law in electrostatic. Define unit of electric charge. Define electric field and electric field intensity. 1+2+2=5

(b) What are defects suffered by a simple voltaic cell ? Discuss about the defects. 2+2=4

6. (a) State Kirchhoff's first law and second law. 2

(b) Define series and parallel combination of cells. Emf of 2V, 3V and 5V cells are connected in series. The combination of cells is connected to resistance $10^3\Omega$. Neglecting the internal resistance of the cells find the current flowing through the resistance. 2+3=5

(c) Write short note on thermo-couple. 2

7. (a) An electric bulb having resistance 7Ω connected to 240V AC is glowing for 2 hours. Find the energy consumed by the bulb. 3

(b) What is self and mutual induction ? Discuss about the function of step up and step down transformer. 2+2=4

(c) Write Faraday's law of electromagnetic induction. 2

8. (a) What is p-type, n-type and intrinsic semi-conductor. Discuss about the working principle of a rectifier. 3+3=6

(b) Discuss about mass energy equivalence and mass defect. 3

9. Write short notes on any *three* : 3×3=9

(a) Radio-activity

(b) Electric lines of forces

(c) Induced magnetism

(d) Dry cell

(e) Electro-plating.