



Roll No.

Answer Sheet No. \_\_\_\_\_

Sig. of Candidate. \_\_\_\_\_

Sig. of Invigilator. \_\_\_\_\_

107

**RADIOGRAPHIC TECHNIQUES HSSC-I**  
**SECTION – A (Marks 20)**

**Time allowed: 25 Minutes**

**NOTE: Section-A is compulsory. 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 is a molecule?
- A. Smallest particle of matter  
B. Smallest particle of matter which can exist in the universe freely  
C. Smallest particle of matter which cannot exist in the universe freely  
D. Biggest particle of matter
- (ii) What is potential difference?
- A. Work done on an electron  
B. Work done on an electron to bring it from infinity to a point  
C. Work done on an electron to bring it from a point to another point  
D. Difference between two points
- (iii) What is an Ampere?
- A. Unit of energy  
B. Unit of potential difference  
C. Unit of current  
D. Unit of power
- (iv) What is called, "Whenever a current carrying conductor is placed in a magnetic field, it is acted upon by a force which tends to move it or throw it out of the field"?
- A. Motor effect of current  
B. Generator effect of magnet  
C. Heating effect of current  
D. None of these
- (v) Which of the following is called commercial unit of energy?
- A. Watt  
B. Watt-hour  
C. Kilo watt hour  
D. None of these
- (vi) Which of the following laws is working principle of electric generator?
- A. Ohm's law  
B. Coulomb's law  
C. Faraday's law of electromagnetic induction  
D. Laws of resistance
- (vii) Which of the following equation is derived in Ohm's law?
- A.  $H = I^2 Rt$   
B.  $F = Q_1 \times Q_2 / r^2$   
C.  $V = I \times R$   
D.  $R = R_1 + R_2 + R_3 + \dots + R_n$
- (viii) Which of the following describes the parallel circuit of resistances?
- A. Sum of all resistances is lower than any one resistance in the circuit  
B. Sum of all the resistance is arithmetical addition of all the resistances  
C. Sum of reciprocal of all the resistances  
D. None of these
- (ix) Which of the following circuit is used as test circuit?
- A. Short circuit  
B. Series circuit  
C. Parallel circuit  
D. Series – parallel circuit
- (x) Which of the following machine is used to increase the low voltage into high voltage?
- A. Electric Generator  
B. Step – up transformer  
C. Step down transformer  
D. Electric motor

**DO NOT WRITE ANYTHING HERE**

- (xi) Which of the following shows the definition of impedance?
- A. Combined effect of resistance and inductance
  - B. combined effect of resistance and capacitance
  - C. Combined effect of resistance, inductance and Capacitance
  - D. None of these
- (xii) Which of the following is a device to store electric charge?
- A. Heater
  - B. Motor
  - C. Capacitor
  - D. Resistor
- (xiii) Which of the following is the working principle of diode Tube?
- A. Flow of electron
  - B. Emission of electron due to heating of cathode
  - C. Heating of cathode
  - D. None of these
- (xiv) What is called, "Whenever current flows through a conductor, magnetic field is set up around it"?
- A. Electric effect of a magnet
  - B. Magnetic effect of electric current
  - C. Generator effect
  - D. Motor effect
- (xv) What is called, "A phenomenon in which a changing current in one coil induces an e.m.f in another coil"?
- A. Magnetic induction
  - B. Mutual induction
  - C. Self induction
  - D. None of these
- (xvi) Which of the following value of AC is equal to DC?
- A. R.M.S Value
  - B. Peak Value
  - C. Average Value
  - D. None of these
- (xvii) Which of the following conditions is called resonance?
- A. When  $X_L$  is lower than  $X_C$
  - B. When  $X_L$  is higher than  $X_C$
  - C. When  $X_L$  is equal to  $X_C$
  - D. None of these
- (xviii) Which of the following waves require no medium for transmission but propagate through vacuum?
- A. Sound waves
  - B. Heat waves
  - C. Electromagnetic waves
  - D. None of these
- (xix) Which of the following has ionizing property?
- A. Radio waves
  - B. Microwaves
  - C. Light rays
  - D. X-rays
- (xx) Which of the following is the true for X-ray machine?
- A. It converts electrical energy into mechanical energy
  - B. It converts Mechanical energy into electrical energy
  - C. It converts electrical energy into electromagnetic radiation energy
  - D. None of these

**For Examiner's use only:**

**Total Marks:**

20

**Marks Obtained:**

— 1HA 1750 —



# RADIOGRAPHIC TECHNIQUES HSSC-I

108

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

- (i) Define current, potential difference and resistance.
- (ii) Define Coulomb's law.
- (iii) Differentiate energy and power.
- (iv) What is magnetic effect of electric current?
- (v) How an electric motor works?
- (vi) Differentiate series and parallel circuit.
- (vii) What is root means square value of A.C?
- (viii) What is impedance?
- (ix) What is difference between Mutual and self induction?
- (x) Define frequency, time period and wavelength.
- (xi) What is thermionic emission?
- (xii) Differentiate ionization and excitation.
- (xiii) Enumerate types of ionizing and Non-ionizing radiations included in electromagnetic radiation spectrum.
- (xiv) What is the working principle of electric generator?
- (xv) Enlist films used in Radiography with their size.

## SECTION – C (Marks 30)

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

- Q. 3 Define laws of resistance and derive a relation from them.
- Q. 4 (a) Explain properties of series and parallel circuit.  
(b) Three resistances of 9, 11, 13 Ohms are connected in parallel and supplied with 100 volts. Find total resistance and current of each resistance.
- Q. 5 What is a film? What types of films are used in radiography? Write procedure for developing the film.
- Q. 6 Write a note on Atomic Structure.
- Q. 7 What is radiation? Write method of protection from radiation.