

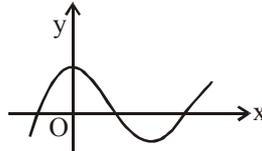
**SAMPLE PAPER - 1**
**TIME : 3 HRS.**
**MAX. MARKS : 80**
**GENERAL INSTRUCTIONS :**

- ▶ All questions are compulsory.
- ▶ The question paper consists of 38 questions divided into five sections A, B, C, D and E.
- ▶ Section A contains multiple choice questions (Q.1 to Q.20) of one mark, only the correct option is to be written in your answer sheet.  
Section B contains short answer type questions (Q.21 to Q.25) carrying two marks each.  
Section C contains short answer type questions (Q.26 to Q.31) carrying three marks each.  
Section D contains short answer type questions (Q.32 to Q.35) carrying five marks each.  
Section E has 3 case based integrated units of assessment 4 marks each with sub-parts of the values of 1, 1 and 2 marks each respectively.
- ▶ All Questions are compulsory. However, an internal choice in 2 Questions of 2 marks, 2 Questions of 3 marks and 2 Questions of 5 marks has been provided. An internal choice has been provided in the 2marks sub part of questions of Section E
- ▶ There is no overall choice. However, internal choice may be provided . You have to attempt only one of the alternatives in all such questions.
- ▶ Use of calculators and cell-phones are not permitted in the Examination Hall.

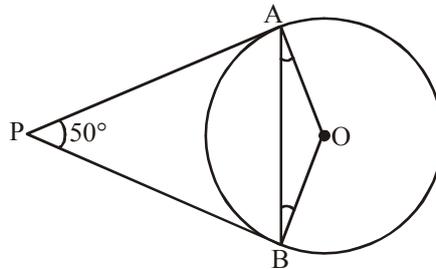
**SECTION-A**

1. HCF of 168 and 126 is  
 (1) 21                                      (2) 42                                      (3) 14                                      (4) 18
2. Empirical relationship between the three measures of central tendency is  
 (1)  $2 \text{ Mean} = 3 \text{ Median} - \text{Mode}$   
 (2)  $2 \text{ Mode} = 3 \text{ Median} - \text{Mean}$   
 (3)  $\text{Mode} = 2 \text{ Mean} - 3 \text{ Median}$   
 (4)  $3 \text{ Median} = 2 \text{ Mode} + \text{Mean}$
3. Which of the following equations has 2 as a root?  
 (1)  $x^2 - 4x + 5 = 0$   
 (2)  $x^2 + 3x - 12 = 0$   
 (3)  $2x^2 - 7x + 6 = 0$   
 (4)  $3x^2 - 6x - 2 = 0$
4. 325 can be expressed as a product of its primes as  
 (1)  $5^2 \times 7$                                       (2)  $5^2 \times 13$                                       (3)  $5 \times 13^2$                                       (4)  $2 \times 3^2 \times 5^2$
5. One card is drawn from a well shuffled deck of 52 cards. The probability that it is black queen is  
 (1)  $\frac{1}{26}$                                       (2)  $\frac{1}{13}$                                       (3)  $\frac{1}{52}$                                       (4)  $\frac{2}{13}$

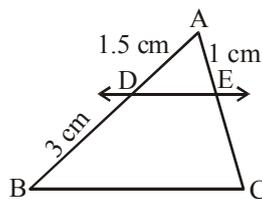
6. If in triangles ABC and DEF,  $\frac{AB}{DE} = \frac{BC}{FD}$ , then they will be similar, when  
 (1)  $\angle B = \angle E$                       (2)  $\angle A = \angle D$                       (3)  $\angle B = \angle D$                       (4)  $\angle A = \angle F$
7. Which of the following is the decimal expansion of an irrational number  
 (1) 4.561                                      (2)  $0.\overline{12}$                                       (3) 5.010010001.....                      (4) 6.03
8. The following figure shows the graph of  $y = p(x)$ , where  $p(x)$  is a polynomial in variable  $x$ . The number of zeroes of the polynomial  $p(x)$  is



- (1) 1    (2) 2    (3) 3    (4) 4
9. In the figure, if PA and PB are tangents to the circle with centre O such that  $\angle APB = 50^\circ$ , then  $\angle OAB$  is equal to



- (1)  $25^\circ$                                       (2)  $30^\circ$                                       (3)  $40^\circ$                                       (4)  $50^\circ$
10. The mid point of the line segment joining the points  $(-5, 7)$  and  $(-1, 3)$  is  
 (1)  $(-3, 7)$                                       (2)  $(-3, 5)$                                       (3)  $(-1, 5)$                                       (4)  $(5, -3)$
11. The point which divides the line segment joining the points  $A(0, 5)$  and  $B(5, 0)$  internally in the ratio  $2 : 3$  is  
 (1)  $(3, 2)$                                       (2)  $(2, 2)$                                       (3)  $(2, 3)$                                       (4)  $(3, 3)$
12. The pair of lines represented by the equations  $2x + y + 3 = 0$  and  $4x + ky + 6 = 0$  will be parallel if value of  $k$  is  
 (1) 1    (2) 4    (3) 6    (4) 2
13. The value of  $\sin 60^\circ \cos 30^\circ + \sin 30^\circ \cos 60^\circ$  is  
 (1) 1    (2) 2    (3) 3    (4) 4
14. Value of  $\cos 0^\circ \cdot \cos 30^\circ \cdot \cos 45^\circ \cdot \cos 60^\circ \cdot \cos 90^\circ$  is  
 (1)  $\sqrt{3}$     (2) 1    (3) 0    (4) 4
15. In the given figure, if  $DE \parallel BC$ , find EC.



- (1) 1.5 cm                                      (2) 2 cm                                      (3) 3 cm                                      (4) 4 cm

16. Find the area of the circle whose circumference is 22 cm.  
 (1)  $38.5 \text{ cm}^2$                       (2)  $77 \text{ cm}^2$                       (3)  $22 \text{ cm}^2$                       (4)  $44 \text{ cm}^2$
17. If area of quadrant of a circle is  $38.5 \text{ cm}^2$  then find its diameter (use  $\pi = \frac{22}{7}$ ).  
 (1) 7 cm                      (2) 14 cm                      (3) 21 cm                      (4) 28 cm
18. A dice is thrown once. Find the probability of getting a prime number.  
 (1) 1                      (2)  $\frac{1}{6}$                       (3)  $\frac{1}{3}$                       (4)  $\frac{1}{2}$
19. **Assertion (A) :** PQ is tangent to a circle with centre O at point P. If  $\Delta OPQ$  is an isosceles triangle, then  $\angle OQP = 45^\circ$ .  
**Reason (R) :** If two tangent inclined at  $60^\circ$  are drawn to a circle of radius 3 cm, then the length of each tangent is  $3\sqrt{3} \text{ cm}$ .  
 (1) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).  
 (2) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).  
 (3) Assertion (A) is true but Reason (R) is false.  
 (4) Assertion (A) is false but Reason (R) is true.
20. **Assertion (A) :** All regular polygons of the same number of sides such as equilateral triangle, square etc. are similar.  
**Reason (R) :** Two polygons are said to be similar if their corresponding angles are equal and length of corresponding sides are proportional.  
 (1) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).  
 (2) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).  
 (3) Assertion (A) is true but Reason (R) is false.  
 (4) Assertion (A) is false but Reason (R) is true.

**SECTION-B**

21. If two coins are tossed simulatenously. Find the probability of getting 2 heads.
22. A lot of 25 bulbs contain 5 defective ones. One bulb is drawn at random from the lot. What is the probability that the bulb is good.

**OR**

Two dice are thrown simultaneously at random. Find the probability of getting a sum of eight.

23. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.
24.  $\Delta PQR$  is right angled isosceles triangle, right angled at R. Find value of  $\sin P$ .

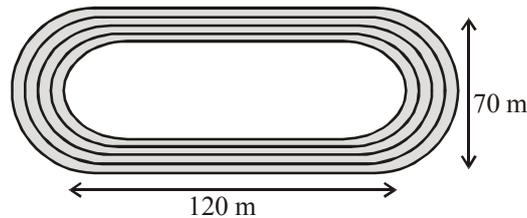
**OR**

If  $15 \cot A = 8$ , then find value of  $\operatorname{cosec} A$ .

25. If the quadratic equation  $x^2 - 2x + k = 0$  has equal roots, then find the value of k.

**SECTION-C**

26. Find the zeroes of the quadratic polynomial  $x^2 - 3x - 10$  and verify the relationship between the zeroes and coefficient.
27. Following figure depicts a park where two opposite sides are parallel and left and right ends are semi-circular in shape. It has a 7m wide track for walking.



Two friends Seema and Meena went to the park. Meena said that area of the track is  $4066\text{m}^2$ . Is she right? Explain.

28. Prove that  $\frac{\cot A - \cos A}{\cot A + \cos A} = \frac{\operatorname{cosec} A - 1}{\operatorname{cosec} A + 1}$

**OR**

Prove that :  $\frac{\tan A + \sin A}{\tan A - \sin A} = \frac{\sec A + 1}{\sec A - 1}$

29. Prove that  $\sqrt{3}$  is irrational.

**OR**

An army contingent of 616 members is to march behind an army band of 32 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can March?

30. Prove that the lengths of tangents drawn from an external point to a circle are equal.
31. Solve  $2x + 3y = 11$  and  $x - 2y = -12$  algebraically and hence find the value of 'm' for which  $y = mx + 3$ .

**SECTION-D**

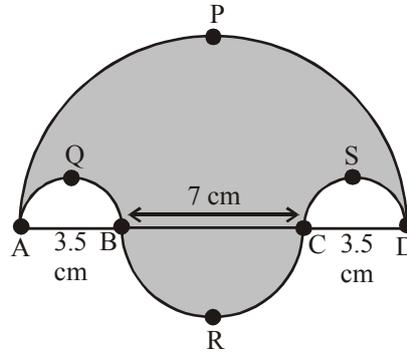
32. If the sum of first 14 terms of an A.P. is 1050 and its first term is 10, find the 20<sup>th</sup> term. Also, find sum of first 20 terms.

**OR**

The first term of an A.P. is 5, the last term is 45 and sum is 400. Find the number of terms and the common difference.

33. As observed from the top of a 75 m high light house above the sea level, the angles of depression of two ships are  $30^\circ$  and  $45^\circ$  respectively. If one ship is exactly behind the other on the same side of the light house and in the same straight line, find the distance between the two ships. (use  $\sqrt{3} = 1.732$  )
34. If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then prove that the other two sides are divided in the same ratio.

35. Find the area of the shaded region in figure,  $\widehat{APD}$ ,  $\widehat{AQB}$ ,  $\widehat{BRC}$  and  $\widehat{CSD}$ , are semi-circles of diameter 14 cm, 3.5 cm, 7 cm and 3.5 cm respectively. (Use  $\pi = \frac{22}{7}$ ).



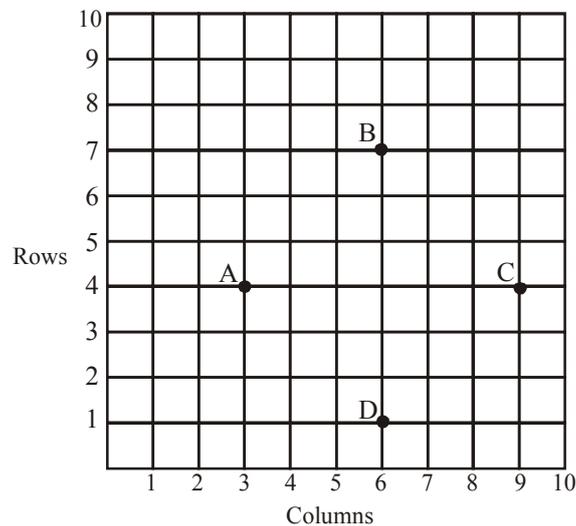
**OR**

The internal and external diameters of a hollow hemispherical vessel are 16 cm and 12 cm respectively. If the cost of painting 1 cm<sup>2</sup> of the surface area is Rs.5, find the total cost of painting the vessel all over. (Use  $\pi = 3.14$ )

**SECTION-E**

**36. Case study-1**

In a class room, four students Sita, Gita, Rita and Anita are sitting at A(3, 4), B(6, 7), C(9, 4), D(6, 1) respectively. Then a new student Anjali joins the class.



- (i) Teacher tells Anjali to sit in the middle of the four students. Find the coordinates of the position where she can sit.
- (ii) Calculate the distance between Sita and Anita.
- (iii) Which two students are equidistant from Gita.

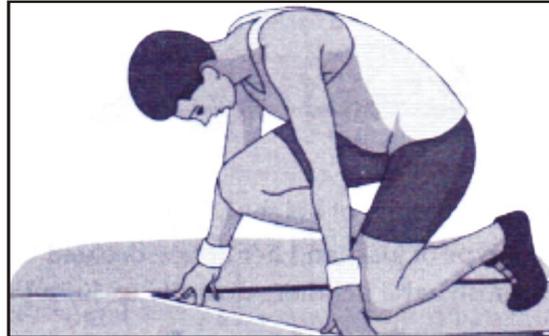
**OR**

Name the figure formed by joining A, B, C and D

**37. Case study-2**

100 m RACE

A stopwatch was used to find the time that it took a group of students to run 100 m.



Time (in sec)	0-20	20-40	40-60	60-80	80-100
Number of students	8	10	13	6	3

(i) Estimate the mean time taken by a student to finish the race.

**OR**

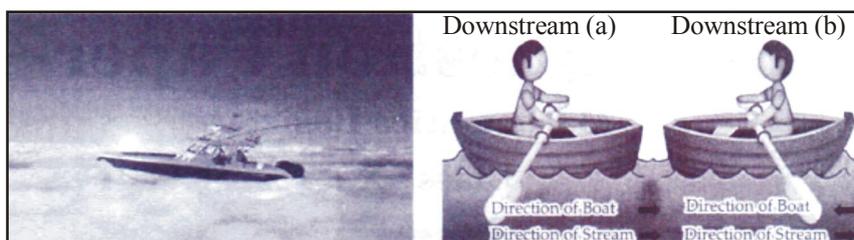
Find the sum of lower limits of median class and modal class.

(ii) How many students finished the race within 1 minute?

(iii) How many students finished the race within 40 sec?

**38. Case study-3**

The speed of a motor boat is 20 km/hr. For covering the distance of 15 km the boat took 1 hour more for upstream than downstream.



(i) If speed of the stream be  $x$  km/h, then find the speed of the motorboat in upstream.

(ii) Write the relation between speed, distance and time?

(iii) Find the quadratic equation for the speed of the current?

**OR**

What is the speed of current?