

# साधना देवी विद्यापीठ

Punjabi Colony (Dharampur) Samastipur. 848101 (Bihar)  
Final Examination- 2019-20

Class :- IX  
Sub :- Maths

Time :- 3hrs  
F.M. :- 100

## General instructions

Section A contains 9 questions of 1 marks each.



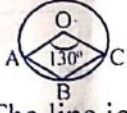
Section A contains 9 questions of 3 marks each.

Section A contains 8 questions of 5 marks each.

Section A contains 4 questions of 6 marks each.

## Section A

Tick the correct options.

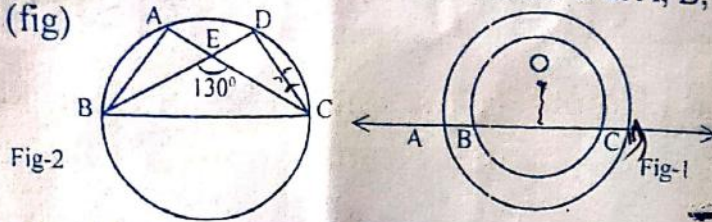
- The length of the diagonals of a rhombus are 12cm and 16cm. The area of the rhombus .  
(i) 192cm<sup>2</sup> (ii) 96cm<sup>2</sup> (iii) 64cm<sup>2</sup> (iv) 80cm<sup>2</sup>
- In  $\triangle ABC$ , D is the mid point of BC and E is the mid point of AD then ar(BED) = ?  
(i)  $\frac{1}{2}$ ar(ABC) (ii)  $\frac{1}{4}$ ar(ABC) (iii)  $\frac{1}{8}$ ar(ABC) (iv)  $\frac{1}{16}$ ar(ABC)  

- In the given figure O is the centre and AB=AC then  $\angle ABC = ?$   
(i) 30° (ii) 45° (iii) 60° (iv) 90°  

- In the given figure  $\angle ABC = ?$   
(i) 80° (ii) 60° (iii) 115° (iv) 130°  

- The parallel sides of trapezium are a and d respectively. The line joining the mid points of its nonparallel sides will be.  
(i)  $\frac{1}{2}(a-b)$  (ii)  $\frac{1}{2}(a+b)$  (iii)  $\frac{2ab}{a+b}$  (iv)  $\sqrt{ab}$
- Total surface area of a cube is 96cm<sup>2</sup>. The volume of the cube is  
(i) 8cm<sup>3</sup> (ii) 27cm<sup>3</sup> (iii) 64cm<sup>3</sup> (iv) 572cm<sup>3</sup>
- If the volume and the surface area of a sphere are numerically the same then its radius is.  
(i) 1 unit (ii) 2 units (iii) 3 units (iv) 4 units
- The median of the data arranged in ascending order 8, 9, 12, 18, (x+2), (x+2), (x+4), 30, 31, 34, 39 is 24. The value of x is  
(i) 22 (ii) 21 (iii) 20 (iv) 24
- It is given that the probability of winning a game is 0.7. What is the probability of losing the game.  
(i) 0.8 (ii) 0.3 (iii) 0.35 (iv) 0.15

## Section B

10. A line segment EF is drawn parallel to side BC of a triangle ABC such that BE and CF meet EF at E and F respectively. Show that ar(BEF) = ar(CFE)



11. If a line intersects two concentric circles with centre O at A, B, C and D Prove that  $AB=CP$  (fig)



12. In fig 1 A, B, C and D are four points on a circle. AC and BD intersect at E such that  $\angle BEC = 130^\circ$  and  $\angle ECD = 20^\circ$  Find  $\angle BAC$

13. Prove that cyclic 11gm is a rectangle.

14. Construct an angle of  $22\frac{1}{2}^\circ$

15. Find the area of a triangle two sides of which are 18cm and 10cm and perimeter is 42cm

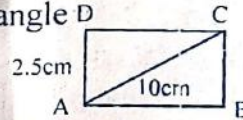
16. Find the radius of sphere whose surface area is  $154\text{cm}^2$ .

17. How many planks of dimensions (5m x 25cm x 10cm) can be stored in a pit which is 20m, 6m and 80cm deep.

18. In the given figure ABCD is a rectangle

$AD=2.5\text{cm}$ ,  $AC=10\text{cm}$

Find area of ABCD.



### Section - C

19. The following table gives the life time of 400 neon lamps.

Life time (inhors)	Number of lamps
300-400	14
400-500	56
500-600	60
600-700	86
700-800	74
800-900	62
900-1000	48

- (i) Represent the given information with the help of a histogram.

- (ii) How many lamps have life time more than 700 hours ?

20.

Cost of living index	Number of weeks
140-150	5
150-160	10
160-170	20
170-180	9
180-190	6
190-200	2

Draw a frequency polygon for the data above without constructing a histogram

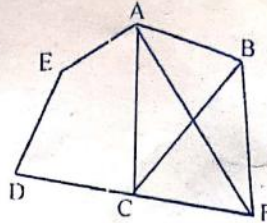
21. A river 3 metre deep and 4m wide is flowing at the rate of 2km/hr. How much water will fall into the sea in a minute ?

22. What length of tarpaulin 3m wide will be required to make a conical tent of height 8m and base radius 6m. Assuming that the extra length of material that will be required for stitching and wastage is cutting is approximately 20cm ( $\pi=3.14$ )

23. If the non parallel sides of a trapezium are equal prove that it is cyclic.



24. In the given fig. ABCD is pentagon.  
A line through B parallel to AC Meets  
DC produced at F. Show that



- (i)  $\text{ar}(\text{ACB}) = \text{ar}(\text{ACF})$   
(ii)  $\text{ar}(\text{AEDF}) = \text{ar}(\text{ABCDE})$
25. l, m and n are three parallel lines intersected by transversal P and Q such that l, m and n cut off equal intercept AB and BC on P. Show that l, m and n cut off equal intercepts DE and EF on Q also.
26. Construct a triangle ABC in which  $\text{BC} = 6\text{cm}$ ,  $\angle B = 60^\circ$  and  $\text{AC} - \text{AB} = 2\text{cm}$ .  
Write steps of construction.

#### Section - D

27. If a triangle and a parallelogram are on the same base and between the same parallels then prove that the area of triangle is equal to half the area of the parallelogram
28. Prove that the sum of either pair of opposite angles of a cyclic quadrilateral is  $180^\circ$ .
29. A frame of a lampshade has a base diameter 20cm and height 30cm. It is to be covered with a decorative cloth. A margin of 2.5cm is to be given for folding it over the top and bottom of the frame. Find how much cloth is required for covering the lampshade.
30. A recent survey shows that the ages of 200 workers in factory is distributed as follows.

Age (in year)	20-29	30-39	40-49	50-59	60 and more
Number of works	37	28	86	46	3

If a worker is selected of random find probability that the selected worker is

- (i) 40 years or more  
(ii) Under 40 years  
(iii) Having an age from 30 to 39 years  
(iv) Under 60 but over 39 years