CLASS - 12th

SUB- PHYSICS

Time- 3hours M.M.-70

Instructions :—

(1) All Questions are compulsory.
(2) Question No 1 to 4 carry 7 marks each.
(3) Question No 5 to 12 carry 2 marks each.
(4) Question No 13 to 16 carry 3 marks each.
(5) Question No 17 carry 4 mark
(6) Question No 18 and 19 carry 5 marks each.

[I]:- Write the correct answer From the given options:- 7×1 = 7

(a) At zero Kelvin Germenium is:-

(i) Superconducter (ii) Good conducter
(iii) Insulator (iv) Semiconducter.

(b) The speed of electromagnetic waves in air is equal to:-

(i) $\sqrt{\frac{\epsilon_0}{\mu_0}}$ (ii) $\sqrt{\mu_0 \epsilon_0}$

(iii) $\frac{1}{\sqrt{\mu_0 \epsilon_0}}$ (iv) $\sqrt{\frac{\mu_0}{\epsilon_0}}$

(c) A depletion layer contains:-

(i) only the Electrons (ii) only the holes

(iii) Electrons and holes (iv) Neither electrons Nor holes.

(d) X-rays astronomy is possible at the :-

(i) Equator (ii) Poles

(iii) Satellites revolving the earth

(iv) Mountains

P.T.O.

(e) The wavelength of a photon is 5000 A° its momentum will be:-

(i) 1.32×10^{-27} kgm/sec (ii) 1.5×10^{-27} kgm/sec

(iii) 2.32×10^{-27} kgm/sec (iv) 5×10^{-27} kgm/sec

(f) Zener diode is used as:-

(i) Rectifier (ii) Amplifier

(iii) Oscillator (iv) Voltage regulator.

(g) Photo electric effect can be caused by:-

(i) Visible light but not by X-rays.

(ii) Gamma rays but not by X-rays

(iii) Ultraviolet light only.

(iv) All of these.

[2] Fill in the blanks:— 7×1=7

(a) In a terrestrial telescope the image of the object is ——.

(b) Resolving limit of a healthy eye is ——

(c) To take clear photograph of clouds —— is used before the lense of camera.

(d) —— rays are used as germs killer.

(e) —— is the phenomenon which keeps earth's surface warm in night.

(f) The frequency of optical wave is of the order of ——

(g) The deviation of purple ray is ——— For a prism

[3] Match the correct Pairs:— 7×1=7

(a) Wavelength of microwaves - 1nm to 10^{-3}m
(b) Frequency of E.M.W. - $2\pi LF$
(c) Use in electric brackes - Chock coil
(d) Moving coil galvanometer - Potential gradient
(e) Wattless current - Carrying loop
(f) Inductive reactance - Hertz
(g) Intensity of electric Field - Eddy current
- $\frac{1}{2\pi\omega C}$
- 0.1m to 1mm

[4] Give answer in one word/sentence each. 7×1=7

(a) What is the value of rest mass of electron?
(b) What is the unit of capacity of conducter is c.g.s system?
(c) What effect of temperature on drifth velocity?
(d) Is ohm's law true for all conductors?
(e) What is the use of galvanometer?
(f) Write the equation of displacement current
(g) A capacitor stops d.c. why?

Q.[5] Is the mass of a body affected on charging ?

or

Why electric lines of force donot form closed loop ?

[6] What do you mean by 1 unit of electric energy in domestic use.?

or

When will the sensitivity of wheatstone bridge be maximum ?

[7] State Flemings left hand rule.

or

Write the practical unit of current and define it.

[8] Write the reason for twinkling of stars.

or

State the principle of reversibility of light

[9] on what factors dispersive power of a prism depends ?

or

Is it possible that, When a microscope is inverted, it becomes telescope? Give reason

[10] When any electric circuit is suddenly cut off then sparks take place, why ?

or

A.C. does not show magnetic and chemical effect, why ?

[11] What is thermionic emission?

or

Work function of a metal is 3.2 e.V. A Photon of energy 4.0 e.V. is incident on it. Calculate the maximum energy of emitted Photon.

[12] Photodiode is kept in revers bias. why?

or

How is p type and N type semiconductor formed?

[13] State and explain Kirchhoff's laws.

or

Explain the principle of potentiometer.

[14] A hollow copper tube of 5 m m has got external diameter equal to 10 c.m. and its walls are 5 mm thick. Find its Resistence. If Resistivity of copper is 1.7×10^{-8} ohm x meter.

or

A 10 m long potentiometer wire carries a steady current. A standard cell of e.m.f 1.018 V is balanced against a length of 254.5 c.m of the wire Find the potential gradient.

[15] State and prove that Biot-Savart's law.

or

Draw a labelled Diagram of a moving coil galvanometer. Why are its pole made concave?

[16] prove that lense maker formula

$$\frac{1}{F} = (a^{\mu}g - 1)\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$$

or

Define Total internal Reflection with their condition and prove that

$$\mu = \frac{1}{\sin i_c}$$

[17] Explain the construction and working of a solar cell and draw its Characteristic curve.

or

Explain The NOR Gate on the Following hedings:

(1) symbole - 1/2 mark

(2) Boolean Equ. - 1/2 mark

(3) Thruth Table - 1 mark

(4) its output signal in wave form - 2 mark

[18] State and prove that Gauss' theorem of any shape of closed surface.

or.

Determine the equivalent capacitence of the series combination and parallel combination of capacitor.

[19] prove that :-

(1) $M = \sqrt{L_1 L_2}$

(11) $L = L_1 + L_2$

OR

Explain a transformer under the following headings:-

(i) Labelled diagram – 1 mark
(ii) Principle – 1/2 mark
(iii) Formula for Transformer ratio - 1/2 m
(iv) Energy loss in a Transformer - 2 ma

(v) Why is the core of the Transformer laminated. 1 mar

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