**SAMPLE PAPER-2013**

**Subject: MATHEMATICS**

**CLASS X**

M.M. 80TIME-3h

**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**

**Q1.** The distance between two parallel tangents to a circle of radius 5 cm is

(a) 10cm (b) 5cm (c) 8cm (d) 9cm

**Q2.** The probability of occurrence of event A is denoted by P(A) so the range of P(A) is

 (a) 0<P(A)<1 (b) 0  P(A)<1 (c) 0<P(A) 1 (d) 0  P(A) 1

**Q.3.** If the perimeter and area of a circle are numerically equal, the radius of the circle is

 (a) 2 units (b) π units (c) 4 units (d) 7 units

**Q.4.** The first and last terms of an AP are 1 and 11. If the sum of all its terms is 36, then

the number of terms will be

 (a) 5 (b) 6 (c) 7 (d) 8

**Q.5.** A funnel is the combination of

(a) Cone and cylinder (b) Frustum of a cone and cylinder

(c) Hemisphere and cylinder (d) Hemisphere and cone

**Q.6.** For a race of 1540 m number of rounds one has to take on a circular track of radius 35m;

(a) 5 (b) 6 (c) 7 (d) 10

**Q.7.** The tops of two poles with heights 25 m and 35 m are connected by a wire, which makes an angle of elevation of 30 degrees at the top of 25 m pole. Then the length of wire is:

(a) 26 m (b) 35 m (c) 15 m (d) 20 m

**Q.8.** One coin is tossed thrice. The probability of getting neither 3 heads nor 3 tails is:

(a) 1/3 (b) ¾ (c) ½ (d) 2/3

**Q.9.** To divide a line segment PQ in the ratio 3:4, first a ray PX is drawn so that angle QPX is an acute angle and then at equal distances points are marked on the ray PX such that the minimum number of these points is:

(a) 7 (b) 4 (c) 5 (d) 3

**Q.10.**Twelve solid spheres of the same size are made by melting a solid metallic cylinder of base diameter 2cm and height 16 cm. The diameter of each sphere is:

(a) 4 cm (b) 3 cm (c) 2 cm (d) 6 cm

 **SECTION – B**

**Q.11.** In a circle of radius 10cm, an arc subtends an angle of 90° at the centre. Find the area

of the major sector.

**Q.12**. Which term of A.P. 8, 14, 20, 26,… will be 72 more than its 41st term?

**Q.13.** If all the side of a parallelogram touches a circle, show that the parallelogram is a rhombus.

**Q.14.**The minute hand of a clock is √21 cm . Find the area described by the minute hand on face of the clock between 7 a.m. to 7.35 a.m.

**Q.15.** 50 circular plates each of diameter 14 cm and thickness 0.5 cm are placed one above the other to form a right circular cylinder. Find its total surface area.

**Q.16.** If (-3, a) is image of point (1, a + 4) in point (b, 1), find the value of a and b.

**Q.17.** Find the relation between x and y if the points (x, y) , (1,2) and (7,0) are collinear.

**Q.18.** Find the probability that the month of February may have 5 Tuesdays in

**(i)** a leap year **(ii)** a non leap year

**OR**

From the deck of 52 cards 2 black kings and 2 black jacks are removed. From the remaining cards find the probability that the card drawn is

**(i)** neither an ace nor king **(ii)** black card or king

**(iii)** face card **(iv)** red or jack

**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

 **( a)** an even number

 **( b )** a number less than 14

 **( c )** a number which is a perfect square

 **( d )**a prime number less than 20.

**OR**

A letter is chosen at random from the English alphabet. Find the probability that the letter

chosen

 **(a)** is a vowel

 **(b)** is a consonant

 **(c)** precedes P

 **(d)** follower of R.

**Q.20** Find the sum of all multiple of 9 lying between 300 and 700.

**Q.21.** 50 circular plates, each of radius 7 cm and thickness 1/2cm are placed one above

another to form a Solid right circular cylinder. Find the total surface area and the volume of

the cylinder so formed.

**Or,**

A hemispherical tank of radius15/4m is full of water. It is connected with a pipe which

empties it at the rate of 7 litres per second. How much time will it take to empty the tank

completely?

**Q.22.** The area of an equilateral triangle is 49√ 3 *cm*2  taking each vertex as centre; a circle

is drawn with radius equal to half the length of the side of the triangle. Find the area of the

triangle not included in the circles.

**Q.23.** Draw a line segment AB of length 8 cm. Taking A as centre, draw a circle of radius 4cm and taking B as centre, draw another circle of radius 3 cm. Construct tangents to each circle from the centre of the other circle.

**Q.24.** Using A ( 4,-6), B(3,-2) and C(5,2),verify that a median of the triangle ABC divides it

into two triangles of equal areas.

**Q.25.** In a quadrilateral PQRS in circumscribed touching the circle at A, B, C and D .

If AP = 5cm , QR =7 cm and CR = 3 cm , then find the length of PQ.

**Q.26** Which term of the sequences 114,109,104 ………is the first negative term?

**Q.27.** Find the coordinates of the points which divide the line segment joining the points

 (–8,0) and (4,–8) in four equal parts.

**Q.28.** Prove that the parallelogram circumscribing a circle is a rhombus.

**SECTION – D**

**Q.29.** Water is flowing at the rate of 5 km/h through a pipe of diametric 14 cm into a rectangular tank which is 50 m long and 44 m wide, Determine the time in which the level of water in the tank will rise by 7 cm.

**Q.30.** Swati can row her boat at a speed of 5 km/h in still water. If it takes her 1 hour more to row the boat 5.25 km upstream than to return downstream, find the speed of the stream.

**Q.31.** Find four terms is an A.P., whose sum is 20 and the sum of whose square is 120.

**Q.32.** A person on tour has Rs 360 for his expenses. If he extends his tour for four days, he has to cut down his daily expenses by Rs 3. Find the original duration of the tour.

**Q.33.** Prove that the angle between two tangents drawn from an external point to a circle is

supplementary to the angle subtended by the line segment joining the points of contact at the centre.

**Q.34.** A man on the top of a vertical tower observes a car moving at a uniform speed coming directly towards him. If it takes 12 minutes for the angle of depression to change from 30 degree to 45 degree, how soon after this, will the car reach the tower? Give your answer to the nearest second.

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