

Total No. of printed pages = 6



RETEST EXAMINATION - 2019

Semester : 2nd (New)

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. Questions on PART - A are compulsory.
2. Answer any *five* questions from PART - B.

1. Fill in the blanks : 1×10=10
 - (a) A ——— image can be taken on a screen.
 - (b) In an optical fibre, light travels due to the phenomenon of ———.
 - (c) Magnetic poles always exit in ———.
 - (d) N/C is the SI unit of ———.

[Turn over

- (e) The unit of current is ____.
- (f) Resistance of a conductor ____ with increase in temperature.
- (g) SI unit of specific resistance is ____.
- (h) Laser is based upon the principle of ____ emission.
- (i) ____ are the minority carriers in p-type semiconductors.
- (j) Pure semiconductors are also known as ____.
2. Write true or false : $1 \times 10 = 10$
- (a) Virtual image formed by a convex mirror is always enlarged.
- (b) Greater the wavelength of light, smaller is the critical angle.
- (c) The angle of dip is the same everywhere on earth.
- (d) Electric current is a vector quantity.
- (e) Conductivity is the reciprocal of resistivity.
- (f) The algebraic sum of currents at any junction is zero.

168/Sc-204/AP-II (N) (2)

- (g) Alpha rays have positive charge.
- (h) He-Ne laser is a solid laser.
- (i) Ge is an n-type semiconductor.
- (j) Electric conductivity of extrinsic semiconductor is very low.
3. Choose the correct answer : $1 \times 5 = 5$
- (a) Unit of magnetic field is
- (i) Newton (ii) Tesla
- (iii) Henry (iv) Joule
- (b) A voltmeter is used to measure
- (i) Potential difference
- (ii) Electric current
- (iii) Resistance
- (iv) Magnetic field
- (c) Commercial unit of electric energy is
- (i) Horse power (ii) Kilowatt-hour
- (iii) Joule (iv) Ampere-second

168/Sc-204/AP-II (N) (3)

[Turn over

(d) 1 Tesla is

(i) 10^5 Gauss (ii) 10^4 Gauss

(iii) 10^8 Gauss (iv) 10 Gauss

(e) Size of an atom is

(i) 10^{-6} m (ii) 10^{-8} m

(iii) 10^{-10} m (iv) 10^{-14} m

PART - B

Marks - 45



4. (a) State the laws of reflection. Define real and virtual images. 2+2=4

(b) Draw a ray diagram to show the formation of an image of an object placed

(i) between F and 2F and

(ii) at F in a convex lens. 2+2=4

(c) Velocity of light in vacuum is 3×10^8 m/s and that in water is 2.25×10^8 m/s. Find the refractive index of water. 1

168/Sc-204/AP-II (N) (4) 900(W)

5. (a) What is an Optical fibre? Describe its parts. 1+2=3

(b) Deduce the relation between electric potential and electric intensity. 3

(c) State and explain Coulomb's law. What do you mean by an electric potential? 2+1=3

6. (a) What is a capacitor? What is its primary function? 1+1=2

Calculate the charges on condensers $2\mu\text{F}$ and $3\mu\text{F}$ capacity connected in parallel when a potential difference of 100 V is applied across them. 3

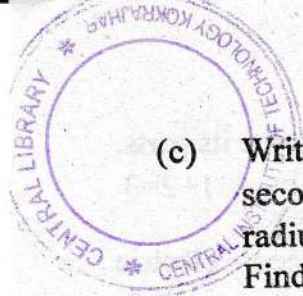
(b) What is a uniform magnetic field? 1

(c) Deduce the relation between electric potential and electric intensity. 1

7. (a) Define magnetic induction and give its SI unit. What do you mean by electric potential? 2+1=3

(b) State Ohm's law and hence define resistance. 2

168/Sc-204/AP-II (N) (5) [Turn over



- (c) Write the differences between primary and secondary cells. A wire of length 1m and radius 0.1 mm has a resistance of 100 ohm. Find the resistivity of the material.

2+2=4

8. (a) What do you mean by Thermo electricity ? Define Peltier effect and Thomson effect.

1+2=3

- (b) Define Lenz's law and explain it. What is the unit of electric field ? State Faraday's laws of electromagnetic induction. 2+1+3=6

9. (a) What is stimulated emission ? Explain the principle of a LASER. 1+3=4

- (b) Write three differences between p-type and n-type semiconductors. Explain the formation of energy bands in solids. 3+2=5