

# R.S.TUTORIAL

M.M. 80

TEST SERIES (2011-2012)

TIME-3h

TEST- 7

CLASS- X

MATHEMATICS

## GENERAL INSTRUCTIONS:

- 1- All questions are compulsory.
- 2- The question paper consists of 34 questions divided into four sections A, B, C, & D.
- 3- Section A comprises of 10 questions of 01 marks each, Section B comprises of 8 questions of 2 marks each, Section C comprises of 10 questions of 3 marks each and Section D comprises of 6 questions of 4 marks each.
- 4- All questions in Section A are multiple choice questions where you are to select one correct option out of given four.
- 5- There is no overall choice. However internal choice has been provided in one question of two marks each, 3 questions of 3 marks each and two questions of four marks each. You have to attempt only one of the alternatives in all such questions.
- 6- Use of calculators is not permitted.

## SECTION - A

**Q.1.** Which of the following equations has two distinct real roots?

(a)  $2x^2 + 3\sqrt{2}x + 9/4 = 0$

(b)  $x^2 + 4x - 3\sqrt{2}x = 0$

(c)  $x^2 - 4x - 3\sqrt{2} = 0$

(d)  $5x^2 - 3x + 1 = 0$

**Q.2.** The sum of first n terms of a series is  $5n^2 + 2n$ , then the second term is,

(a) 15

(b) 16

(c) 17

(d) none of these

**Q.3.** The probability that a card drawn from a pack of 52 cards will be a diamond or a king is,

- (a)  $2/13$  (b)  $4/13$   
(c)  $1/52$  (d)  $1/13$

**Q.4.** Two concentric circles are of radii 13cm and 5cm. The length of the chord of larger circle which touches the smaller circle is

- (a) 12cm (b) 20cm  
(c) 24cm (d) 26cm

**Q.5.** The coordinates of the middle points of the sides of a triangle are (4, 2) (3, 3) and (2, 2), then the coordinates of its centroid are

- (a)  $(3, 7/3)$  (b) (3, 3)  
(c) (4,3) (d) none of these

**Q.6.** There are 25 tickets bearing numbers from 1 to 25. One ticket is drawn at random. The probability that the number on it is a multiple of 5 or 6 is

- (a)  $7/25$  (b)  $9/25$   
(c)  $11/13$  (d)  $13/25$

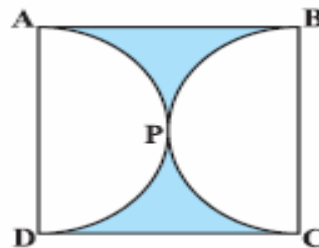
**Q.7.** If one roots of the equation  $px^2 - 14x + 8 = 0$  is six times the other, then p is equal to

- (a) 2 (b) 3  
(c) 1 (d) none of these

**Q.8.** Find the angle of elevation of the top of a tower  $100\sqrt{3}$  m long, from a point at a distance of 100m, from the foot of the tower in a horizontal plane.

- (a)  $45^\circ$  (b)  $30^\circ$   
(c)  $60^\circ$  (d) none

**Q.9.** The area of the shaded region in Fig. , if ABCD is a square of side 14 cm and APD and BPC are semicircles.



- (a)  $24\text{cm}^2$  (b)  $42\text{cm}^2$

(c)  $420\text{cm}^2$

(d) none of these

**Q.10.** TP and PQ are the two tangents to a circle with centre O, so that angle POQ =  $100^\circ$ , then angle PTQ is equal to

(a)  $60^\circ$

(b)  $70^\circ$

(c)  $80^\circ$

(d)  $90^\circ$

## SECTION- B

**Q.11** A solid sphere of radius 6cm is melted and recast into small spherical balls each of diameter 0.6cm. Find the number of balls thus obtained.

**Q.12** Write the nature of roots of the quadratic equation  $\sqrt{5}x^2 - 3\sqrt{6}x - 20 = 0$ .

**Q.13** What is the perimeter of a sector of angles  $45^\circ$  of a circle with radius 7 cm? (Use  $\pi = 22/7$ )

**Or,**

The diameter of a circle is 84 cm. find the number of revolutions it will make in moving 792 meters.

**Q.14** There are four male and six female candidates for the selection of a vacancy of a teacher in a school. If the selection is made, find the probability that

(a) Male is selected

(b) Female is selected.

**Q.15** The distance between A (x, 7) and B (1,3) is 5. Calculate x.

**Q.16** The encircle of  $\Delta ABC$  touches the side AB, BC & CA at P, Q & R respectively. Show that  $AP + BQ + CR = \frac{1}{2}$  (perimeter of  $\Delta ABC$ ).

**Q.17** Determine k, so that  $4k + 8$ ,  $2k^2 + 3k + 6$ ,  $3k^2 + 4k + 4$  are three consecutive terms of an A. P.

**Q.18.** If the coordinates of the middle point of the line segment joining the point ( 2 , 1) (1,-3) be  $(\alpha, \beta)$  prove that  $6\alpha + \beta - 8 = 0$ .

## SECTION- C

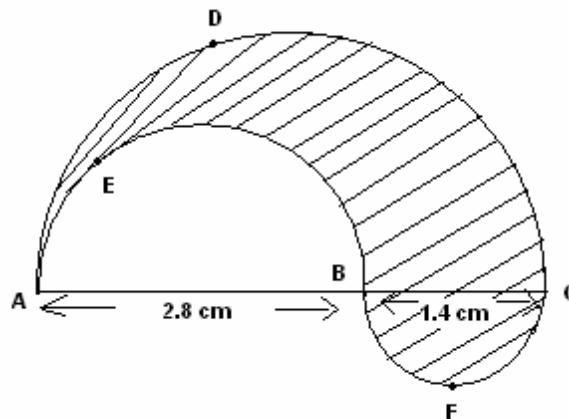
- Q.19.** Cards marked with the numbers 2 to 101 are placed in a box and mixed thoroughly. One card is drawn from this box. Find the probability that the number on the card is
- an even number
  - a number less than 14
  - a number which is a perfect square
  - a prime number less than 20.

OR,

Two customers SEAROSE and POOJA are visiting a particular shop in the same week (Tuesday to Saturday). Each is equally likely to visit the shop on any day so on another day. What is the Probability that both will visit the shop on

- same day?
- Consecutive days?
- Different days?

- Q.20** In fig, find the perimeter of shaded region Where ADC, AEB and BFC are semi-circles on diameters AC, AB and BC respectively



- Q.21.** The sum of first 9 terms of an AP is 171 and that of the first 24 terms is 996. Find the AP.

- Q.22** There are two poles, one each on either bank of a river. just opposite to each other. One pole is 60 m high. From the top of this pole, the angles of depression of the top and the foot of the other pole are  $30^\circ$  and  $60^\circ$  respectively. Find the width of the river and the height of the other pole.

**Q.23** The rain water from a roof  $22\text{m} \times 20\text{m}$  drains into a cylindrical vessel having diameter of base  $2\text{m}$  and height  $3.5\text{m}$ . If the vessel is just full, find the rainfall in  $\text{cm}$ .

**OR**

Water flows at the rate of  $10\text{m}$  per minute through a cylindrical pipe having its diameter as  $5\text{mm}$ . How much time will it take to fill a conical vessel whose diameter of base is  $40\text{cm}$  and depth  $24\text{cm}$ ?

**Q.24** In what ratio does the point  $P(p, -5)$  divide the line segment joining  $A(-3, 5)$  and  $B(4, -9)$ ? Also find  $p$ .

**Q.25** Prove that, the opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the center of the circle.

**Q.26** Draw a circle of  $3.4\text{cm}$  radius. Take a point  $P$  outside the circle. Draw two tangents to the circle from the point  $P$  without using the center.

**Q.27** An iron solid sphere of radius  $3\text{cm}$  is melted and recast into small spherical balls of radius  $1\text{cm}$  each. Assuming that there is no wastage in the process, find the number of small spherical balls made from the given sphere.

**Q.28** The co-ordinates of the vertices of  $\Delta ABC$  are  $A(4, 1)$ ,  $B(-3, 2)$  and  $C(0, k)$ . Given that the area of  $\Delta ABC$  is  $12\text{unit}^2$ , find the value of  $k$ .

## SECTION – D

**Q.29.** Sheela can row a boat  $8\text{km}$  downstream and return in  $100$  minutes. If the speed of the stream is  $2\text{km/hr}$ , find the speed of the boat in still water.

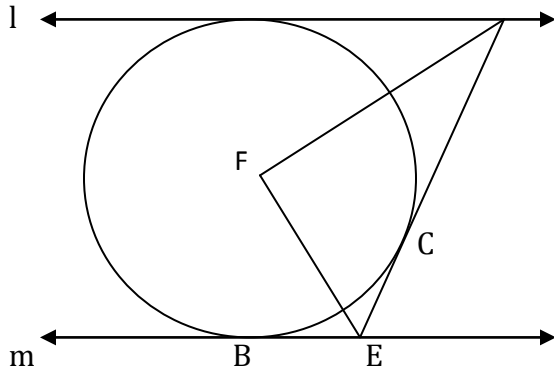
**OR**

Some students planned a picnic. The budget for food was  $\text{Rs.}500$ . But  $5$  of these failed to go and thus the cost of food for each student increased by  $\text{Rs.}5$ . How many students attended the picnic?

**Q.30.**  $l$  and  $m$  are two parallel tangents at  $A$  and  $B$ . The tangent at  $C$  makes an intercept  $DE$  between  $l$  and  $m$ . Prove that  $\angle DFE = 90^\circ$ .

A

D



**Q.31** A metallic right circular cone 20 cm high and whose vertical angle is  $60^\circ$  is cut into two parts at the middle of its height by a plane parallel to its base. If the frustum so obtained be drawn into a wire of diameter  $\frac{1}{16}$  cm, find the length of the wire. (Use  $\pi = \frac{22}{7}$ )

**Q.32.** Had Ravinder scored 10 more marks in his mathematics test out of 30 marks, 9 times these marks would have been the square of his actual marks. How many marks did he get in this test?

**Or**

Out of a number of Saras birds, one fourth the number are moving about in lotus plants,  $\frac{1}{9}$  th coupled (along) with  $\frac{1}{4}$  as well as 7 times the square root of the number move on a hill; 56 birds remain in vakula trees. What is the total number of birds.

**Q.33** A bucket of height 8 cm and made up of copper sheet is in the form of Frustum of a right circular cone with radii of its lower and upper ends as 3 cm and 9 cm respectively. Calculate:

(i) the height of the cone of which the bucket is a part

(ii) the volume of water which can be filled in the bucket.

(iii) the area of copper sheet required to make the bucket (leave the answer in terms of  $\pi$ ).

**Q.34** A man on the top of a vertical tower observes a car moving at a uniform speed coming directly towards it. If it takes 12 minutes for the angle of depression to change from  $30^\circ$  to  $45^\circ$  how soon after this, will the car reach the tower?

**OR**

A boy is standing on the ground and flying a kite with 150 m of string at an elevation of  $30^\circ$ . Another boy is standing on the roof of a 25 m high building and is flying his kite at an elevation of  $45^\circ$ . Both the boys are on opposite sides of both the kites. Find the length of the string that the second boy must have so that the two kites meet.