CLASS XII
GUESS PAPER
PHYSICS

M.M.-70   Time:3hrs

Q1	Why does a paramagnetic sample shows greater magnetization (for same magnetizing field) when cooled	1
Q2	A bulb is glowing with a coil in series. How will its brightness change when circuit is switched off	1
Q3	What is the effect on the phase of a light wave when it is reflected from a mirror ?	1
Q4	The work function of metals A and B are 2.5eV and 4eV respectively. If same light is incident on both giving rise to photoelectric emission then for which of the two stopping potential is high?	1
Q5	What is the SI unit of radioactivity?	1
Q6	Why a photodiode is preferably used in reverse bias ?	1
Q7	Draw the transfer characteristics of a transistor and mention in which range of voltage it can be used as an amplifier	1
Q8	Define displacement current.	1
Q9	Can we measure the EMF of a cell by voltmeter? Explain	2
Q10	Derive the condition of balance in a wheatstone's bridge. When is it most sensitive?	2
Q11	A wire of length 5m is carrying a current of 10A in east to west direction. If linear mass density is 0.05 kgm^{-1} then find the magnitude and direction of magnetic field necessary to keep it hanging in air.	2
Q12	Find the expression for energy stored in a current carrying coil	2
Q13	Red, Blue and Green light are incident normally on one of the faces	2

forming right angle on a right angled isosceles prism. Which of the rays will emerge out from the slant face if refractive indices are 1.39, 1.43 and 1.48 respectively

Q14 Using Huygen's principle establish the laws of refraction. Which parameter of light remains invariant during the process   2

OR

Draw graph to show variation of intensity in case of diffraction due to a single slit. Give reason for the variation shown by the graph

Q15 What is beta decay. How does neutron to proton ratio change in the process of (1)beta decay (2) alpha decay   2

Q16 Draw circuit diagram to obtain the characteristics of a transistor .hence draw the characteristic curves   2

Q17 Derive the formula for height of an antenna for covering a given range around it   2

Q18 Show that energy of an EM wave is divided equally in its electric and magnetic field   2

Q19 Define equipotential surface. How much work is needed to move a charge of 2μC in a uniform electric field of 2KVm^{-1}n from A to C if ABC is a right angled triangle having AB =8cm parallel to the field and AC = 6cm perpendicular to the field   3

Q20 A bulb A is connected parallel to a variable resistor R_h and another identical bulb Bis put in series to the combination. If the ciruit is made to operate and during operation R_h is increased then what will be the effect on brightness of A and B . explain   3

Q21 Define interference show that the phenomenon is in accordance with energy conservation principle   3

OR

Give three conditions for sustained interference with reason

Q22 Draw the ray diagram for a compound microscope and derive the   3

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formula for its magnifying power

Q23   A liquid of refractive index µ is filled upto a height h from the base of a   3
container . if radius of container is R then find the relation between R
and h so that a small point sized bulb placed at centre of base could
illuminate only half of the area of top layer of liquid.

Q24   Explain the experiment that establishes wave nature of electrons   3

Q25   Derive the expression for the frequency of photon emitted by a   3
transition of electron from nth state to (n-1)th state. Show that the
result matches with the frequency of electron in nth state for large
value of n

Q26   Explain the working of a transistor as an oscillator   3

Q27   Give the block diagram of a faithful communication system. Show that   3
amplitude modulation results in signal with two side bands apart from
the carrier. What is the significance of these side bands

Q28   Show that all the charge of a conductor can be transferred to other   5
conductor. How can we use this idea to generate potential of few
million volts
Draw diagram for such a device and state its principle

<div align="center">OR</div>

What is an electric dipole and electric dipole moment is it a vector or
scalar (if vector specify direction)
Find expression for electric field on the equatorial line of dipole. What
will be the field at same distance on axial line and field at the centre of
dipole

Q29   State ampere's circuital law .Use it to find the expression for magnetic   5
field at a point (1)inside (2) outside a current carrying wire of radius r.
draw graph to show the variation

<div align="center">OR</div>

What is the principle of a MCG. Draw its diagram. Define its current

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sensitivity and voltage sensitivity

Explain its conversion into an ammeter and voltmeter by deriving suitable expression

Q30 Explain the principle of an AC generator . draw diagram. Explain   5
mathematically that it produces AC. Is the peak voltage dependent on
the shape of coil

OR

Find the expression for power in an AC circuit . define power factor.
Shall it be low or high for power transmission. give reason
Why high voltage transmission is preferable in case of power
transmission

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