

## INSTRUCTIONS :

Question paper consists of 4 sections. Sec-A carries 1 mark each, Sec-B carries 2 marks each, Sec-C carries 3 marks each and Sec-D carries 4 marks each. In all 18 questions are there. All questions are compulsory. Neat and Clean work carries full marks. Internal questions are compulsory.

## SECTION A

(1×3)

1. For an A.P., if  $a_{18} - a_{14} = 32$ , then find the common difference 'd'?
2. Find the distance of the point P (-6,8) from the origin?
3. Calculate the distance between two parallel tangents of a circle of radius 3 cm.

## SECTION - B

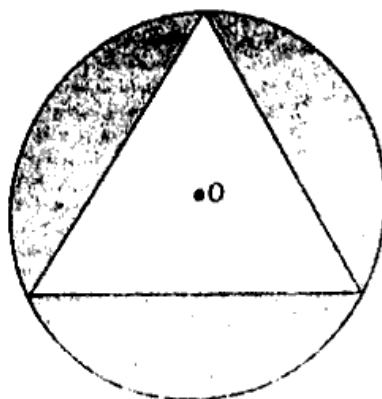
(2×4)

4. Father's age is 3 times the sum of ages of his two children. After 5 years his age will be twice the sum of ages of two children. Find the age of father.
5. Solve for 'x':  $\sqrt{6x+7} - (2x-7) = 0$
6. Prove that the points (3,0), (6,4) and (-1,3) are the vertices of a right angled isosceles triangle.
7. A card is drawn from a well shuffled deck of 52 cards. Find the probability that the card drawn is neither a red card nor a queen.

## SECTION - C

(3×5)

8. On dividing  $x^3 - 3x^2 + x + 2$  by a polynomial  $g(x)$ , the quotient and the remainder were  $(x-2)$  and  $(-2x+4)$ , respectively. Find  $g(x)$ .
9. In a flower bed, there are 23 rose plants in the first row, 21 in the second, 19 in the third and so on. There are 5 rose plants in the last row. How many rows are there in the flower bed?
10. Find the points on the x-axis, which are at a distance of  $2\sqrt{5}$  from the point (7,-4)?
11. In  $\Delta OPQ$ , right angled at P,  $OP = 7\text{cm}$  and  $OQ - PQ = 1\text{ cm}$ . Determine the values of  $\sin Q$  and  $\cos Q$ .
12. In a circular table cover of radius 32 cm, a design is formed leaving an equilateral triangle ABC in the middle as shown in the figure. Find the area of the design?



## SECTION -D

(4x6)

13. In a school, the duration of a period in junior section is 40m in and senior section it is 1 hour. If the first bell for each section rings at 9.00a.m, when will the two bells ring together again.
14. For which value of 'k' will the following pair of linear equations have no solution.  $3x + y = 1$  ;  $(2k - 1)x + (k - 1)y = 2k + 1$
15. A motor boat whose speed is 18km/hr in still water takes 1 hour more to go 24km upstream than to return downstream to the same spot. Find the speed of the stream.
16. From a point P on the ground the angle of elevation of the top of a 10m tall building is  $30^\circ$ . A flag is hoisted at the top of the building and the angle of elevation of the top of the flagstaff from P is  $45^\circ$ . Find the length of the flag staff and the distance of the building from the point P. ( $\sqrt{3} = 1.732$ )
17. A life insurance agent found the following data for distribution of ages of 100 policy holders. calculate the median age, if policies are given only to persons having age 18 years onwards but less than 60 years.

AGE IN YEARS	NUMBER OF POLICY HOLDERS
Below 20	2
Below 25	6
Below 30	24
Below 35	45
Below 40	78
Below 45	89
Below 50	92
Below 55	98
Below 60	100

18. A triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the points of contact D are of length 8 cm and 6cm respectively. Find the sides AB and AC.

