END SEMESTER /RETEST EXAMINATION 2021

SC-204

APPLIED PHYSICS – II

Full Marks – 70

Time=3 hrs

Part A

MARKS-25

1) **Fill in the blanks:** 1x10=10

i) ..... mirror is used in motor vehicle.

ii)..... is the practice unit of capacity?

iii) Magnetic poles are situated .....

iv) Wavelength of X-ray is of the order of .....

v) ..... atom is doped in n-type semiconductor.

vi) Kinetic Energy of photo-electrons depend upon the .....

of incident light.

vii) Atomic mass unit is ..... of the mass of a neutral carbon atom

viii) LASER is monochromatic and .....

ix) Current at junction point is always .....

x) Lenz's law obeys .....

2. **Write true or false:** 1x5=5

i) Refractive index of glass varies for different colour of light.

ii) Mass and energy are equivalent.

iii) Transmission of signal through an optical fibre is based on the principle of total internal reflection of light

iv) Reversed biased of a p-n junction diode acts as a low resistance.

v) Numbers of turns in primary coil of a step-down transformer is greater than its number of turns in secondary coil.

3. **Chose the correct answers:** 1x10=10

i) Which one of the following value of dip is not possible

a) 95 ° N b) 2 ° S c) 90 ° S

ii) Which one of the following indicates surest test of electrification

a) Attraction b) Repulsion c) Induction

iii) Storage cell accumulate energy in the form of

a) Chemical energy b) Electric Energy c) Potential energy

iv) Kilowatt hour is the unit of

a) Energy b) Power c) Current

v) Magnetic lines of force produced by a current carrying conductors are

a) Parallel to the conductor

b) Concentric – circles round the conductor

c) Parallel straight line

vi) Photo electric current depends upon the

a) Intensity of the incident light.

b) frequency of the incident light

c) None of the above.

vii) Monochromacity of LASER means it has

a) Single frequency

b) Multiple frequency

c) Wide width

viii) Unit of 'Z' is

a) gm/C b) gmC c) gmC sec

ix) Emission of a beta particle

a) Increases the atomic number by one unit

b) Decreases the atomic number by one unit

c) Reduces the mass of the atom by one unit

x) At the neutral temperature the thermo-emf becomes

a) Maximum b) Minimum c) zero

Part B

MARKS-45

Answer any five

4. a) Write the properties of the magnetic lines of force. 2

b) Find out the intensity at the broad side on position of a bar magnet. 4

c) Calculate the coulomb's force between two α particles separated by a distance of

3.2×10^{-5} m in air. Charge of a proton 1.6×10^{-19} C, $4\pi\epsilon_0 = 3.2 \times 10^{-15}$. 3

5. a) Draw a net ray diagram to show the formation of a real image by a concave mirror. 3

b) Power of a lens is +2D. State the nature of the lens and calculate its focal length. 2

c) Define total internal refraction. Draw a neat ray diagram of total internal refraction. 2+2

6.

a) What is photo electric effect? 1

b) Derive Einstein's equation of photo electric effect. 2

c) What is radio activity? Explain 'γ-rays are not affected by a magnetic field'. 2

d) How can you use two p-n junction diodes as a half wave rectifier? Explain with a neat diagram. 4

7.

a) Write the chemical equations that take place in a simple voltaic cell. What are the defects of this cell and how they can be removed? 3+2

b) Find out the total resistance of three resistances connected in parallel. 2

c) How much silver is deposited in1hour when a current of 0.1 amp is passed through a silver nitrated solution? Given ECE of silver 0.00118 gm/C 2

8.

a) State the Faraday's Laws of electromagnetic induction. 2

b) Define Fleming`s Left Hand rule. What is eddy current? 2

c) How a p-type semiconductor is prepared? Explain with a neat diagram. Why do we need population inversion? 2+1+2

9.

a) Mention two difference between LASER and ORDINARY light. 2

b) Mention two uses of optical fibre. What is population inversion? Write one characteristics of spontaneous emission. 2+1+1

c) State Faraday's laws of electrolysis. What is Electroplating? 2+1

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