12th CLASS GUESS PAPER - 2022 .
PHYSICS
UNIT NO. 12   ELECTROSTATICS.
SHORT QUESTIONS.
1. Prove that coulomb's law obeys third law of motion.
2. Describe five properties of electric field lines.
3. What are factors upon which electric flux depend?
4. Define Gaussian surface and electric lines of force.
5. Find electric intensity of field inside a hollow charged sphere.
6. What is the difference between electric and gravitational force?
7. Define capacitor and farad.
8.

LONG QUESTIONS.
1. Define electric potential. Derive the expression for electric potential at a certain point due to a point charge.
2. A proton placed in a uniform electric field of 5000 NC-1 directed to right is allowed to go through a distance of 10.0 cm, Calculate potential differs between two points work done and velocity.

UNIT NO. 13   CURRENT ELECTRICITY.
SHORT QUESTIONS.
1. What are the difficulties in testing whether the filament of a lighted bulb obeys Ohm's Law?
2. Define temperature co-efficient of resistance and write its formula.
3. Distinguished between resistivity and conductivity.
4. Write two uses of rheostat draw their diagram.
5. What are thermistors? How are they made?
6. State Kirchhoff's 1st rule.

LONG QUESTIONS.
1. State and explain Ohm's law.
2. The resistance of an iron wire at $0\ ^{o}C$ is 1×10^{-1} ohm. What is the resistance at $500\ ^{o}C$ if temperature. Coefficient of resistance of iron $5.2 \times 10^{-3}\ K^{-1}$.

UNIT NO. 14   ELECTROMAGNETISM.
SHORT QUESTIONS.
1. State Ampere's law and write it in mathematical form.
2. What is Lorentz force? Give its formula.
3. What is CRO? Write name of any four main parts of it.
4. Define magnetic flux and its unit.
5. What is the function of grid in a cathode ray oscilloscope?
6. Explain briefly the working of electron gun in CRO.

LONG QUESTIONS.
1. State ampere's law and apply it to find the magnetic field due to current carrying solenoid.
2. How e/m of an electron can be determined? Explain.
3. Example 14.4

UNIT NO. 15   ELECTROMAGNETIC INDUCTION.

SHORT QUESTIONS.
1. Define electromagnetism and give the name of one device in which electromagnetism is used.
2. State Faraday' law of electromagnetism and write its mathematical form.
3. Show that induced emf and rate of change of flux has the same unit.
4. What are the dimensions of mutual inductance?
5. Define self-induction and self-inductance
6. Write a note on back motor effect in generator?
7. Give the two techniques to improve the efficiency of transformer.
8. How the induced current can be increased?
9. Why self-induced emf is also called back emf?

LONG QUESTIONS.
1. What is transformer? Describe its principle construction and theory.
2. An ideal step down transformer is connected to main supply of 240 V. It is desired to operate a 12 v, 30 w Lamp. Find current in the primary and the transformation ratio.

UNIT NO. 16   ALTERNATING CURRENT.

SHORT QUESTIONS.
1. Name the device that will permit flow of direct current but oppose the flow of alternation current.
2. What do you mean by phase of A.C.?
3. Define peak value and peak to peak value of A.C. Voltage?
4. Define A.C. current. Make its wave form.
5. How does doubling the frequency affect the reactance an inductor?
6. In R – C Series circuit will the current lag or lead the voltage. Illustrate your answer with diagram.
7. What do you mean by phase lag and pose lead?
8. Define impedance and write the impedance expression for R – L Series circuit.

LONG QUESTIONS.
1. Define modulation, electromagnetic waves and in a R – L series circuit. Will the cunt lag or lead the voltage? Illustrate your answer by a vector diagram.
2. Numerical No. 16.8
3. Discuss the behavior of an inductor in an A.C. Circuit and write expression for the inductive reactance.
4. An iron core coil of 2.0 H and 50 Ohm is placed in series with an resistance of 450 Ohm. An AC supply of 100 V, 50 Hz is connected across the circuit. Find the current flowing in the coil.

UNIT NO. 17   PHYSICS OF SOLIDS.

SHORT QUESTIONS.
1. Define crystal lattice and give one example.
2. Define modulus of elasticity and write its formula.
3. What is meant by strain energy?
4. What are hard and soft magnetic materials.
5. Define the curie temperature.
6. What is meant by strain energy? How can is be determined from the force –extension graph.

LONG QUESTIONS.
1. Numerical No. 17.2,17.3,17.4
2. Define stress and strain. What is strain energy? Calculate its value in terms of modulus of elasticity.
3. What is energy band theory in solid? Distinguish between conductor's insulators and semiconductors on the basis of this theory.

UNIT NO. 18   ELECTRONICS.

SHORT QUESTIONS.

1. What is net charge on N-Type and P-Type substances? Justify the answer.
2. Distinguished between P-Type semiconductor and N-Type semic conductor.
3. How the current flows in forward and reverse biased diode?
4. Why ordinary silicon diodes do not emit light?
5. Define open loop gain of an operational amplifier and write its formula.
6. The inputs of a gate are 1 and 0. Identify the gate if its out is a) 0 b) 1

LONG QUESTIONS.

1. The current flowing into base of a transistor in 100 Meo A. Find its ratio Ic / I e if the value of current gain B is 100.

UNIT NO. 19   DAWN OF MODERN PHYSICS.

SHORT QUESTIONS.

1. If the speed of light were infinite, what would be the equations of special theory of relativity reduce to?
2. Is it possible for an object to move with speed of light? Justify your answer.
3. What are black body radiation? How can you get a black body?
4. Which photon blue or red has greater energy and greater momentum?
5. When does light behave as a wave? When does it behave as a particle?
6. State uncertainty principle. Give its two mathematical forms.

LONG QUESTIONS.

1. What is Photo electric effect? Explain it on the basis of quantum theory.
2. What is the de-Broglie's wavelength of an electron whose kinetic energy is 120 eV?
3. A particle of mass 5.0 mg moves with speed of 8.0 ms-1 Calculate its de Broglie wave length.
4. Numerical – 19.10

UNIT NO. 20   ATOMIC SPECTRA.

SHORT QUESTIONS.

1. What is meant by line spectrum? Example how line spectrum can be used for identification of elements?
2. How the spectrum of hydrogen can contains many lines when hydrogen contains one electron?
3. Is energy conserved when an atom emits a photon of light? Explain.
4. Find the speed of the electron in 1st First Bohr's orbit.
5. What is meant by population inversion? Explain.
6. How K and Kp x-rays are emitted.

LONG QUESTIONS.

1. What is meant by inner shell transitions and characteristic X-rays? How X-rays are produced? Write down any two properties and ses of X-rays.
2. What are X-rays? Describe explain the production of X-rays.

UNIT NO. 21   NUCLEAR PHYSICS.

SHORT QUESTIONS.

1. Why are heavy elements unstable?
2. In $^{235}U_{92}$ find. a) Atomic number   b) Charge Number   c) Number of Neutrons
   d) Number of Electrons.
3. What is radioactive decay? Give an example.
4. Define Decay constant and write its unit.
5. Explain the working of control rods in a nuclear reactor.
6. What is meant by Quenching? Explain.
7. Write a short note on Geiger Muller counter.
8. What is fission chain reaction?

LONG QUESTIONS.

1. What is radioactivity? Discuss emission of alpha and beta and gamma radiations from radioactive nuclei.
2. Numerical – 21.8
3. Explain the principle. Construction and working of G.M. Counter.