10th CLASS (SLOs) STUDENTS LEARNING OUTCOMES EXAMINATION.
FEDERAL BOARD SSC-II EXAMINATION.
PHYSICS.

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UNIT NO. 10 SIMPLE HARMONIC MOTION AND WAVE.

KNOWLEDGE BASED. 30%

1. What is simple harmonic motion? What are the necessary conditions for a body to execute simple harmonic motion?
2. Is the motion of a simple pendulum a simple harmonic motion? Write in detail.
3. What are damped oscillations? How damping progressively reduces the amplitude of oscillation?
4. Describe the types of waves?
5. Distinguish between longitudinal and transverse waves with suitable examples?
6. Derive a relationship between speed, frequency and wave length of a wave. Write a formula relating speed of a wave to its time period and wave length.
7. What is a ripple tank? Write its construction and use to study the wave properties?

UNDERSTANDING BASED. 50%

1. If the length of a simple pendulum is doubled what will be the change in its time period?
2. A ball is dropped from a certain height on to the floor and keeps bouncing. Is the motion of the ball simple harmonic? Explain
3. Think of several examples in our daily life of motion that are simple harmonic?
4. Does increasing the frequency of a wave also increase its wave length? If not, how are these quantities related?
5. What type of waves do not require any material medium for their propagation?
6. What will happen to acceleration of mass spring system if its mass is doubled?
7. Same mass are attached to different springs, one is vibrating faster. Why?

LONG QUESTIONS.

1. What do you mean by oscillation? Define simple harmonic motion. What are conditions for a body to perform SHM? Give examples of bodies which perform SHM.
2. Explain the following for SHM: Vibration, amplitude, time period, frequency.
3. Explain the process of Damping. Differentiate between damped and undammed oscillations
4. Explain the reflection of water waves with the help of ripple tank. Draw a neat diagram to illustrate the phenomenon.

NUMERICAL PROBLEMS: 10.110.2,10.3

UNIT NO. 11 SOUND

KNOWLEDGE BASE. 30%

1. Difference between pitch and quality of sound. Draw graph to show variation of pitch with frequency.
2. Calculate the wavelengths of sound at the lowest audible frequency.(20Hz)and highest audible frequency (20,000 Hz), (Assume speed of sound in air is 332 ms-1)
3. Differentiate between intensity level and intensity of sound.
4. Write a note on the characteristics of sound?
5. What is the reflection (echo) of sound? Give one example?
6. What is noise pollution? Explain that noise is a nuisance?
7. What is the audible frequency range? What are the uses of ultrasound in medicine?
8. What is the necessary condition for the production of sound?
9. Difference between Pitch and Quality of a sound.

UNDERSTANDING BASE. 50%

1. How can you find the speed of sound by eco method?
2. Why two tin cans with a string stretched between them could be better way to communicate than merely shouting through the air?
3. We cn recognize persons speaking with the same loudness from their voice. How is this possible.?
4. Is there any difference between echo and reflection of sound? Explain.
5. Why ultrasound is useful in medical field?
6. Will two separate 50 dB sounds together constitute a 100 dB sound? Explain.

LONG QUESTIONS.

1. Describe the characteristic of sound in detail.
2. What is loudness of sound? ON what factors does it depend?
3. What are Ultrasounds? Give their uses in different fields of life.

NUMERICAL PROBLEMS: 11.2, 11.4,11.5,11.9

CHAPTER NO. 13 ELECTROSTATICS

UNDERSTANDING BASE.50%

1. An electrified rod attracts pieces of paper. After a while these pieces fly away. Why?
2. In what direction will a positively charged particle move in an electric field?
3. Does each capacitor carry equal charge in series combination? Explain.
4. Is the presence of charge necessary for the existence of electrostatic potential?
5. Rubber tires get charged from friction with the road. What is the polarity of the charge?
6. Explain why, a glass roa can be charged by rubbing when held by hand but an iron rod cannot be charged by rubbing, if held by hand?

APPLICATION BASED. 20%

1. What factors effect he ability of capacitor to store charge.
2. What energy stored in a capacitor.
3. What is the meaning of volt?
4. What is SI unit of charge?
5. Enlist some used of capacitors.

LONG QUESTIONS.

1. Explain combination of capacitors in series and in parallel with diagram. Also find an expression for their equivalent capacitance (Cap)
2. State coulomb's law. Derive the expression of electrostatic force?
3. Derive a formula for the effective capacitance for a series combination of a number of capacitors.
4. Discuss different types of capacitance.

NUMERICALPROBLEM: 13.2, 13.6,13.7

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UNIT NO.14 CURRENT ELECTRICITY.

KNOWLEDGE BASE. 30%

1. Define the term electric current? What is conventional current?
2. What is meant by the electric potential of the battery?
3. What do you mean by the term "electric potential difference"?
4. Explain ohm's law?
5. Difference between ohmic and non-ohmic substances".
6. What is the difference between conductors and insulators?
7. What is electrical power?
8. Discuss unit Kilowatt-hour?
9. Difference between D.C and A.C.
10. Uses of a fuse in domestic electricity circuits?
11. Use of circuit breaker and earth wire in household circuits.

UNDERSTANDING BASED. 50%

1. Why in conductors charge in transferred by free electrons rather than by positive charges?
2. What is the difference between a cell and a battery?
3. Can current flow in a circuit without potential difference?
4. How many watt-hours are there in 1000 Joules?
5. It is impracticable to connect an electric bulb and an electric heater in series. Why?
6. In order to measure voltage in a circuit voltmeter is always connected in parallel Discuss.

APPLICATION BASE. 20%

1. Who developed the first practical electric battery?
2. How Potential difference in measured.
3. Use of electric current.
4. Why the voltage used for the domestic supply much lower than the voltage at which the power in transmitted.

LONG QUESTION.

1. What is the difference between D.C and A.C ? Discuss the supply to house and house wiring.
2. Explain the energy dissipation in a resistance. What is Joule's law?
3. Determine the equivalent resistance of parallel combination of resistors?
4. What is the difference between conductors and insulators?
5. Difference between Ohmic and Non-Ohmic substances?
6. Explan Ohm's law.

NUMERICAL PROBLEMS: 14.1, 14.3, 14.4, 14.10

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UNIT NO. 15 ELECTROMAGNETISM

KNOWLEDGE BASE.30%

1. Define Right hand rule.
2. Define Fleming's left hand rule.
3. What principle of working of D.C. motor
4. What is electromagnetic induction?
5. State Faraday's law?
6. Define Lenz's law.
7. Write the working of A.C. generator?
8. What do you understand by the term mutual induction? Name and define SI unit of mutual inductance?
9. What is a transformer?
10. Write any one application of electromagnet?

UNDERSTANDING BASED. 50%

1. Which device is used for converting electrical energy? Into mechanical energy.
2. What is the difference between a generator and a motor?
3. What reverses the direction of electric current in the armature coil of D.C. motor?
4. Can a transformer operate on direct current?
5. Suppose you have a coil of wire and a bar magnet. Describe how you could use them to generate an electric current.

APPLICATION BASE. 20%

1. Why generator is used.
2. Explain the working of transformer in connection with mutual induction?
3. Define Step-up transformer and Step –down transformer.
4. Write Power formula.
5. How working Relay.
6. Can a transformer operate on direct current?

LONG QUESTIONS.

1. Write the construction and principle of working of D.C. motor.
2. State Faraday's Law? How the direction of induced e.m.f. is determined by Lenz's law?
3. Write the working of A.C. generator? How current is produced from a generator?
4. What is electromagnetic Induction? Describe simple experiments to demonstrate that a changing magnetic field can induce an e.m.f in a circuit?
5. Explain the working of transformer in connection with mutual induction. Describe types of transformer.

NUMERICAL PROBLEMS: 15.2, 15.3, 15.5

UNIT NO. 16 BASIC ELECTRONICS.

KNOWLEDGE BASE. 30%

1. What is electron gun? Describe the process of thermionic emission?
2. What is cathode ray oscilloscope?
3. Write Uses of C.R.O.
4. What do you understand by digital and analogue quantities?
5. Difference between analogue electronic and digital electronics?
6. Write a note on the basic operation of digital electronics-logic gates?
7. Describe the simple uses of logic gates.
8. What are NAND and NOR gates?
9. Name some uses of oscilloscope.

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UNDERSTANDING BASED.50%

1. Name two factors which can enhance thermionic emission.
2. Give three reasons to support the evidence that cathode rays are negatively charged electrons.
3. In what ways is an oscilloscope a voltmeter?
4. How can you compare the logic operation X = A.B with usual operation of multiplication.
5. NAND gate is the reciprocal of AND gate. Discuss.

LONG QUESTION.

1. What are the basic Logic Gates? Give symbols and truth tables of any two.
2. Identify and draw the symbols for the logic gates.(NOT, OR, AND,NOR and NAND).
3. What do you know about NAND Gate and NOR Gate. Draw their circuit diagram symbols and truth tables. Give Boolean equations for each.
4. What is OR gate? Draw its symbol and truth Table.

UNIT NO. 17 INFORMATION AND COMMUNICATION TECHNOLOGY

KNOWLEDGE BASE. 30%

1. What do you understand by information and communication technology?
2. What are the components of computer based information system?
3. Write about the transmission of electrical signal through wires?
4. What about the transmission of light singles through optical fibers?
5. What is a computer? Write its uses?
6. Difference between the primary and secondary memory.
7. Distinguish between compact disc and flash drive.
8. What do you understand by the term word processing and data management?
9. What do you know about "Web browsing" and "E-mail"?
10. Write a few uses of internet?

APPLICATION BASED.20%

1. What is E-Commerce?
2. How to search the web.
3. What is data managing?
4. What is pits and lands?
5. What is microprocessor?
6. What do you know Mobile phone?
7. What do you know about Radio waves?

LONG QUESTIONS.

1. Write about the transmission of electrical signal through wires? How Radio waves are transmitted through space?
2. What do you understand by information and communication technology?
3. Difference between the primary and secondary memory? How data is stored & used in audio/video cassettes?
4. What do you understand by the term word processing and data management?

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UNIT NO. 18 ATOMIC AND NUCLEAR PHYSICS.

KNOWLEDGE BASE. 30%

1. Difference between atomic number and atomic mass?
2. What do mean by the term radioactivity.
3. What do you understand by half-life of a radioactive element?
4. What are the radioisotopes?
5. Describe two uses of radioisotopes in medicine, industry or research?
6. What is nuclear fusion?

UNDERSTANDING BASE. 50%

1. Is it possible for an element to have different types of atoms? Explain
2. Which has more penetrating power, alpha a particle or gamma ray photon?
3. What is the difference between natural and artificial radioactivity?
4. How much of a 1 g sample pure radioactive matter would be left after four half-lives?
5. Which type of natural radioactivity leaves the number of protons and the number of neutrons in the nucleus unchanged?
6. How long would you likely have to wait to watch any sample of radioactive atoms completely decay?

APPLICATION BASE. 20%

1. What you understand word atom.
2. What do you know the positively charged in a nucleus?
3. What do you mean by decay process?
4. What SI unit of radioactive.
5. Define Characteristics of Radiations Alpha Particles.
6. What is Carbon dating?

LONG QUESTIONS.

1. Explain the meaning of half -life of a radioactive material.
2. State, for radioactive emissions.
   a.. electric singals through wires
   b. radio wave through air.
   c, Light signals through optical fibres.
3. Explain Half-Life of a radioactive element with graph and decay equation. Also clarify the term parent element and daughter element.
4. What is radio activity? What is meant by half-life of a radioactive element? Explain how the half-life of an element can be measured. Draw neat graph to illustrate the answer.

NUMERICAL PROBLEMS: 18.2, 18.3, 18.5, 18.9

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