

#### General Instructions:

1. All questions are compulsory.
2. The question paper consists of 31 questions divided into five sections A, B, C, D and E. Section – A comprises of 4 questions of 1 mark each, Section – B comprises of 6 questions of 2 marks each, Section – C comprises of 8 questions of 3 marks each and Section – D comprises of 10 questions of 4 marks each. Section – E comprises of two questions of 3 marks each and 1 question of 4 marks from Open Text theme.
3. There is no overall choice.
4. Use of calculator is not permitted.

#### SECTION – A

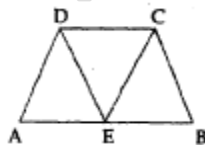
Question numbers 1 to 4 carry one mark each.

1. Force is directly proportional to the acceleration produced in the body. Write an equation in two variables to express this.
2. The graph of the equation  $y = mx + c$  passes through the origin or not?
3. In  $\Delta ABC$ , AD is the median on side BC. If  $\text{ar}(\Delta ABC) = 100 \text{ cm}^2$ , find  $\text{ar}(\Delta ABD)$ .
4. The total surface area of a cube is  $726 \text{ cm}^2$ . Find the length of its edge.

#### SECTION – B

Question numbers 5 to 10 carry two marks each.

5. ABCD is a trapezium with E being any point on side AB. If  $AD \parallel EC$  and  $DE \parallel BC$ , find the ratio  $\text{ar}(\Delta DAE) : \text{ar}(\Delta BEC)$ .



6. Draw  $\angle DOE = 15^\circ$ , using protractor. Now, using  $\angle DOE$ , construct  $\angle MOE = 7\frac{1}{2}^\circ$ , with the help of compass and ruler.
7. The angles of a quadrilateral are  $(4x)^\circ$ ,  $(7x)^\circ$ ,  $(15x)^\circ$ ,  $(10x)^\circ$ . Find the smallest and largest angles of the quadrilateral.

8. What is the volume of a right circular cylinder whose base area is  $606 \text{ cm}^2$  and whose height is  $2 \text{ m}$ ?
9. Out of 35 students participating in a dance competition 10 are boys. What is the probability that the winner is a girl?
10. A group of 80 students are selected of Class X and asked for their choice of subject to be taken in class XI, which is recorded as below:

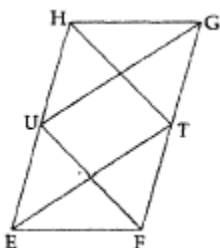
Stream	PCM	PCB	Commerce	Humanities	Total
Number of students	29	18	21	12	80

If a student is chosen at random find the probability that it is a student of either commerce or Humanities stream.

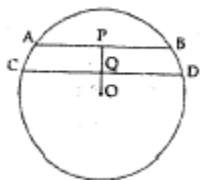
### SECTION – C

**Question numbers 11 to 18 carry three marks.**

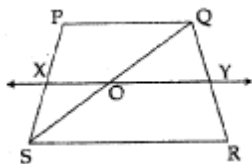
11. Find three solutions of  $5x - 3y = 10$  linear equation in two variables. Also draw its graph.
12. In  $3x + 2y = 12$ , express  $y$  in terms of  $x$ . Find three solutions for this equation. Also find a point where it cuts  $x$  – axis.
13. EFGH is a parallelogram and U and T are points on sides EH and GF respectively. If  $\text{ar}(\triangle EHT) = 16 \text{ cm}^2$ , find  $\text{ar}(\triangle GUF)$ .



14. In the figure, AB and CD are two parallel chords of a circle with centre O and radius  $13 \text{ cm}$  such that  $AB = 10 \text{ cm}$  and  $CD = 24 \text{ cm}$ . If OP is perpendicular to AB and OQ is perpendicular to CD, determine the length of PQ.



15. Construct a triangle whose sides measure  $4.5 \text{ cm}$ ,  $5 \text{ cm}$  and  $5.3 \text{ cm}$ . Bisect the largest angle.
16. In the figure, PQRS is a trapezium in which  $PQ \parallel SR$ , QS is a diagonal and X is the mid – point of PS. A line through X is drawn parallel to PQ intersecting QR at Y and QS at O. Show that Y is the mid – point of side QR.

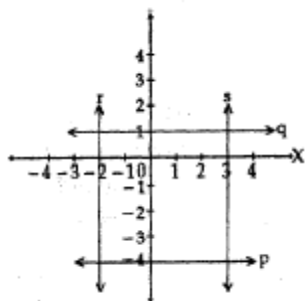


17. Construct angle of  $52 \frac{1}{2}^\circ$ , using compass and ruler.
18. The radius and height of a cylinder are in the ratio 5:7. If its volume is  $4400 \text{ cm}^3$ , find the radius.

### SECTION – D

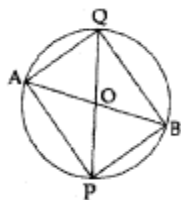
Question numbers 19 to 28 carry four marks each.

19. Cost of typing an English page is Rs.  $x$  and that for typing Hindi page is Rs.  $y$ . If total bill for typing 10 English and 15 Hindi pages is Rs. 45, then write a linear equation which satisfies this data. Also draw the graph for the equation.
20. Write the equation of the lines drawn in following graph.



Also, find the area enclosed between them.

21. Prove that angle subtended by an arc at the centre is twice the angle subtended by it at any point on the remaining part of the circle.
22. In the given figure, a diameter AB of a circle bisects a chord PQ.  $AQ \parallel BP$ . Prove that chord PQ is also a diameter. What is the name given to quadrilateral AQB P?



23. Construct a triangle ABC whose perimeter is 11 cm,  $\angle B = 30^\circ$  and  $\angle C = 90^\circ$ .
24. EFGH is a rectangle A, B, C and D are mid – points of the sides EF, FG, GH and EH respectively. Show that ABCD is a rhombus.
25. In a group of 3 girls, one girl forgot to bring her lunch so, other two girls decided to share their lunch with her lunch box 1<sup>st</sup> girl lunch box is in the shape of a cuboidal box measures 6 cm x 8 cm x 15 cm and of 2<sup>nd</sup> girls lunch box is cylindrically shaped radius 7 cm and height 15 cm. Which box has more surface area and which box has more volume? Which value is depicted by girls?

26. A conical tent with basic radius 7 m has been made from a piece of canvas whose area is  $551 \text{ m}^2$ . Find the volume of the tent, assuming that all the stitching margins and wastage incurred while cutting amounts to approximately  $1 \text{ m}^2$ .
27. A dome of a building is in the form of a hemisphere. From inside, it was white – washed at the cost of Rs. 498.96. If the rate of white washing is Rs. 4 per square meter, find the:
- Inside surface area of the dome.
  - Volume of the air inside the dome.
28. A company selected 4000 families at random and surveyed them to find out a relationship between income level and the number of television sets in a home. The information so obtained is listed in the following table:

Monthly income (in Rs.)	No. of television in a family			
	0	1	2	Above 2
< 10000	20	80	10	0
10000 – 14999	10	240	60	0
15000 – 19999	0	380	120	30
20000 – 24999	0	520	370	80
25000 and above	0	1110	760	220

Suppose a family is chosen at random. Find the probability that the selected family:

- Has earning Rs. 10000 – Rs. 14999 per month and has exactly one television.
- Has earning Rs. 25000 and more per month and owns 2 televisions.
- Is not having any television.
- Has 2 and more than 2 television.

### SECTION – E

#### Theme: Atithidevo Bhavah

29. Refer to Table – 2 and answer the following questions:  
What do you observe about FTAs in India from various Regions/Countries over the period of two years?
30. Refer to Table – 3 and answer the following questions:
- What was the percentage of children (age group 0 – 15) in FTAs in India during 1996 – 2012?
  - What was the percentage of senior citizens (age group 65 and above) in FTAs in India during 1996 – 2012?
  - What was the percentage of elderly (age group 55 and above) in FTAs in India during 1996 – 2012?

31. Refer to figure 1

The percentage of foreign tourists arrivals in May and June marked as 5.7 and 6.6 and rectified to 7.5 and 4.8 percentage respectively. What is the new median of foreign tourists arrivals in the year 2012?

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