

**MARKING SCHEME**

- Q.1 .Correct answer -1 mark
- Q.2 . Correct answer -1 mark
- Q.3 Correct answer -1 mark.
- Q.4 Correct answer -1 mark
- Q.5  $F_g : F_e : F_n = 1 : 10 : 10$
- Q.6 correct symbolic representation 1 mark
- Q.7 each advantages 1mark 1 + 1
- Q.8 diffusion & redistribution of electrons & holes
- Q.9 (i) the electric discharge takes place in air readily at pointed conductors 1 mark  
(ii) charges reside on the surface of a conductor, enabling it to accept large amount of charge to build up very high potential.  
1 mark
- Q.10  $E - IR$  1 mark  
when current is drawn a drop of internal voltage is observed. 1 marks
- Q.11 correct derivation with diagram 1 mark  
 $P/Q = R/S$  1 mark
- Q.12 formula used  $S = I_g G/I - I_g$  1mark  
 $I = 5 \times 10^{-4} (1 + 24/3) = 4500\mu A$  1 mark
- Q.13  $E = E_0 \cos w(t - x/c)$   
 $B_0 = E_0/C$  1 mark  
 $B_0 = 0.167 \times 10^{-6}$   
 $\lambda = c/v = 0.01 \text{ m}$  1 mark
- Q.14  $n = \sin (A + \delta)/2 / \sin A/2 = \sqrt{3}$  2 marks
- Q.15  $\lambda = h/mv$  1 mark  
 $= 1.1 \times 10^{-34} \text{ m}$  1mark
- Q.16 correct diagram 1 mark  
Correct labelling 1 mark
- Q.17 Two difference between  $\beta$  particle and  $\gamma$ - rays 1 + 1 marks
- Q.18 explanation for necessary or need of modulation. 2 marks
- Q.19 correct expression 1 mark

Correct derivation 2 mark

Q.20 (a) no Change

(b) V-I graph for a metallic wire at different temperature  $T_1$  and  $T_2$   
 $T_2$  is greater than  $T_1$

Q.21 Give 1 mark for finding equal resistance for each mesh (1 + 1 + 1)

Q22. correct diagram 1 mark

Calculation for current 1 mark

Calculation for phase angle 1 mark

Q.23 Correct Explanation 1 mark

Two applications of it 1 + 1 marks

Q.24 Correct ray diagram 1 mark

Correct derivation 2 marks

Q.25 (i) myopia defect and correction 1 mark

(ii) Hypermetropia defect and correction 1 mark

(iii) Presbyopia defect and correction 1 mark

Q.26 correct diagram 1 mark

and expression for height of Antenna. 2 marks

Q.27 correct explanation 3 marks.

Q.28 Distinguish the magnetic properties of dia-, para-, and ferro-magnetic substances- 1  
 $\frac{1}{2}$  marks

one example of each of these materials 1  $\frac{1}{2}$  marks

Draw the field lines due to an external magnetic field near a

(i) diamagnetic 1 mark

(ii) paramagnetic substance. 1 mark

**OR**

(a) Deduce the expression for magnetic field at the centre of a circular current  
 carrying coil – 3 marks

(b) For calculation correct magnitude and direction -2marks

Q.29 (a) ray diagram 1 mark

Correct derivation for expression for its magnifying power. 2 mark

(b)

(i) refractive index of the medium between the object and the objective lens increases 1  
 mark

(ii) wavelength of the radiation used is increased 1 mark

**OR**

(a) labeled ray diagram. 1 mark

(b) (i) the focal length – 1  $\frac{1}{2}$  mark

- (c) (ii) the aperture ? for correct justification. 1 ½ marks
- (d) Calculation of correct focal lengths of the lenses. 1 marks

Q.30 (i) Explanation with diagram. 1 mark  
circuit diagram of a full wave rectifier 1 ½ marks  
and explanation its working . 1 ½ marks  
Draw the input and output wave form. 1 mark

OR

- (i) Correct explanation 2 marks  
determination of voltage gain 1 ½ 20 marks
- (ii) values of  $\beta =$  ,  $I_c = 2.1$  mA and  $\alpha = 0.95$

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