BOARD OF SECONDARY EDUCATION KARACHI.
KARACHI, HYDERABAD, SUKKAR, LARKANA, MIR PUR KHAS BOARD.
S.S.C II (ANNUAL) EXAMINATIONS 2023
PHYSICS(THEORY) PAPER – II

Time: 3 Hours **CLASS - X (SCIENCE GROUP)** **(Marks: 60)**

SECTION " A" (20%)
MULTIPLE CHOICE QUESTIONS (MCQs) **(12 Marks)**

Q.1 12 MCQs will be given from whole syllabus. Each carries 1 Mark.

SECTION " B" (40%)
(SHORT ANSWERS QUESTIONS) **(24 marks)**

UNIT NO. 10 GENERAL WAVES PROPERTIES.
MULTIPLE CHOISE QUESTIONS: PAGE NO. 6 , 7, 10
SHORT QUESTIONS. **40%**

1. Difference between Mechanical waves and Electromagnetic wave.
2. Distinguish between transverse and longitudinal waves.
3. Derive the relation between wave speed and frequency.
4. Calculate the frequency of second's pendulum?
5. What are the necessary conditions for a body to execute simple harmonic motion?
6. How are damped oscillations?
7. Power that: v = f lamda.

DESCRIPTIVE ANSWER QUESTION:

1. Prove that vibratory motion of mass attached to spring is S.H.M.
2. Prove that motion of a ball in a ball and bowl system is simple harmonic motion.

(NUMERICALS: Page No: 20- 3, 5, 6 7

UNIT NO. 11 SOUND
MULTIPLE CHOISE QUESTIONS: 1, 3, 5, 8, 9 , 10 **20%**
SHORT QUESTIONS.

1. Why are sound waves referred to as mechanical waves?
2. Distinguish between musical sound and noise.
3. Define Echo: a) Explain the working and application of a sonar.
   b) How can defects in a metal block be detected using ultrasound? Explain with the help of a diagram.
4. Define the following terms: i. Infrasonic b. The audible frequency range of hearing
   c. Ultrasound.
5. How is ultrasound used for cleaning?
6. Define the intensity of sound.

DESCRIPTIVE ANSWER QUESTONS. **40%** **(24 Marks)**

1. What are Ultra Sound? Explain two applications of Ultra Sound that are used in Hospital.
2. With the help of a diagram, describe how compressions and rarefactions are produced in the air near a source of the sound.

NUMERICALS: 1 , 3

UNIT NO. 12 ELECTROMAGNETIC SPECTRUM

MULTIPLE CHOISE QUESTIONS: 1, 2, 3, 6

SHORT QUESTIONS. 40%

1. What are electromagnetic waves?
2. Define dispersion of light.
3. Explain how the rainbow is produced a rainy day?
4. What are Radio wave, how radio waves are produced? Write its one use in Telecommunication.
5. Define spectrum of light.
6. Write uses of electromagnetic waves.
7. Define fluorescence.
8. What are the main sources of radio waves?
9. What is the main advantages of using radio waves in communication?
10. Why are microwaves preferred in satellite communication?
11. On what principle do optical fibers work?

DESCRIPTIVE ANSWER QUESTONS. 40% (24 Marks)

1. Reference the daily life application of optical fibers in: Telecommunication, Medical industry.
2. Why are ultraviolet rays used under medically supervised control in sunbeds?
3. How are gamma radiations used in radiosurgery for destroying cancerous cells?
4. Explain the application of gamma rays used in hospitals for medical imaging.

NUMERICAL: Page No. 56: 2, 3, 6, 7

UNIT NO. 13 GEOMETRICLA OPTICS.

MULTIPLE CHOSE QUESTIONS: Page No.82 2. 4, 5, 8, 11, 13, 14

SHORT QUESTIONS ANSWER: 40%

1. What do you understand by the term reflection of light?
2. Define the following: The angle of incidence , The angle of refraction.
3. What is the lens?
4. Define critical angle.
5. What do you understand by the term total internal reflection?
6. What are optical fibers?
7. Describe how total internal reflection is used an endoscope?
8. What is meant by the terms? i. short-sigh, and ii. Long-sigh

DESCRIPTIVE ANSWER QUESTIONS. 40%

1. Describe the power of a lens and its units.
2. Draw the ray diagram of a magnifying glass.
3. With the help of a ray diagram, give the magnifying powers of the following optical instruments.
   i. Simple microscope or magnifying glass.
   ii. Compound microscope
   iii. Refracting telescope

NUMERICAL: Page No. 85- 4,5,6

UNIT NO. 14 ELECTROSTATICS.

MULTIPLE CHOISE QUESTIONS. PAGE NO. 107: 3,5,6,7,89

SHORT QUESTIONS.

1. State and explain the Coulomb's law.
2. Define electric field and electric field intensity.
3. What is the difference between variable and fixed type capacitor?
4. Describe the concept of electrostatic potential.
5. Give some examples of where capacitors are used in different kinds of electrical devices.
6. How an electroscope is built and how it operates.

DESCRIPTIVE ANSWER QUESTIONS. 40%

1. Explain why it's important to know the effective capacitance of a number of capacitors connected n series and in parallel.
2. Provide an example of when static electricity could cause harm, as well as the measures taken to prevent injury.

NUMERICALS: PAGE NO. 108 2, 3, 4

UNIT NO. 15 CURRENT ELECTRICITY.

MULTIPLE CHOICE QUESTIONS. PAGE NO. 129- 2, 4, 5, 7, 8

SHORT QUESTIONS. 40%

1. Explain what you mean by the term" conventional current"
2. Describe Ohm's law and its limitations.
3. When a fuse is used n a circuit, does it control the current or the potential difference?
4. Explain Joule's law and the process of energy dissipation in resistance.
5. Explain how safety precautions are used in home electricity.

DESCRIPTIVE ANSWER QUESTIONS.. 40%

1. Describe Ohm's law and its limitations.
2. Explain Joule's law and the process of energy dissipation in a resistance.
3. Explain the roles of the live, neutral and earth wires in a standard home electrical system.
4. Explain how safety precautions are used in home electricity.

NUMERICAL: PAGE NO. 131 - 2, 3, 5, 6, 7

UNIT NO. 16 ELECTROMAGNETISM

MULTIPLE CHOICE QUESTIONS: PAGE NO. 151 3, 5, 7, 9

SHORT QUESTIONS: 40%

1. Define Lenz's law of electromagnetic induction.
2. Define mutual induction.
3. How A.C. generator works?
4. What is transformer and how it works?
5. What is the difference between steps up and step down transformer?
6. Write down any three daily life applications of transformer.
7. Explain how an A.C. generator work in its most simple form.

DESCRIPTIVE ANSWER QUESTIONS. 40%

1. State that, a current carrying coil in a magnetic field will experience a torque.
2. Explain the units of mutual induction and provide an example.
3. Explain what role transformers play in alternating current circuits.

NUMERICAL: PAGE NO. 152- 3 , 4

UNIT NO. 17 INDRODUCTORY ELECTRONICS.

MULTIPLE CHOICE QUESTIONS: PAGE NO. 177- 2, 5, 6, 7,9 ,10

SHORT QUESTIONS. 40%

1. Difference between analogue and digital electronics.
2. Write the names of any three analogue and digital devices.
3. What is meant by thermionic emission?
4. Define Cathode rays.
5. What is a logic gage?
6. Write the Boolean expression of an OR gate?
7. Define the role of vacuum tube in electronics.
8. Demonstrate the process of thermionic emission by diagram?
9. Any two properties of cathode rays.
10. Write any three advantages of Digital electronics over analogue electronics devices.

DESCRIPTIVE ANSWER QUESTIONS. **40%**

1. What is cathode ray Oscilloscope? Also describe the basic principle and working with diagram.

UNIT NO. 18 INFORMATION AND COMMUNICATION TECHNOLOGY.

MULTIPLE CHOICE QUESTIONS: PAGE NO. 196- 2, 4, 5, 6, 8, 9

SHORT QUESTIONS. **40%**

1. Difference between data and information?
2. What do you understand by Information and Communication Technology (ICT)?
3. Difference between the primary memory and the secondary memory.
4. Difference between hardware and software? Name different software's.
5. Difference between RAM and ROM memories?
6. What is Internet? Internet is a useful source of knowledge and information discuss.

DESCRIPTIVE ANSWERS QUESTIONS. **40%**

1. What are the components of information technology? Clearly indicate the function of each components.
2. Explain briefly the transmission of radio waves through space.
3. How light signals are send through optical fibre?
4. Why optical fibre is more useful tool for the communication process?
5. What is Internet? Internet is a useful sources of knowledge and information discuss.

UNIT NO. 19 ATOMIC STRUCTURE.

MULTIPLE CHOICE QUESTIONS: PAGE NO. 206 1, 3, 4, 6 7, 8

SHORT QUESTIONS **40%**

1. What the center of an atom is called?
2. Describe the structure of an atom.
3. Give the Rutherford model of an atom
4. What is the Isotope?
5. Explain the isotope with an example.
6. Define Atomic number.
7. Why are the chemical properties of an element's different isotopes identical?

DESCRIPTIVE ANSWERS QUESTIONS: **40%.**

1. Describe Rutherford's experiment for the separation of radioactive rays.
2. Cite the Geiger Marsden experiment with the help of a diagram.
3. Explain the isotope with an example.

UNIT NO. 20 NUCLEAR STRUCTURE.

MULTIPLE CHOICE QUESTIONS: PAGE NO. 229- 1, 2, 3, 5, 6, 9, 11, 12

MULTIPLE CHOICE QUESTIONS. **40%**

1. Define radioactivity.
2. Define Ionization.
3. Define the penetrating power?
4. Define Nuclear Transmutation.
5. Difference between stable and unstable nucleotides?
6. What is mean by : a. Nuclear fission b. Nuclear chain reaction c. Nuclear fusion.
7. State the nucleon number.
8. What is meant by a beta particle?

DESCRIPTIVE ANSWEERS QUESTIONS. **40%**

1. What do you understand by the half-life of a radioactive element?
2. Complete the nuclear equation of the uranium decay.
3. Uranium-238 nuclide decay to form a thorium nuclide by emission an alpha particle