Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

# B.Sc. (Radiotherapy Technology) (Sem.–1) ELEMENTARY MATHEMATICS AND PHYSICS Subject Code : BSRT-101-19 M.Code : 77188 Date of Examination: 14-01-2023

Time: 3 Hrs.

Max. Marks : 60

## **INSTRUCTIONS TO CANDIDATES :**

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

# **SECTION-A**

#### 1. Write briefly :

- a) The two angles of a triangle are  $72^{\circ}$  and  $58^{\circ}$ . Find the measure of the third angle.
- b) Draw the line passing through (2, 3) and (3, 2). Find the coordinates of the points at which this line meets the x-axis and y-axis.
- c) If 26% of a number is 65, find the number.
- d) From a point P on a ground level, the angle of elevation from the top of the tower is 30°. If the height of the tower is 200 m, find the distance of point P from the foot of the tower.
- e) A sum gains total simple interest of Rs. 4016.25 at the rate of 9% per annum in 5 years. What is the sum?
- f) What are the two supplementary units in International system of units? Define these units.
- g) Can electric potential be zero at a place where the electric field intensity is non zero? Give an example of such a situation.
- h) What is the significance of Ohm's Law?
- i) What do you mean by Eddy currents?
- j) What is the difference between Galvanometer and Ammeter?

#### **SECTION-B**

- 2. A bus covers 128 km in 2 hours and a train covers 240 km in 3 hours. Find the ratio of their speeds.
- 3. Plot a line graph for the variables x and y, where y = 2x+1. Using the graph, find the value of (a) y, when x = 5 and (b) x, when y = 13.
- 4. A and B can do a piece of work in 12 days, B and C in 15 days, and C and A in 20 days. How much time will A alone take to finish the job.
- 5. Discuss Newton's laws of motion.
- 6. Write a note on electrometer.

## **SECTION-C**

- 7. Manohar purchased two handbags for Rs. 1500 each. He sold these bags, gaining 8% on one and losing 4% on the other. Find his gain or loss percent in the whole transaction.
- 8. What is Biot-Savart's Law? Derive an expression for the magnetic field at a point near a long straight wire carrying a current.
- 9. What do you understand by electromagnet? Discuss different elementary principle of magnetization of materials by electric current.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.