Mathematics
Class- X, Session: 2022-23
PERIODIC TEST-II

Date- 18-07-2022

Time Allowed: 1.5 hours **Maximum Marks: 40**

General Instructions:

1. The question paper consists of 14 questions divided into 4 sections A, B, C, D.
2. All questions are compulsory.
3. Section A comprises of 5 questions of 1 mark each.
4. Section B comprises of 3 questions of 3 marks each.
5. Section C comprises of 4 questions of 4 marks each.
6. Section D comprises of two case study-based questions of 5 marks each.

SECTION A

Q.1. Find the value of k for which x = 2 is a solution of the equation

$k^2 - 2x - 3 = 0$.

Q.2. Find the value(s) of k for which the quadratic equation $3x^2 + kx + 3 = 0$ has real and equal.

Q.3. In quadratic equation $x^2 + bx + c = 0$ if b=0 and c < 0 then what type of roots does the equation have?

Q.4. Three points A, B, C are such that AB + BC= AC then points A, B and C are said to be _____.

Q.5. The point which divides the line segment joining the points A (-6, 10) and B (3, -8) in 2:7 lies in _____quadrant.

SECTION B

Q.6. Find the nature of the roots of the quadratic equation

$$x^2 - 2\sqrt{2}x - 6 = 0$$

Q.7. Find the coordinates of the point R on the line segment joining the points P(-1,3) and Q(2,5) such that $PR = \frac{3}{5}PQ$.

Q.8. If the distances of P(x, y) from A(5, 1) and B(-1,5) are equal, then prove that 3x=2y.

SECTION C

Q.9. ABCD is a rectangle formed by the points A (-1, -1), B (-1, 4), C(5, 4) and D(5.-1). P,Q ,R,S be the mid-points of AB, BC, CD and DA respectively, show that PQRS is a rhombus

Q.10. If (3, 3), (6, y), (x, 7) and (5, 6) are the vertices of a parallelogram taken in order, find the values of x and y.

Q.11. Sum of the areas of two squares is 305 m^2. If the difference of their perimeters is 36 m, then find the sides of the two squares.

Q.12. Solve for X : $7x^2 + 49x + 84 = 0$

Section-D

Q.13. Case I: RAMESH and AMAN are very close friends. Both the families decide to go to Ranikhet by their own cars. Ramesh's car travels at a speed of x km/h while Aman's car travels 5 km/h faster than Ramesh's car. Ramesh took 4 hours more than Aman to complete the journey of 400 km.

(i). What will be the distance covered by Aman's car in two hours?

a) 2(x +5) km
b) (x – 5) km
c) 2(x + 10) km
d) (2x + 5) km

(ii). Which of the following quadratic equation describe the speed of Ramesh's car?

a) $x^2 - 5x - 500 = 0$
b) $x^2 + 4x - 400 = 0$
c) $x^2 + 5x - 500 = 0$
d) $x^2 - 4x + 400 = 0$

(iii). What is the speed of Ramesh's car?

a) 20 km/hour
b) 15 km/hour
c) 25 km/hour
d) 10 km/hour

(iv). How much time AMAN took to travel 400 km?

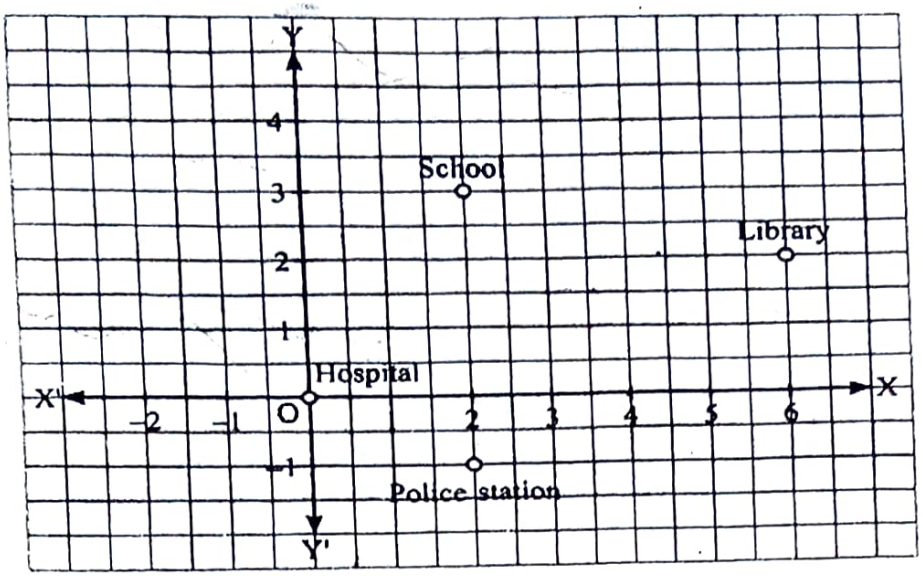
a) 20 hour
b) 40 hour
c) 25 hour
d) 16 hour

(v). How much time RAMESH took to travel 400 km?

a) 16 hour
b) 20 hour
c) 24 hour
d) 18 hour

CASE STUDY-2

Q.14. Kushal is a Class X student residing in a village. One day, he went to a city Hospital along with his grandfather for general check-up. From there he visited three places School, Library and Police Station. After returning to his village, he plotted a graph by taking Hospital as origin and marked three places on the graph as per his direction of movement and distance. The graph is shown below:



(i) Distance between two points P(x_1, y_1) and Q(x_2, y_2) is:

(a) $\sqrt{(x_1^2 - x_2^2) + (y_1^2 - y_2^2)}$ (b) $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

(c) $\sqrt{(x_2 - y_2)^2 + (x_1 - y_1)^2}$ (d) $\sqrt{(x_2 - x_1)^2 - (y_2 - y_1)^2}$

(ii) Distance between school and hospital is:

(a) $\sqrt{11}$ (b) $\sqrt{13}$

(c) $\sqrt{5}$ (d) $\sqrt{17}$

(iii) Distance between school and police station:

(a) 4 (b) 3

(c) 2 (d) 1

(iv) Distance between police station and library:

(a) 4 (b) 5

(c) 7 (d) 3.5

(v) Nearest place to library is:

(a) police station (b) school

(c) hospital (d) all are at equal distance