

RADIOGRAPHIC TECHNIQUES HSSC-I

SECTION – A (Marks 20)

Time allowed: 25 Minutes

NOTE:- Section-A is compulsory and comprises pages 1-2. All parts of this section are to be answered on the question paper itself. It should be completed in the first 25 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q. 1 Circle the correct option i.e. A / B / C / D. Each part carries one mark.

- (i) What are the forces to keep the electron in its orbit?
- A. Centripetal force B. Centrifugal force
C. Electric repulsive force D. All of these
- (ii) Which of the following statements defines free electrons?
- A. The electrons which change their orbit on absorbing energy
B. The electrons which can be removed from outermost orbit easily
C. The removal or addition of an electron to an atom
D. The electrons which do not leave their orbit on application of energy
- (iii) Which of the following statements is **TRUE**?
- A. The atoms of the same element have identical structures
B. The atoms of the different elements have identical structures
C. The atoms of the same element have different structures
D. None of these
- (iv) Which of the following particles makes the nucleus positive?
- A. Electron B. Proton
C. Neutron D. Both B and C
- (v) Which of the following parameters are directly proportional in Ohm's law?
- A. Voltage V and Resistance R B. Voltage V and Current I
C. Current I and Resistance R D. None of these
- (vi) Which of the following varies directly to the Resistance of a wire?
- A. Area B. Specific Resistance
C. Length D. Resistance
- (vii) Which of the following circuit's total resistance is calculated by arithmetic addition of the resistances?
- A. Parallel circuit B. Series – Parallel circuit
C. Series circuit D. Short circuit
- (viii) Which of the following circuits is used as Testing circuit?
- A. Parallel circuit B. Series – Parallel circuit
C. Series circuit D. Short circuit
- (ix) Which of the following is defined as "work done on an electron to it from a point to another point"?
- A. Potential B. Potential Difference
C. Charge D. Current
- (x) Which of the following is used to store electric charge?
- A. Resistor B. Inductor
C. Capacitor D. Conductor
- (xi) Which of the following terms is used to express the total charge of 6.29×10^{29} ?
- A. Ampere B. Coulomb
C. Watt D. Ohm

DO NOT WRITE ANYTHING HERE

- (xii) Which of the following is essential to induce e.m.f. in the conductor?
- Conductor
 - Magnetic field
 - Movement of either conductor or of magnetic field
 - All of these
- (xiii) Which of the following is known as BOT unit or Commercial unit?
- Kilowatt-hour
 - Watt-hour
 - Watt
 - Volt-Ampere
- (xiv) Which of the following laws is the working principle of electric generator?
- Ohm's law
 - Coulomb's law
 - Faraday's law of electromagnetic induction
 - Electrodynamic principle
- (xv) Which of the following machines converts electric energy into mechanical energy?
- Ampere meter
 - Motor
 - Generator
 - Transformer
- (xvi) Which of the following machines is used to transform voltage?
- Ampere meter
 - Motor
 - Generator
 - Transformer
- (xvii) Which of the following machines is used to convert A.C. into D.C.?
- Diode
 - Motor
 - Generator
 - Transformer
- (xviii) Which of the following machines works on the principle of thermionic emission?
- Diode
 - Motor
 - Generator
 - Transformer
- (xix) Which of the following units is used to measure radiation exposure or intensity?
- Rad
 - Rem
 - Roentgen
 - Curie
- (xx) Which of the following machines gives voltage in KV to X-Ray tube?
- Electric Generator
 - High Tension Generator
 - Control Consol
 - Bucky

For Examiner's use only:

Total Marks:

20

Marks Obtained:

— 1HA-1150 —



Time allowed: 2:35 Hours

Total Marks Sections B and C: 80

NOTE:- Answer any ten parts from Section 'B' and any three questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly.

SECTION – B (Marks 50)

Q. 2 Attempt any TEN parts. The answer to each part should not exceed 2 to 4 lines. (10 x 5 = 50)

- (i) Define Coulomb's law.
- (ii) What is the difference between a Conductor and an Insulator?
- (iii) What is Ampere?
- (iv) What is Potential difference and Potential?
- (v) What are the laws of Resistance?
- (vi) What is a Parallel circuit and what are its advantages?
- (vii) What is Energy and Power?
- (viii) What is a motor?
- (ix) What is Generator?
- (x) How does a diode work?
- (xi) What is the difference between Mutual and Self induction?
- (xii) What is Faraday's law of electromagnetic induction?
- (xiii) What is a Capacitor and Capacitance?
- (xiv) What is Radiation?
- (xv) What is High Tension Generator in an X-Ray system?

SECTION – C (Marks 30)

Note: Attempt any THREE questions. All questions carry equal marks. (3 x 10 = 30)

- Q. 3 List the types of films used for X-Ray? Also write down the use of each.
- Q. 4 Compare and contrast Auto and Manual processing of films.
- Q. 5 Discuss the working of an electric motor.
- Q. 6 Discuss the structure, calculation of total resistance, properties and advantages of Series and Parallel circuit.
- Q. 7 Explain Sine wave, Frequency, and R.M.S value of A.C.