**GUESS PAPER-2013
CLASS-X
SUBJECT- MATHEMATICS**

Time allowed : 3 hours  Maximum Marks : 90

General Instructions :

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

**(section A)**

1. Which of the following is an A.P. *?*

(a) 3,$ \frac{7}{2}$ ,4, $\frac{9}{2}$ ,…….. ... (b) -1,-2,-4,-7………………………..

(c) -3,0,1, 3 ……… (d) $\sqrt{4},\sqrt{16}$, $\sqrt{25},\sqrt{36}$……………..

1. A card is drawn from a pack of 52 playing cards, then probability of getting ‘ a heart’ or ‘2’ is

(a) $ \frac{1}{4}$ (b) $ \frac{17}{52}$ (c) $ \frac{7}{26}$ (d) $ \frac{4}{13}$ .

1. If the perimeter of a circle is equal to 4-times that of a square , then the ratio of their areas is

(a) 24:7 (b) 7:224 (c) 224:11 (d) 11:14

1. If the equation X2 – bX +1=0 does not possess real roots, then

(a) -3<b<3 (b) -2<b<2 (c) 2<b (d) b<-2

1. The midpoint of the line segment AB is the point (4,0) . If the coordinates Of point A are (3,-2),. Then coordinates of the point B are:
2. (5,2) (b) (11,-2) (c) (9,2) (d) (9,-2)
3. A solid sphere of the radius 6cm is melted and recast into spherical balls of 2cm radius. Find the number of the balls made.
4. 3 (b) 108 (c) 216 (d) 27
5. If a cone is cut into the parts by a horizontal plane passing through the mid point of its axis, the ratio of the volumes of the upper part and the cone is

(a) 1:2(b) 1:4 (c) 1:6 (d) 1:8

1. A point A is 240m due north of pt. B and C is 180m due east of B. The distance between pt. A and B is :

 (a) 300m (b) 200m (c) 240m (d) 280m.

 **(section B)**

1. Find a point on X-axis which is equidistant from the points A(2, -2) and B (-2,- 3).
2. Solve the quadratic equation in x : 6a2 X2 – 7abX-3b2 = 0 , (a≠0)

**Or**

In an A.P. the first term is 22 , nth term is -11 and Sn is 66. Find n and d.

1. A glass cylinder with diameter 20cm has water to a height of 9cm. A metal cube of 8cm edge is immersed in it completely. Calculate the height by which water will rise in the cylinder.
2. One card is drawn from a well shuffled deck of 52 playing cards. Find the probability of getting

 (i) a face card (ii) a black king or a red jack

1. A solid hemispherical at the bottom and conical above it. whose total height is 24cm and radii of both are 3cm each. Find the volume of solid.
2. Circumference of the edge of a hemispherical bowl is 132cm. Find the capacity of the bowl.

**(section C)**

1. The sum of the squares of two consecutive natural numbers is 421. Find the numbers.

**OR**

If the sum of all terms of the AP – 4 ,- 1 , 2, 5,…….., *x* is 437, find *x*.

1. The sum of first six terms of an A.P is 42 . The ratio of its 10th term & 30th is 1:3. Calculate the first & 13th term of the A.P.
2. From the top of a 100m high building the angles of the depression of the top and bottom of the tower are observed to be 45o and 60o. Calculate the height of the tower.
3. A toy is in the form of hemisphere surmounted by a right circular cone of same radius as that of hemisphere .If the radius of the cone is 21cm and its volume is $\frac{2}{3}$ of the volume of the hemisphere, calculate the height of the cone and surface area of the toy.
4. Construct a ABC with sides CA=6cm,AB=5cm ABC= 45o , then construct a triangle similar to ABC whose sides are 6/5 times the corresponding sides of triangle ABC .

1. In the given figure, $∆PQR$ is an equilateral triangle of side 8 cm and P, Q, R are centres of circular arcs, each of radius 4 cm. Find the area of shaded region. (Use $π=$3.14 and $\sqrt{3}$ =1.732) 
2. Find the sum of all 3-digit numbers which leave the remainder 3 when divided by 5.
3. The line segment joining the points P(2,1) and Q(5,-8) is divided by the points A such that $\frac{PA}{PQ}=\frac{1}{3}$ .

 If A lies on the line given by 2x+y+k=0 , find the value of k.

1. A pair of dice is rolled once. Find the probability of getting a sum of 10 on both dice.
2. Which term of the sequences 114,109,104 ………is the first negative term?

**SECTION D**

1. Prove that the parallelogram circumscribing a circle is a rhombus.
2. 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.

1. In fig. 4, circle with centre O touches the side BC of

 ΔABC at Q and sides AB and AC are produced at P

and R respectively.

Show that AP = perimeter of ΔABC.

1. A passenger train takes a 2 hour less for a journey of 300km, it its speed is increased by 5km/h from its usual speed. Find its usual speed.

**OR**

A motor boat, whose speed is 15km/h in still water, goes 30km down stream and comes back in a total of 4 hours and 30 minutes. Determine the speed of streams.

1. The internal and external diameters of hollow hemispherical vessel are 16cm and 12cm respectively. If the cost of painting 1cm2 of the surface area is Rs 5.00, find the total cost of painting the vessel all over.

(use 𝜋 = 3.14)

**OR**

A Solid is composed of a cylinder with hemispherical ends. If the whole length of solid is 100 cm and diameter of the hemispherical ends is 28cm. Find the cost of polishing the surface of the solid at the rate of 5 paise per square cm. (use $π=\frac{22}{7}$)

1. The angle of elevation of a jet fighter from point A on ground is 600. After a flight of 10 seconds, the angle changes to 300. If the jet is flying at a speed of 648 km/hour, find the constant height at which the jet is flying.
2. A solid iron pole consists of a cylinder of height 220 cm and base diameter 24 cm is surmounted by another cylinder of height 60 cm and radius 8 cm. Find the mass of the pole, given that 1 cm3 of iron has approximately 8 g mass.  (use 𝜋 = 3.14)



1. A two digit number is such that the product of its digits is 18. When 63 is subtracted from the number, the digits interchange their places. Find the number.
2. From a window (60 m high above the ground) of a house in a street, the angles of elevation and depression of the top and the foot of another house on opposite side of the street are 600 and 450 respectively. Find the height of the opposite house. [ Given that$\sqrt{3}=$1.73 ]
3. If *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 $∠DEF=90^{0}$.



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