SPECTRA PRACTICE PAPER (2025-2026)
CLASS-Xth
SUBJECT: MATHEMATICS

DURATION: 3 HRS. **M MARKS:80**

General Instruction:

1. This Question Paper has 5 Sections A-E.
2. **Section A** has 20 MCQs carrying 1 mark each.
3. **Section B** has 5 questions carrying 02 marks each.
4. **Section C** has 6 questions carrying 03 marks each.
5. **Section D** has 4 questions carrying 05 marks each.
6. **Section E** has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each respectively.
7. All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E
8. Draw neat figures wherever required. Take $\pi=22/7$ wherever required if not stated.

SECTION–A

Questions 1 to 20 carry 1 mark each.

1. The pair of equations $x+4y+5=0$ and $-3x-12y+1=0$ have
(a) A unique solution (b) exactly two solutions
(c) Infinitely many solutions (d) no solution

2. If $p(x) = ax^2 + bx + c$, then $-\frac{b}{a}$ is equal to
(a) sum of zeroes (b)product of zeroes (c)zero (d)None of these

3. $\sin 2B = 2 \sin B$ is true when B is equal to
(a)60° (b)45° (c)30° (d)0°

4. The distance of the point P(2, 3) from the x-axis is
(a)3m (b)2m (c) 0m (d)5m

5. In ΔABC right angled at B, if $\cot C=\sqrt{3}$,then then $\cos A\sin C+\sin A\cos C=$
(a) –1 (b)0 (c)1 (d)$\sqrt{3}/2$

6. If θ is an acute angle and $\tan\theta+\cot\theta=2$,then the value of $\sin^3\theta+\cos^3\theta$ is
(a) 1 (b)0 (c)$1/\sqrt{2}$ (d) None of these

7. If the distance between the points(4,p)and(1,0)is5,then value of p is
(a)4 only (b)±4 (c)-4only (d)0

8. If p and q are positive integers such that $p=a^3b^2$and $q=a^2b$, where 'a' and 'b' are prime numbers, then the LCM (p, q) is …..
(a)ab (b)a^2b^2 (c) a^3b^2 (d)a^3b^3

9. The product of two co-prime numbers is 117. What is their LCM?
(a)9 (b)13 (c)39 (d)117

Centre: Gole Market and Minto Road Complex, New Delhi
M: 9650618171, 9013160531, 9899349601
Website: www.spectraclasses.com Email: info@spectraclasses.com

10. If angle between two radii of a circleis130º,the angle between the tangents at the ends of the radii is :

(a)90º (b)50º (c)70º (d)40º

11. The relationship between mean, median and mode for a moderately skewed distribution is

(a) mode=median–2mean (b) mode=3median–2mean

(c) mode=2median–3mean (d) mode=median–mean

12. If the mean of frequency distribution is 7.5 and $\sum fi\ xi = 120 + 3k$, $\sum fi = 30$, then k is equal to:

(a)10 (b)30 (c) 35 (d)50

13. The area of a quadrant of a circle, whose circumference is 22cm,is

(a) $\frac{11}{8}cm^2$ (b) $11\frac{1}{8}cm^2$ (c) $11\frac{1}{2}cm^2$ (d) $11\frac{1}{4}cm^2$

14. If the quadratic equation $x^2 + 4x + k = 0$ has real and equal roots, then

(a)$k<4$ (b)$k>4$ (c)$k=4$ (d)$k\geq 4$

15. Volumes of two spheres are in the ratio 64:27.The ratio of their surface areas is

(a)3: 4 (b)4:3 (c)9: 16 (d)16:9

16. The area of the square that can be inscribed in a circle of radius 8cm is

(a) $256cm^2$ (b)$128cm^2$ (c)$64\sqrt{2}cm^2$ (d)64 cm^2

17. Two dice are thrown at the same time and the product of numbers appearing on them is noted. The probability that the product is a prime number is

(a)1/3 (b)1/6 (c)1/5 (d)5/6

18. InΔABC, DE ||AB, If CD=3cm,EC=4cm,BE=6cm,then DA is equal to

(a)7.5cm (b)3cm (c)4.5cm (d)6cm

DIRECTION: In the question number 19 and 20, a statement of **Assertion (A)** is followed by a statement of **Reason (R)**.
Choose the correct option

19. Assertion (A): The point (0,4) lies on y-axis.
Reason (R): The x co-ordinate on the point on y-axis is zero.

(a) Both Assertion(A) and Reason(R) are true and Reason(R) is the correct explanation of Assertion (A)

(b) Both assertion(A) and reason(R) are true and reason(R) is not the correct explanation of Assertion (A)

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

20. Assertion(A): If HCF(90,144)=18,then LCM(90,144)=720
Reason(R): HCF (a,b) x LCM (a,b) = a x b

(a) Both Assertion (A) and Reason(R) are true and Reason(R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason(R) are true but Reason(R) is not the correct explanation of Assertion (A).
(c) Assertion (A) is true but Reason(R) is false.
(d) Assertion (A) is false but Reason(R) is true.

SECTION–B

Questions 21 to 25 carry 2 marks each.

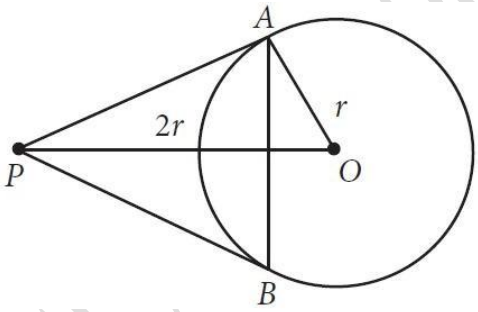
21. The length of the minute hand of a clock is 21cm.Find the area swept by the minute hand in 10 minutes.

OR

In a circle of radius 21 cm, an arc subtends an angle of 60° at the centre. Find (i) the length of the arc (ii) area of the sector formed by the arc.

22. Find the value of m & n for which the system of Linear equation has infinity many solutions. $3x+4y=12$; $(m+n)x+2(m-n)y=5m-1$.

24. From a point P, two tangents PA and PB are drawn to a circle C(0,r).If OP=2r,then find∠APB. Prove that triangle APB is an equilateral triangle.



OR

If $x\sin^3\theta+y\cos^3\theta = \sin\theta\cos\theta$ and $x\sin\theta = y\sin\theta$ then find x^2+y^2.

25. If one diagonal of a trapezium divides the other diagonal in the ratio 1:3. Prove that one of the parallel sides is three times the other.

SECTION–C

Questions 26 to 31 carry 3 marks each.

26. A man walks a certain distance with certain speed. If he walks 1/2 km an hour faster, he takes 1 hour less. But, if he walks 1 km an hour slower, he takes 3 more hours. Find the distance covered by the man and his original rate of walking.

OR

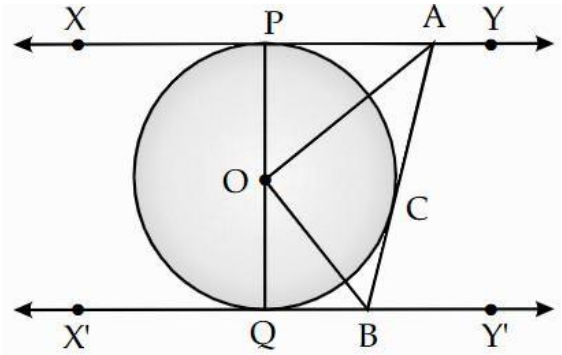
A motor boat whose speed is 18 km/h in still water takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream.

27. Derive value of Sin60.

28. 210 oranges, 252 apples and 294 pears are equally packed in cartons so that no fruit is left. What is the biggest possible number of cartons needed?

29. Find the zeroes of the quadratic polynomial $2x^2 - 5$ and verify the relationship between the zeroes and the coefficients of the polynomial.

30. In the figure XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with point of contact C interesting XY at A and X'Y' at B, what is the measure of ∠AOB.



31. Ajay throws two dice once and computes the product of the numbers appearing on the dice. Rita thrown one side one die and squares the number that appears on it. Who has the better chance of getting the number of 36? why?

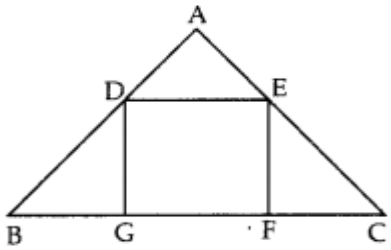
SECTION–D

Questions 32 to 35 carry 5 marks each.

32. State and Prove Basic Proportionality Theorem.

OR

In the given figure, DEFG is a square and ∠BAC = 90°. Show that $FG^2 = BG \times FC$.



33.A moving boat is observed from the top of a 150 m high cliff moving away from the cliff. The angle of depression of the boat changes from 60° to 45° in 2 minutes. Find the speed of the boat in m/h.

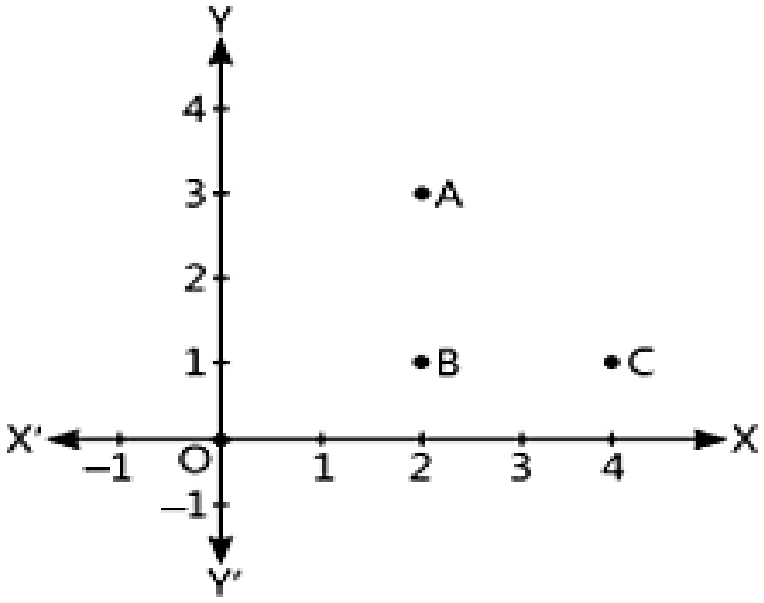
34. A solid wooden toy is in the form of a hemisphere surmounted by a cone of same radius. The radius of hemisphere is 3.5 cm and the total wood used in the making of toy is 16656 cm^3. Find the height of the toy. Also, find the cost of painting the hemispherical part of the toy at the rate of ₹10 per cm^2. [Use $\pi = 227$]

35. The median of the following data is 16. Find the missing frequencies a and b if the total of frequency is 70

Class	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	12	a	12	15	b	6	6	4

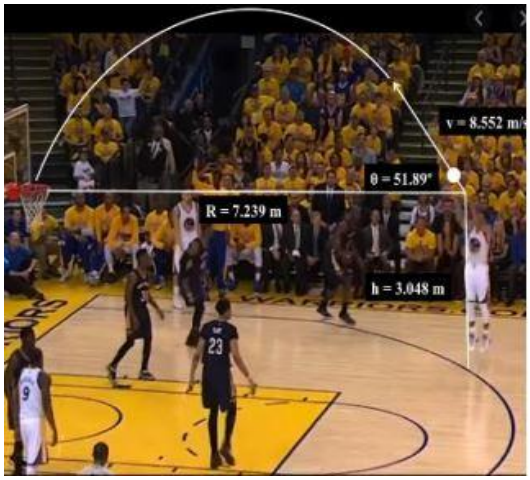
Questions 36 to 38 carry 4 marks each.

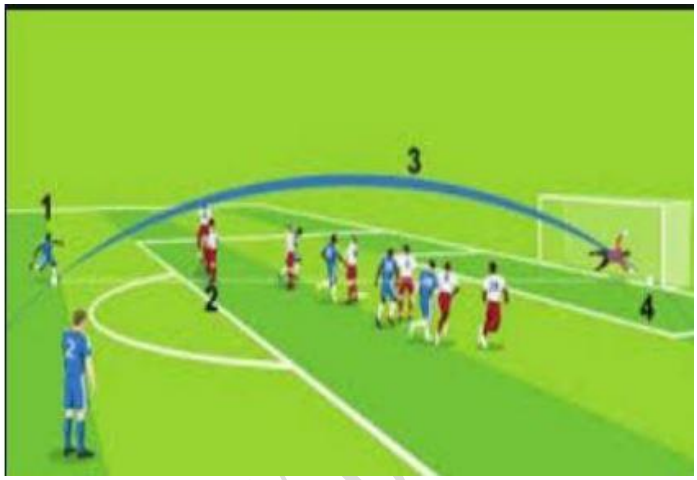
36. Rajesh and Suresh are friends living on the same street in Moti Nagar. Suresh's house is at the intersection of one street with another street on which there is a library. They both study in the same school and that is not far from Suresh's house. Suppose the school is situated at the point O, i.e., the origin, Rajesh's house is at A. Suresh's house is at B and library is at C.



i. How far is Rajesh's house from Suresh's house? (1 mark)
ii. How far is the library from Suresh's house? (1 mark)
iii. Show that for Suresh, school is farther compared to Rajesh's house and library. (1 mark)
iv. Show that Rajesh's house, Suresh's house and library form an isosceles right triangle. (1 mark)

37.Basketball and soccer are played with a spherical ball. Even though an athlete dribbles the ball in both sports, a basketball player uses his hands and a soccer player uses his feet. Usually, soccer is played outdoors on a large field and basketball is played indoor on a court made out of wood. The projectile (path traced) of soccer ball and basketball are in the form of parabola representing quadratic polynomial.





a. The shape of the path traced shown is

b. The graph of parabola opens upwards, if _____

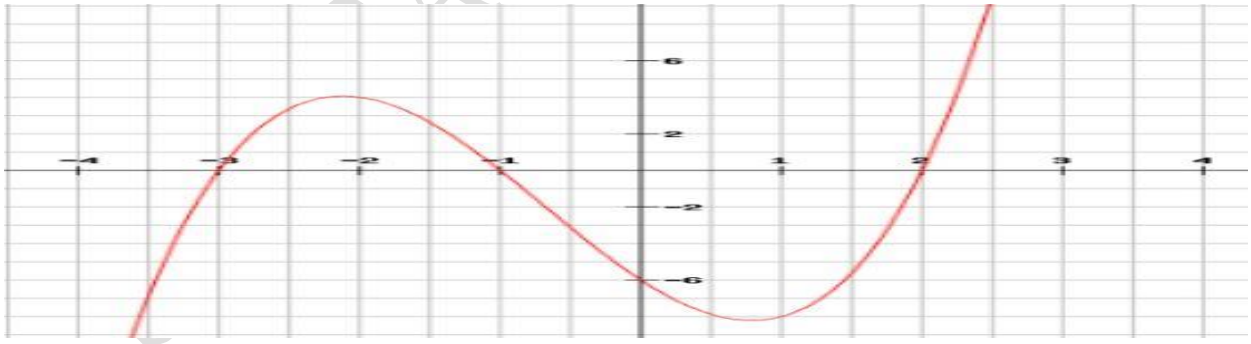
i) $a = 0$

ii) $a < 0$

iii) $a > 0$

iv) $a \geq 0$

c. Observe the following graph and answer



In the above graph, how many zeroes are there for the polynomial?

d .The three zeroes in the above shown graph are

38. Ramesh takes a loan from a bank for his car. Ramesh repays his total loan of Rs.118000 by paying every month starting with the first installment of Rs.1000.If he increases the installment by Rs.100 every month.

(i) What is the first term and common difference of given question. (1)
(ii) The amount paid buy him in the 30^{th} installment. (1)
(iii)What amount does he still have to pay after 30^{th} installment? (2)