Dr.K.K.R GOWTHAM (E.M) HIGH SCHOOL :: GUDIVADA
Class : X – State   **MODEL PAPER – 1**   **Marks : 100**
Sub : Mathematics   **Time:3:15 hrs**

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Instructions:

1.   There are four sections and 33 questions in the paper.
2.   Answers should be written in a given answer booklet.
3.   There is internal choice in Section-IV.
4.   Write all the questions visible & legibly.
5.   15 minutes are given for reading the question paper and 2.30 hours given for answering   questions.

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SECTION – I (12× 1 = 12 M)

Note: 1. Answer all the question's

     2. Each Question carries 1 Mark.

1.   Find the value of $\log_2 512$

2.   Find the quadratic equation whose one root is $7 - \sqrt{3}$

3.   If A $= \{1,2,3,4\}$ B $= \{1,2,3,4,5,6\}$ then find A $\cap$ B

4.   If $p(x) = 5x^7 - 6x^5 + 7x - 6$, find

         i) coefficient of x^5 ii) degree of p(x)   iii) constant term

5.   Draw the rough graph for the linear equation $x = 7$

6.   Find the value of x if $x - 1, x + 3, 3x - 1$ are in A.P.

7.   Find the distance of the point (-8, 3) from origin.

8.   If the sides of two similar triangles are in the ratio 7 : 2 then find the ratio of their areas

9.   From the figure, find x in cm
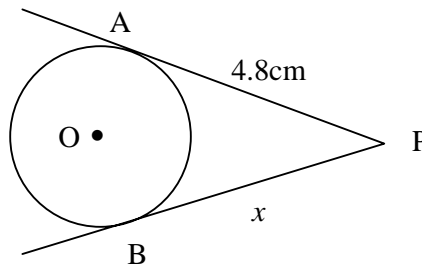
10.   Find the slant height of the cone if r = 7cm and h = 10cm .

11.   Evaluate $\sin 45^0 + \cos 45^0$

12.   A person from the top of a building of height 25cm has observed another building top and bottom at an angle of elevation 45^0 and at an angle of depression 60^0 respectively. Draw the diagram for this data.

SECTION – II (8× 2 = 16 M)

Note: 1. Answer all the Questions

     2. Each Question carries 2 Mark

13.   If the distance between the points (4, y) and (1, 0) is 5 then find y.

14. Find the zeroes of the quadratic polynomial $x^2 - 2x - 8$ and verify the relation ship between zeroes and coefficients

15. If $\sin \theta = \dfrac{1}{2}$ then value of $\cos\left(\dfrac{3\theta}{2}\right)$

16. You have a single deck of well shuffled cards. Then what is the probability that the card drawn will be a queen?

17. If $A = \{1, 2, 3, 4, 5\}$ $B = \{4, 5, 6, 7\}$ then find $A - B$ and $B - A$. Are they equal.

18. Find the roots of the quadratic equation $3x^2 - 5x + 2 = 0$

19. Reduce the pair of linear equations $\dfrac{5}{x-1} + \dfrac{1}{y-2} = 2$ and $\dfrac{6}{x-1} - \dfrac{3}{y-2} = 1$ into pair of linear equations in two variables a and b.

20. In a GP the 3rd term is 24 and 6th term is 192. Find the 10th term.

SECTION – III ($8\times 4 = 32$ M)

Note: 1. Answer all the Questions

  2. Each Question carries 4 Mark.

21. Consider the following distribution of daily wages of 50 workers of a factory. .

Daily wages in Rupees	200-250	250-300	300-350	350-400	400-450
Number of workers	12	14	8	6	10

Find the mean daily wage of the workers by choosing an appropriate method.

22. Find the area of the shaded region in figure, if ABCD is a square of side 7cm and APD and BPC are semicircles $\left(use\ \pi = \dfrac{22}{7}\right)$
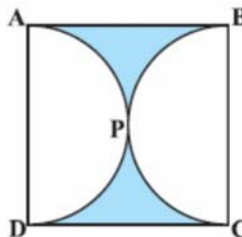
23. A jar contains 24 marbles, some are green and others are blue. If a marble is drawn at random from the jar, the probability that it is green is $\dfrac{2}{3}$ .. Find the number of blue marbles in the jar.

24. Find two consecutive odd positive integers, sum of whose squares is 290.

25. A hemispherical bowl of internal radius 15cm contains a liquid. The liquid is to be filled into cylindrical bottles of diameter 5cm and height 6cm. How many bottles are necessary to empty the bowl?

26. The age of a father 8 years ago was 5 times that of his son. 8 years hence, his age will be 8 years more than twice the age of his son. Then find the present age of father in years.

27. There is a motor – boat, whose speed in still water is 18km/hr. It takes 1 hour more to go 24km upstream than to return downstream to the same spot. Find the speed of the stream.

28. Two concentric circles of radii 5cm and 3cm are drawn. Find the length of the chord of the larger circle which touches the smaller circle.

SECTION – IV (5× 8 = 40 M)

Note: 1. Answer all the Questions

    2. Each Question has internal choice.

    3. Each Question carries 8 Marks.

29. a) (i) If $\sin(A-B) = \dfrac{1}{2}$ $\cos(A+B) = \dfrac{1}{2}, 0^0 < A+B \le 90^0, A > B$. Find A and B.

    (ii) Evaluate $\dfrac{2\tan 30^0}{1-\tan^2 30^0}$

(OR)

b) The sum of the three terms which are in Arithmetic progression is 33. If the product of the first and the third terms exceeds the second by 29. Find the Arithmetic progression.

30. a) The following distribution shows the daily pocket allowance of children of a locality. The mean pocket allowance is Rs. 18. Find the missing frequency f.

Daily pocket allowance (in Rupees)	11-13	13-15	15-17	17-19	19-21	21-23	23-25
Number of children	7	6	9	13	f	5	4

(OR)

b) A pen stand is made of wood in the shape of cuboid with three conical depressions to hold the pens. The dimensions of the cuboid are 15cm by 10cm by 3.5cm. The radius of each of the depression is 0.5cm and the depth is 1.4cm find the volume of wood in entire stand.

31. a) Use Euclids division lemma to show that the square of any positive integer is of the form 3P, 3P+1

(OR)

b) Find the area of the triangle whose lengths of sides are 15m, 17m, 21m (use Heron's Formula)

32. a) If $A = \{x : x \text{ is a natural number}\}$

    $B = \{x : x \text{ is an even natural number}\}$

    $C = \{x : x \text{ is an odd natural number}\}$

$D = \{x : x \text{ is a prime } \text{ number}\}$

Find A ∩B, A∩C, A∩D, B∩C , B∩D, C∩D

(OR)

b) A 1.5m tall boy is looking at the top of a temple which is 30 meter in height from a point at certain distance. The angle of elevation from his eye to the top of the crown of the temple increases from 30^0 to 60^0 as he walks towards the temple. Find the distance he walked towards the temple.

33.   a) Solve the quadratic polynomial $x^2 - 3x - 4$ by graphical method.

(OR)

b) In ΔABC, XY ‖ AC and XY divides the triangle into two parts of equal area. Find the ratio of $\dfrac{AX}{AB}$.