General Instructions:

1. All questions are compulsory.

2. The question paper consists of **30** questions divided into four sections **A, B, C** and **D**.

3. Section A comprises of **6** 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 ,Section D comprises of **8** questions of **4** marks each.

4. All questions in section A are to be answered in **one word, one sentence** or as per the exact requirement of the question

5. There is no overall choice .However, internal choice has been provided in 4 questions of 3 marks each and 3 questions of 4 marks each .You have to attempt only one of the alternatives in all such question

SECTION-A
Question numbers 1 to 6 carry 1 mark each.

1 Find the degree of the polynomial
$(x^2+9)(5-x^2)$

2 Write the perpendicular distance of the point P(-3,4) from the y –axis.

3 Find the value of k, if 2x-1 is a factor of the polynomial $6x^2 + kx -2$

4 Two right circular cones have equal radii. If their slant heights are in the ratio 4:3, then find ratio of their curved surface areas.

5. Find the value of $\left[(16)^{\frac{1}{5}} \right]^{\frac{1}{2}}$

6. In $\triangle ABC$, if $\angle A = (2X - 5)^0$, $\angle B = (5X + 5)^0$, $\angle C = (3X + 50)^0$ then find the value of x.

SECTION-B
Question numbers 7 to 12 carry 2 marks each.

7. In the given figure, AB = BC, BX =BY. Show that AX =CY. State the Euclid's axiom used.

8. Three coins are tossed simultaneously 200 times with the following frequencies of different outcomes.

Number of tails	0	1	2	3
Frequency	35	45	42	78

Compute the probability of getting:

i) At least 2 heads   ii) All heads.

9. How much ice-cream can be put into a cone with base radius 3.5 cm and height 12 cm?

10. Factorise: $125x^3 - 343y^3$

11 In the given figure, $\angle AOC$ and $\angle BOC$

form a linear pair. If $a - b = 20^0$

find the values of a and b

12 . In the given figure, O is the centre of the circle. If $\angle ACB = 30^0$, then find $\angle ABC$

SECTION –C
Question numbers 13 to 22 carry 3 mark each.

13. Simplify $\dfrac{2}{\sqrt{3}-\sqrt{5}} - \dfrac{2}{\sqrt{5}-\sqrt{3}}$

OR

Simplify $\dfrac{\sqrt{5}+1}{\sqrt{5}-1} - \dfrac{\sqrt{5}-1}{\sqrt{5}+1}$

14. Using Remainder theorem find the remainder when $2x^3 - 4x^2 + x - 5$ is divided by x-3.

   Verify by actual division.

15. Factorise:

$$(p-3q)^3 + (3q-7r)^3 + (7r-p)^3$$

OR

If x and y are two positive real numbers such that $9x^2 + y^2 = 96$ and $xy = 8$,
then find the value of 3x+y.

16. Draw the graph of $2x - 3y + 12 = 0$ in a Cartesian plane. Find the point where the line

   intersects y –axis.

17. The volume of a cylindrical rod is 616 cu.cm. If its height is 4 cm ,find the radius of its

   cross section.

OR

Find the volume of a sphere whose surface area is 1386 cm².

18. State the quadrants in which the following points lie and also plot the points to verify
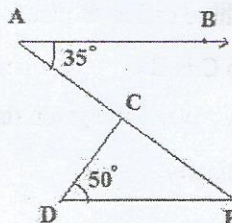   your answer:

$$(-2 ,3) ,(5,4), (4, -2), (-2 , -2)$$

19. In the given figure., $AB \perp CD$. Find x and y, if $\angle A = (x-6)^0$, $\angle B = (3y+6)^0$,

$\angle C = 4Y^0$, $\angle D = x^0$,
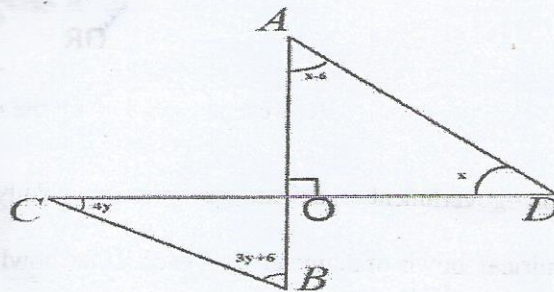
OR

In the given figure, if AB ‖ DE, $\angle BAC = 35^0 \, and \angle CDE = 50^0$, find $\angle DCE$,

20. The unequal side of an isosceles triangle measures 24 cm and its area is 60 cm². Find the perimeter of this triangle.

21. D, E and F are respectively the mid-points of the sides BC, CA and AB of $\triangle ABC$. Show that

    i) BDEF is a parallelogram

    ii) $ar(DEF) = \frac{1}{4} ar(ABC)$

    iii) $ar(BDEF) = \frac{1}{2} ar(ABC)$

22. In the given figure, AB is a diameter of the circle, CD is a chord equal to the radius of the circle. AC and BD when extended intersect at E. Prove that $\angle AEB = 60^0$

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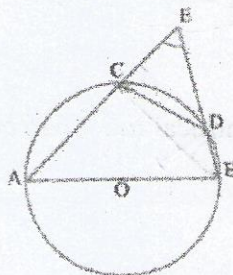
SECTION –D
Question numbers 23 to 30 carry 4 marks each

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23. Construct $\triangle XYZ$ whose base XY = 3 cm, $\angle X = 90^0$ and difference of the other two sides, ZY – XZ = 1 cm.

24. If $x = \frac{\sqrt{2}+1}{\sqrt{2}-1}$ and $y = \frac{\sqrt{2}-1}{\sqrt{2}+1}$, find the value of x^2+y^2+xy

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OR

Represent $\sqrt{8.8}$ on the number line.

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25. A non –government organization supplied soup daily to each patient of a hospital in cylindrical bowls of diameter 7 cm each. If the bowl is filled with soup to a height of 4 cm and number of patients, in the hospital is 600, find how much soup is Supplied by that organization to the hospital daily. What value is indicated from this action?

26. A, B and C are three different places. Cost of a ticket for going from A to B is Rs. x and that of from B to C is Rs. y. A man pays Rs. 1100 for 2 tickets from A to B and 3 tickets from B to C. Write the given data in form of a linear equation in two variables. Also, represent it graphically.

27. Prove that two triangles are congruent if any two angles and the included side of one triangle is equal to any two angles and the included side of the other triangle.

28. ABCD is a quadrilateral in which P,Q,R and S are mid-points of the sides AB,BC, CD and DA. AC is a diagonal. Show that

   i)   SR ∥ AC and $SR = \frac{1}{2}AC$

   ii) PQ = SR

   iii) PQRS is a parallelogram.

OR

In a parallelogram ABCD, the bisector of $\angle A$ **also bisects BC at X. Prove that AD = 2AB**

29. The cost of living index for a particular year in a city during various weeks is given below.

Cost of living index(in Rs.)	140-150	150-160	160-170	170-180	180-190	190-200
Number of weeks	5	10	20	9	6	2

Draw a histogram and frequency polygon on the same scale.

OR

Define median, mode and find the mean, median and mode of this data:

41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60.

30. The following frequency distribution gives the weight of 38 students in a class

Weight (in kg)	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75
Number of students	9	5	14	3	1	2	2	1	1

Find the probability that weight of a student in the class is

i) at most 60 kg   ii) at least 36 kg

iii)not more than 50 kg   iv)more than 75 kg.

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