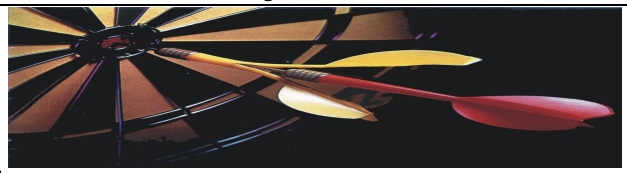

Year of Quality education 18th

Code No. **Series AG-F4** **TMG-D/79/89**

- Please check that this question paper contains 3 printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains 30 questions.

General Instructions: -

1. All questions are compulsory.
2. The question paper consists of 30 questions divided into three sections A, B ,C and D . Section A contains 10 questions of 1 marks each, Section B is of 5 questions of 2 marks each, Section C is of 10 questions of 3 marks each and Section D is of 5questions of 6 marks each.
3. Write the serial number of the question before attempting it.
4. If you wish to answer any question already answered, cancel the previous answer.
5. In questions where internal choices is provided. You must attempt only one choice.

Pre-Board Examination 2009 -10

Time: 3 hrs. ***M.M.: 80***

CLASS – X MATHEMATICS

Section A

Q.1	If 2x, x+10, 3x+2 are in A.P., find the value of x.
Q.2	An arc of a circle is of length 6π and the sector it bounds has an area $30\pi cm^2$. Find the radius of the circle.
Q.3	In right triangle ABC, right-angled at B, if tan A=1, write the value of sin A . cos A.
Q.4	In a triangle ABC D is a point on AB and E is a point on AC such that DE ‖ BC and 3AD=2DB. Calculate the ratio between the area of trapezium DECB and area of triangle ABC.
Q.5	If (1,2) ,(4,y),(x,6)and (2,-4) are the vertices of a parallelogram taken in order ,find the value of x and y.
Q.6	A sum of Rs 280 is to be used to award four prizes. If each prize after the first is Rs 20 less then the next most valuable one, find the value of each of the prizes.
Q.7	If sin θ + cos θ = √2 sin (90º- θ). Find cot θ.
Q.8	If the distance of P(x, y)from the point A(3, 6) and B(-3, 4) are equal, prove that $3x + y - 5 = 0$.
Q.9	A piggy bank contains hundred 50 paise coins, fifty Rs. 1 coins, twenty Rs. 2 coins and ten Rs. 5 coins. If it is equally likely that one of the coins will fall out when the bank is turned upside down, what is the probability that the coin will not be a Rs. 5 coin?

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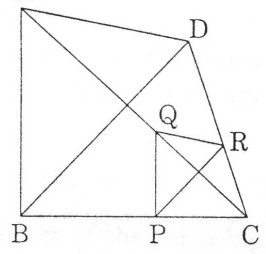
Q.10	The TSA of a hollow metallic cylinder open at both ends of external radius 8cm and height 10cm is 338Πsq. cm. Find the thickness of the metal in the cylinder.
	Section B
Q.11	Divide the polynomial $x^4 - 5x + 6$ by $2 - x^2$ and find the quotient and remainder.
Q.12	On one of the longer side PQ of a rectangle PQRS, a point T is taken such that $ST^2=PT.PQ$. Prove that $\Delta PTS \sim \Delta TSR$. **Or** Prove that the intercept of a tangent between two parallel tangents to a circle subtends a rig angle at the centre.
Q.13	If $\cos\theta + \cos^2\theta = 1$, then find the value of $\sin^2\theta + \sin^4\theta$.
Q.14	A rectangular sheet of paper 44 cm x 18 cm is rolled along its length and a cylinder is formed. Find the curved surface area of the cylinder.
Q.15	Find a relation between x any y such that the point P (x, y) is equidistant from the points A (2,5) and B (-3, 7) .
	Section C
Q.16	If -4 is a root of the quadratic equation $x^2+px-4=0$ and the quadratic equation $x^2+px+k=0$ has equal roots. Find the values of p and k.
Q.17	Construct an isosceles triangle, whose base is 10 cm and altitude 5 cm and then and the another triangle whose sides are $1\frac{1}{2}$ times the corresponding sides of the isosceles triangle.
Q.19	Find the circum centre of a triangle ABC whose vertices are (3,0), (-1,-6) and (4,-1) respectively.
Q.18	Determine graphically the co-ordinates of the vertices of the triangle formed by the lines representing the equations: $x + y = 5$; $x-y=5$; $x = 0$. Also find the area of triangle formed by these lines and the y-axis.
Q.19	In figure (2), two triangles ABE and DBC lie on the same side of base BC. P is a point on BC such that PQ || BA and PR || BD prove that QR || AD 
Q.20	A reservoir is in the shape of a parallelepiped. Its length is 20m. If 18kl of water is removed from the reservoir, the water level goes down by 15cm Find the width of reservoir.
Q.21	A semi circular thin sheet of paper of diameter 28cm is bent and an open conical cup is made. Find the capacity of the cup.

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Q.22 In ΔABC, DE is parallel to base BC, with D on AB and E on AC. If $\frac{AD}{BC} = \frac{2}{3}$, find $\frac{BC}{DE}$.

OR

In two concentric circles, prove that all chords of the outer circle, which touch the inner circle are of equal length.

Q.23 Mohan and his brother (Lalit) are 90m apart on a road. Both Mohan and his brother start at the same time. If they move in the same direction, they meet in 9 minutes. But if they move in the opposite directions, they meet in 1 minute. Find their speeds.

Q.24 If the polynomial $x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by another polynomial $x^2 - 2x + k$, find the value of k and a if the remainder $x + a$.

Q.25 A hollow cone is cut by a plane parallel to the base and the upper portion is removed. If the curved surface of the remainder is 8/9 of the curved surface of the whole cone, find the ratio of the line-segment into which the cone's altitude is divided by the plane.

Section D

Q.26 Find the mode of the following data.

C.I	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80
Frequency	2	8	12	24	38	16

Change the distribution to a more than and less than type distribution and draw its ogive.

Q.27 Prove that in a right triangle, square of the hypotenuse is equal to the sum of the square of the other two sides. Using the above theorem, prove that $2AC^2 = 2AB^2 + BC^2$, if AD perpendicular to BC and CD = 3 BD.

Q.28 The angle of depression of the top and bottom of an 8m tall building from the top of a multi – storeyed building are 30 and 45 respectively. Find the height of the multi – storeyed building and the distance between the two buildings.

Or

The height of a house subtends a right angle at the opposite window. The angle of elevation of the window from the base of the house 60^0. If the width of the road is 6 m, find the height of the house.

Q.29 A boat can go 20km downstream and 30 km upstream in 3 hrs. It can go 20km downstream and 10 km upstream in $1\frac{2}{3}$ hrs. Find the speed of boat in still water and speed of stream.

Q.30 A solid consisting of a right circular cone of height 120 cm and radius 60 cm surmounted on a hemisphere of radius 60 cm is placed upright in a right circular cylinder full of water such that it touches the bottom. Find the volume of water left in the cylinder, if the radius of the cylinder is 60 cm and its height is 180 cm.

OR

A circular tent of total height 50 meters is to be made in the form of right circular cylinder surmounted by a right circular cone. If the height and radius of the conical portion of the tent are 15 m and 20 m respectively, find the cost of the cloth required, at the rate of Rs 14 per square meter to make the tent.

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