SASI FOUNDATION

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Instructions:

1. Answer ALL the questions in a separate answer Booklet.

2. The question paper consists of 4 Sections and 33 questions.

3. There is an internal choice in Section – IV.

4. Write answers neatly and legibly.

SECTION -1

Notes: **12 × 1 = 12 M**

1) Answer ALL the questions in ONE WORD or PHRASE.

2) Each Question carries 1 Mark.

3) If any question is answered more than once, the first answer only will be considered.

1. Define fundamental theorem of Arithmetic
2. Write the set B = {x:x is a natural number and $x^2 < 64$}
3. Write the standard form of Quadratic equation.
4. Find the value of x for the following $2x – (4 – x) = 5 – x$
5. If $\Delta < O$ then Nature of the roots?
6. Write n^{th} term of G.P
7. Find the Midpoint of the line segment joining the points (3, 0) and (–1, 4).
8. A person 1.65m tall casts 1.8m shadow. At the same instance, a lamp post casts a shadow of 5.4m. Find the height of the lamp post.
9. Define secant ?
10. Evaluate $\sin 15^0 . \text{Sec} 75^0$
11. Suppose we throw a dice once. What is the probability of getting a number less than (or) equal to 4.
12. If the arithmetic mean of x, x + 3, x + 6, x + 9 and x + 12 is 10 then find the value of x.

SECTION –II

Note: **8 × 2 = 16 M**

1) Answer All the Questions

2) Each Question carries 2 Marks

13. Find the volume and the total surface area of a hemisphere of radius 4.5cm
14. Solve $3x^2 + 4x + 1 = 0$
15. List all the subsets of A = { S, A, I }
16. Solve $2x – y = 5$ and $3x + 2y = 11$

17. $\Delta ABC \sim \Delta DEF$, BC = 3cm, EF = 4cm and area of $\Delta ABC = 54cm^2$ determine the area of ΔDEF

18. If $\sin A = \cos B$ then prove that $A + B = 90^0$

19. Harpreeth tosses two different coins simultaneously what is the probability that he gets atleast one head.

20. Find the Median class of the given data.

Weight(in kg)	40-45	45-50	50-55	55-60	60-65	65-70	70-75
No. of students	2	3	8	6	6	3	2

SECTION – III

Note : **$8 \times 4 = 32$**

1). Answer ALL the Questions

2). Each Question carries 4 Marks

21. If $x^2 + y^2 = 6xy$ then prove that $2\log(x + y) = \log x + \log y + 3\log 2$

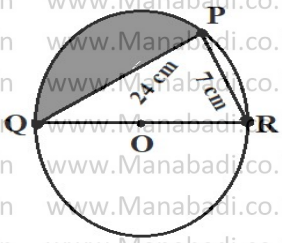
22. If A = {3, 6, 9, 12, 15, 18, 21} B = { 4, 8, 12, 16, 20 } C = { 2, 4, 6, 8, 10, 12, 14, 16 } then find
(i) A – B (ii) A – C (iii) B – C (iv) $A \cap B$

23. A well of diameter 14m is dug 15m deep. The earth taken out of it has been spread. Evenly all around it in the shape of circular ring of width 7m to form an embankment. Find the height of the embankment.

24. If the sum of first 7 terms of an A.P is 49 and that of 17 terms is 289. Find the sum of first n terms.

25. Prove that the points (–7, –3), (5, 10), (15, 8) and (3, –5) taken in order are the vertices to a parallelogram.

26. Find the area of the segment shaded in fig, if PQ = 24cm, PR = 7cm and QR is the diameter of the circle with center 'O'



27. A die is thrown once. Find the probability of getting
(i) A prime number
(ii) An odd number
(iii) An even number
(iv) A number lying between 2 and 6.

28. The following table gives the literacy rate of 35 cities. Find the mean literacy rate.

Literacy rate in %	45-55	55-65	65-75	75-85	85-95
No. of cities	3	10	11	8	3

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SECTION –IV

Note : **$5 \times 8 = 40$**

1) Answer All the Questions

2) Each Question carries 8 Marks

3) There is an internal choice for each Question.

29. a) Show that $\sqrt{p}+\sqrt{q}$ is an irrational number

(OR)

b) Solve $2x^2 + 3x + 7=0$ by using completing the square

30. a) Draw the graph of $y = 6 – x – x^2$ and find zeros.

(OR)

b) Solve $\frac{1}{3x+y}+\frac{1}{3x-y}=\frac{3}{4}$ and $\frac{1}{2(3x+y)}-\frac{1}{2(3x-y)}=\frac{-1}{8}$

31. a) ABC is a right triangle right angled at c. Let BC = a, CA = b, AB =c and let 'P' be the length of the perpendicular form C on AB. Prove that (i) PC = ab (ii) $\frac{1}{p^2}=\frac{1}{a^2}+\frac{1}{b^2}$

(OR)

b) (i) If A,B and C are interior angles of triangle ABC then show that $\sin\left(\frac{B+C}{2}\right)=\cos\frac{A}{2}$

(ii) Show that $\sqrt{\frac{1+\sin A}{1-\sin A}}=\sec A+\tan A$

32. a) A straight highway leads to the foot of the tower. Ramaiah standing at the top of the tower and observes a car at an angle of depression 30^0. The car is approaching the foot of the tower with a uniform speed. Six seconds later the angle of depression of the car is found to be 60^0. Find the time taken by the car to reach the foot of tower from this point.

(OR)

b) Two dice, one red and one white are thrown at the same time write down all the possible outcomes. What is the probability that the sum of the two numbers approving on the top of the dice is

(i) 8 (ii) 13 (iii) less than (or) equal to 12.

33. a) If the geometric progression 162, 54, 18, ……. and $\frac{2}{81},\frac{2}{27},\frac{2}{9}$ ……. having their n^{th} terms equal. Find the value of n.

(OR)

b) The following table gives production yield per hector of wheat of 100 forms of village

Production yield (Qui / Hec)	50-55	55-60	60-65	65-70	70-75	75-80
No. of farmers	2	8	12	24	38	16

Change the distribution to more than type and less than type distribution and draw their ogives.

THE END