PM SHRI K.V. MATI AKBARPUR
AUTUMN BREAK HOMEWORK
CLASS-XII   SUBJECT-PHYSICS

Q1 DERIVE AN EXPRESSION FOR THE ELECTRIC FIELD AT AN AXIAL POINT OF ELECTRIC DIPOLE.

Q2 STATE GAUSS'S THEOREM. APPLY GAUSS'S THEOREM TO CALCULATE THE EXPRESSION FOR ELECTRIC FIELD OF A THIN INFINITELY LONG STRAIGHT LINE OF CHARGE.

Q3 DEFINE EQUIPOTENTIAL SURFACE.
DRAW EQUIPOTENTIAL SURFACE FOR
   (A) A POSITIVE POINT POINT CHARGE
   (B) TWO EQUAL AND OPPOSITE POINT CHARGES
   (C) TWO EQUAL POSITIVE CHARGES
   (D) A UNIFORM ELECTRIC FIELD

Q4 DERIVE AN EXPRESSION FOR CAPACITANCE OF A PARALLEL CAPACITOR WHEN A DIELECTRIC SLAB IS INSERTED BETWEEN PLATES OF PARALLEL PLATE CAPACITOR

Q5 STATE KIRCHHOFF'S LAWS.

Q6 DEFINE WHEATSTONE BRIDGE. WHEN A WHEATSTONE BRIDGE IS SAID TO BE IN BALANCE CONDITION ?
APPLY KIRCHHOFF'S LAWS TO DERIVE BALANCE CONDITION OF WHEATSTONE BRIDGE

Q7 DERIVE RELATION BETWEEN ELECTRIC CURRENT AND DRIFT VELOCITY. HENCE DERIVE OHM'S LAW.HENCE DERIVE EXPRESSION FOR RESISTIVITY IN TERMS OF NUMBER DENSITY OF FREE ELECTRON AND RELAXATION TIME.

Q8 STATE BIOT-SAVART LAW. APPLY BIOT-SAVART LAW TO FIND THE
 MAGNETIC FIELD DUE TO A CIRCULAR CURRENT CARRYING LOOP AT A POINT ON THE AXIS OF THE LOOP.

Q9 STATE AMPERE' CIRCUITAL LAW.APPLY AMPERE'S CIRCUITAL LAW TO FIND THE MAGNETIC FIELD INSIDE A SOLENOID.

Q10 DESCRIBE THE PRINCIPLE, CONSTRUCTION AND WORKING OF A MOVING COIL GALVANOMETER.DEFINE ITS FIGURE OF MERIT.

Q11 EXPLAIN HOW WE CAN CONVERT A GALVANOMETER INTO AN AMMETER OF GIVEN RANGE.

Q12 DERIVE AN EXPRESSION FOR MAGNETIC DIPOLE MOMENT OF AN ELECTRON REVOLVING AROUND A NUCLEUS. DEFINE BOHR'S MAGNETON AND FIND ITS VALUE.

Q13 DERIVE AN EXPRESSION FOR TORQUE ON A MAGNETIC DIPOLE PLACED IN A UNIFORM MAGNETIC FIELD.

Q14 STATE CURIE'S LAW OF MAGNETISM.

Q15 STATE FARADAY'S LAWS OF ELECTROMAGNETIC INDUCTION.

Q16 STATE LENZ'S LAW. SHOW THAT LENZ'S LAW IS A CONSEQUENCE OF THE LAW OF CONSERVATION OF ENERGY.t

Q17 WHAT IS MEANT BY SELF INDUCTION. DEFINE SELF INDUCTION. WRITE ITS UNIT AND DIMENSION

Q18 DEFINE WATTLESS CURRENT.

Q19 DERIVE AN EXPRESSION FOR IMPEDANCE OF LCR CIRCUIT .DRAW PHASOR DIAGRAM OF LCR CIRCUIT ALSO.

Q20 WITH THE HELP OF A LABELED DIAGRAM, EXPLAIN THE PRINCIPLE, CONSTRUCTION AND WORKING OF AN A.C. GENERATOR. DERIVE EXPRESSION FOR THE INDUCED EMF FOR IT ALSO.

Q21 DEFINE DISPLACEMENT CURRENT. WRITE EXPRESSION FOR IT.

Q22 STATE MODIFIED AMPERE'S CIRCUITAL LAW

Q23 HOW FOLLOWING E.M. WAVES ARE PRODUCED

   (A) X RAYS
   (B) MICROWAVE
   (C) INFRARED WAVE
   (D) GAMMA RAYS

Q24 WRITE AND PROVE LENS MAKER FORMULA

Q25 WRITE AND PROVE PRISM FORMULA