# GRAND TEST – I

INSTRUCTIONS : QUADRILATERAL, CIRCLES, AREA OF PARALLELOGRA,S AND TRAIANGLES, CONSTRUCTION, SURFACE AREA AND VOLUMES, STATISTICS AND PROBABILITY

- The question paper consists of **23 questions** divided into four sections A, B, C and D.
  - Section - A: Q. No. 1 to 10 carries **1 mark** each.
  - Section - B: Q. No. 11 to 13 carries **2 marks** each.
  - Section - C: Q. No. 14 to 21 carries **3 marks** each.
  - Section - D: Q. No. 22 to 26 carries **4 marks** each.
  - Time allotted is **2 hours. The maximum marks are 60.**

SECTION – A (1 × 10 = 10)

1. A triangle and rhombus are on the same base and between the same parallels. Then the ratio of area of triangle to that of rhombus is:

(a) 1 : 1   (b) 1 : 2   (c) 1 : 3   (d) 1 : 4

2. In Fig. 1, O is the centre of the circle and $\angle OBA = 60^0$. Then $\angle ACB$ equals:

Fig. 1
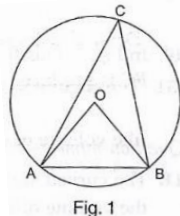
(a) 60^0 (b) 45^0 (c) 30^0 (d) 90^0

3. The diameter and height of a right circular cone are 7 cm and 12 cm respectively. The volume of the cone(in cm^3) is:

(a) 88   (b) 112   (c) 154   (d) 616

4. A fair coin is tossed 100 times and the Head occurs 58 times and tail 42 times. The experimental probability of getting a Head is:

(a) $\frac{1}{2}$ (b) $\frac{21}{50}$ (c) $\frac{29}{50}$ (d) $\frac{42}{58}$

5. The consecutive sides of a quadrilateral have

(a) no common point   (b) one common point   (c) two common points   (d) infinitely many common points

6. The following marks were obtained by the students in a test:

81, 72, 90, 90, 86, 85, 92, 70, 71, 83, 89, 95, 85, 79, 62

The range of the marks is

(a) 9   (b) 17   (c) 27   (d) 33

7. The difference between the highest and lowest values of the observations is called

(a) frequency   (b) mean   (c) range   (d) class-intervals

8. In a histogram, each class rectangle is constructed with base as

(a) frequency   (b) class-intervals   (c) range   (d) size of the class

9. In a cylinder, if radius is doubled and height is halved, curved surface area will be

(a) halved   (b) doubled   (c) same   (d) four times

10. The figure formed by joining the mid-points of the adjacent sides of a parallelogram is a

(a) rectangle   (b) parallelogram   (c) rhombus   (d) square

SECTION – B (2 × 3 = 6)

11. If a line intersects two concentric circles (circles with the same centre) with centre O at A, B, C and D, prove that AB = CD.
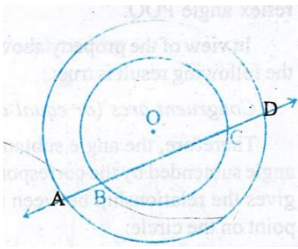

12. Draw different pairs of circles. How many points does each pair have in common? What is the maximum number of common points?

13. Thirty children were asked about the number of hours they watched TV programs in the previous week. The results were found as follows:

1	6	2	3	5	12	5	8	4	8
10	3	4	12	2	8	15	1	17	6
3	2	8	5	9	6	8	7	14	12

Make a grouped frequency distribution table for this data, taking class width 5 and one of the class intervals as 5-10.

SECTION – C (3 × 8 = 24)

**14.** $\angle PQR = 100^0$, where P, Q and R are points on a circle with centre O. Find $\angle$ OPR.
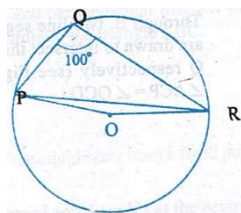
15. The length, breadth and height of a room are 5 m, 4 m and 3 m respectively. Find the cost of white washing the walls the walls of the room and the ceiling at the rate of Rs 7.50 per m^2.

16. Curved surface area of a cone is 308 cm^2 and its slant height is 14 cm. Find (i) radius of the base and (ii) total surface area of the cone.

17. Consider a small unit of a factory where there are 5 employees: a supervisor and four laborers. The laborers draw a salary of Rs. 5000 per month each while the supervisor gets Rs 15,000 per month. Calculate the mean, median and mode of the salaries of this unit of the factory.

18. The distance (in km) of 40 engineers from residence to their place of work were found as follows:

5	3	10	20	25	11	13	7	12	31
19	10	12	17	18	11	32	17	16	2
7	9	7	8	3	5	12	15	18	3
12	14	2	9	6	15	15	7	6	12

What is the empirical probability that an engineer lives.
(i) Less than 7 km from her place of work?
(ii) More than or equal to 7 km from her place of work?
(iii) Within $\frac{1}{2}$ km from her place of work?

19. AP || BQ || CR. Prove that ar (AQC) = ar (PBR).
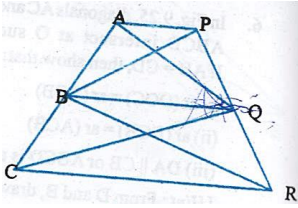
20. Show that the line segment joining the mid points of the opposite sides of a quadrilateral bisect each other.

21. In a triangle ABC, E is the mid-point of median AD. Show that ar(BED) = $\frac{1}{4}$ ar(ABC).

SECTION – D (4 × 5 = 20)

22. In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ. Show that:
(i) $\triangle APD \cong \triangle CQB$ page
(ii) AP = CQ
(iii) $\triangle AQB \cong \triangle CPD$
(iv) AQ = CP
(v) APCQ is a parallelogram

Fig. 8.20
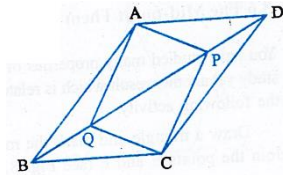
23. Construct a triangle XYZ in which $\angle Y = 30^0$, $\angle Z = 90^0$ and XY + YZ + ZX = 11 cm.

24. A village, having a population of 4000, requires 150 litres of water per head per day. It has a tank measuring 20 m × 15 m × 6 m. For how many days will the water of this tank last?

25. The diameter of the moon in approximately one-fourth of the diameter of the earth. What fraction of the volume of the earth is the volume of the moon?

26. A tyre manufacturing company kept a record of the distance covered before a tyre needed to be replaced. The table shows the results of 1000 cases.

Distance (in km)	less than 4000	4000 to 9000	9001 to 14000	more than 14000
Frequency	20	210	325	445

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If you buy a tyre of this company, what is the probability that:
(i) it will need to be replaced before it has coved 4000 km?
(ii) it will last more than 9000 km?
(iii) it will need to be replaced after it has covered somewhere between 4000 km and 14000 km?