DELHI PRIVATE SCHOOL L.L.C.

مــدرسة دلهــي الخـاصة ذ.م.م.

Affiliated to C.B.S.E., DELHI

D P S SHARJAH (Approved & Recognized By Ministry of Education - United Arab Emirates)

PRE BOARD 1 EXAMINATION (2025-26)

Subject: Mathematics

Grade: X

Name: Section: Roll No:

Max. Marks: 80

Time: 3 Hrs.

General Instructions:

1. *This Question Paper has 5 Sections A, B, C, D and 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 of 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks have been provided. An internal choice has been provided in the 2marks questions of Section E*
8. *Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.*

SECTION A(MCQ)

1. LCM of smallest prime number and smallest 2-digit number is

   a. 2
   b. 2
   c. 10
   d. 20

2. The pair of equations $3x - 5y = 7$ and $-6x + 10y = 7$ have

   a. a unique Solution
   b. infinitely many Solution
   c. two Solutions
   d. No Solution

3. For the equation $x^2 + 5x - 1$, which of the following statements is correct?

   a. The roots of the equation are equal
   b. The discriminant of the equation is negative
   c. The roots of the equation are real, distinct and irrational
   d. The discriminant is equal to zero

4. The 10th term from the end of the A.P. -5, -10, -15,..., -1000 is

   a. -955
   b. -945
   c. -950
   d. -965

5. The nth term of an A.P. is given by $a_n = 3 + 4n$. The common difference is

   a. 7
   b. 4
   c. 3
   d. 1

6. In $\triangle ABC$, $DE \parallel AB$. If $AB = a$, $DE = x$, $BE = b$ and $EC = c$, then x in terms of a, b and c
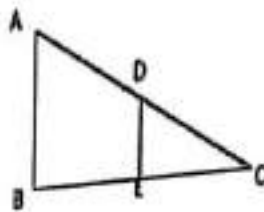
    a. $\dfrac{ac}{b}$

    b. $\dfrac{ac}{b+c}$

    c. $\dfrac{ab}{c}$

    d. $\dfrac{ab}{b+c}$

7. The y-coordinate of the mid-point of the points (3,7) and (5,9) is:

    a. 6

    b. 4

    c. 8

    d. 9

8. Given that $\sin\alpha = \dfrac{1}{2}$ and $\cos\beta = \dfrac{1}{2}$, then the value of $(\alpha + \beta)$ is:

    a. 0^0

    b. 30^0

    c. 60^0

    d. 90^0

9. If a tower 6m high casts a shadow of $2\sqrt{3}$ m long on the ground, then the sun's elevation is:

    a. 60^0

    b. 45^0

    c. 30^0

    d. 90^0

10. If two tangents inclined at an angle $60°$ are drawn to a circle of radius 3 cm, then length of each tangent is equal to
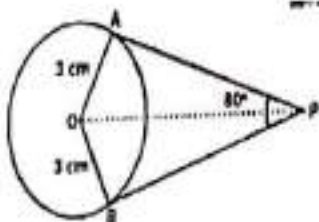
    a. 6cm

    b. 3cm

    c. $\sqrt{3}$ cm

    d. $3\sqrt{3}$ cm

11. The angle formed by the line of sight with the horizontal when the point is below the horizontal level is called:

    a. Angle of elevation

    b. Angle of depression

    c. Reflex angle

    d. No such angle is formed

12. From the letters of the word "MOBILE", a letter is selected at random, the probability that the selected letter is a vowel is

    a. $\dfrac{3}{7}$

    b. $\dfrac{1}{6}$

    c. $\dfrac{1}{2}$

    d. $\dfrac{1}{3}$

13. Which of the following is a condition for unique solution of a pair of linear equations?
   a. $\frac{a1}{a2} = \frac{b1}{b2}$

   b. $\frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

   c. $\frac{a1}{a2} \neq \frac{b1}{b2}$

   d. $\frac{a1}{a2} = \frac{b1}{b2} \neq \frac{c1}{c2}$

14. The product of HCF and LCM of (32,28) is
   a. 256
   c. 832
   b. 840
   d. 896

15. If $\frac{1}{2}$ is a root of the quadratic equation $x^2 - mx - \frac{5}{4} = 0$, then value of m is:
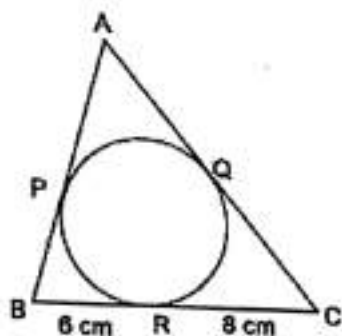   a. 2
   c. 3
   b. -2
   d. -3

16. The number of two digit numbers which are divisible by 6 is:
   a. 15
   c. 10
   b. 20
   d. 12

17. The length of the diagonal of a rectangle with vertices A (1, 2), B (1,5), C(6,5) & D (6,2) is:
   a. 5
   c. √34
   b. √52
   d. 50

18. If perimeter of given triangle is 38 cm, then length AP is equal to

   a. 12cm
   c. 10cm
   b. 5cm
   d. 8cm

19. Assertion (A): If the total surface area of a solid hemisphere is 462cm², then its radius is 7cm
   Reason (R): The total surface area of the hemisphere of radius r is $4\pi r^2$.
   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

20. Assertion(A): The probability of selecting a number at random from the numbers 1 to 20 is 1.

   Reason(R): For any event E, if P(E) = 1, then E is called a sure event.

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 (2 marks each)

21. For what value of p will the following system of equations have no solution?
$(2p - 1) x + (p - 1) y = 2p + 1$, $y + 3x - 1 = 0$.

22. If A (4, -1), B (5,3), C (2, y) and D (1,1) are the vertices of a parallelogram ABCD, find y.

23. In Fig., altitudes AD and CE of $\triangle ABC$ intersect each other at the point P. Show that: $\triangle AEP \sim \triangle CDP$

OR
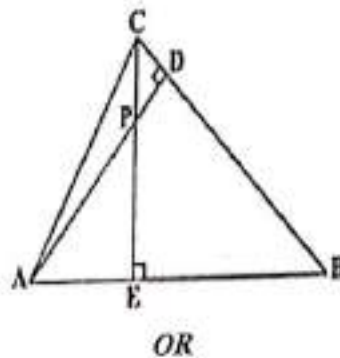
In the given Figure, DE ∥ OQ and DF ∥ OR. Show that EF ∥ QR.
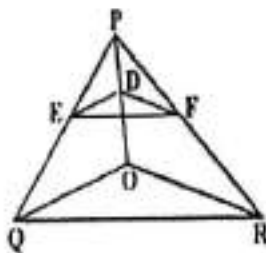
24. In the given figure, if AB = AC, prove that BE = CE.
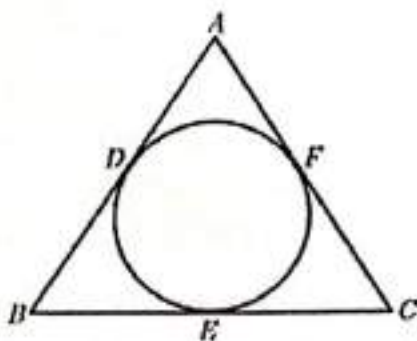
25. The tops of two towers of height x and y, standing on level ground, subtend angles of 30^0 and 60^0 respectively at the center of the line joining their feet, then find x : y.

OR

From a point on a bridge across a river, the angles of depression of the banks on opposite sides of the river are 30° and 45°, respectively. If the bridge is at a height of 3 m from the banks, find the width of the river.

SECTION C (3 marks each)

26. If $x = r\,SinACosC$; $\quad y = r\,SinASinC \quad$ and $z = r\,CosA$, Prove that: $x^2 + y^2 + z^2 = r^2$.

OR

If $sin\,\theta + cos\,\theta = \sqrt{3}$, then prove that: $tan\,\theta + cot\,\theta = 1$.

27. Solve the following pair of equations graphically: $2x + 3y = 12$, $\quad x - y - 1 = 0$. Also find the area bounded by these lines and $y = 0$.

OR

If a bag containing red and white balls, half the number of white balls is equal to one-third the number of red balls. Thrice the total number of balls exceeds seven times the number of white balls by 6. How many balls of each colour does the bag contain?

28. Given that $\sqrt{5}$ is irrational, prove that $2\sqrt{5} - 3$ is an irrational number.

29. From a solid cylinder whose height is 2.4 cm and diameter 1.4 cm, a conical cavity of the same height and same diameter is hollowed out. Find the volume of the remaining solid. (Use $\prod = 22/7$).

30. From a pack of 52 playing cards, Jacks, Queens and Kings of red colour are removed. From the remaining, a card is drawn at random. Find the probability that drawn card is (i) a black king, (ii) a card of red color,

    (iii) a face card.

31. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the center of the circle.

SECTION D(5 marks each)

32. Speed of a boat in still water is 15 km/hour. It goes 30 km up stream and returns at the same point in 4 hours 30 minutes. Find the speed of the stream.

OR

If the price of a book is reduced by Rs 5, a person can buy 4 more books for Rs 600. Find the original price of the book.

33. 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 $166\frac{5}{6}$ cm³. Find the height of the toy. ($\prod = 22/7$).

OR

A circus tent is in the shape of a cylinder surmounted by a conical top of same diameter. If their common diameter is 56 m, the height of cylindrical part is 6 m and the total height of the tent above the ground is 27 m, find the area of canvas used in the tent. ($\prod = 22/7$).

34. i) Prove that, if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.

ii) In $\triangle ABC$, $DE \| BC$, $AD = x$, $AE = x+3$ $DB = x+1$ and $EC = x+5$ find the value of x.
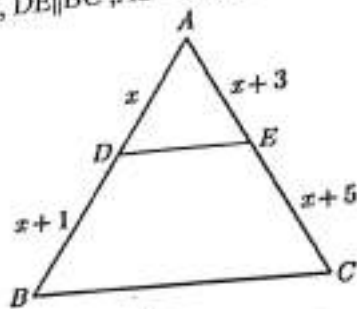
35. Prove that: $\dfrac{\tan\theta}{1-\cot\theta} + \dfrac{\cot\theta}{1-\tan\theta} = 1 + \sec\theta\,\csc\theta$

SECTION E (CASE STUDY - 4 marks each)

36. Use of mobile screens for long hours makes your eyesight weak and gives you headaches. Children who are addicted to play "PUBG" can get easily stressed out. To raise social awareness about ill effects of playing PUBG, a school decided to start 'BAN PUBG' campaign, in which students are asked to prepare campaign board in the shape of a rectangle. One such campaign board made by class X students at the school is shown in the figure.
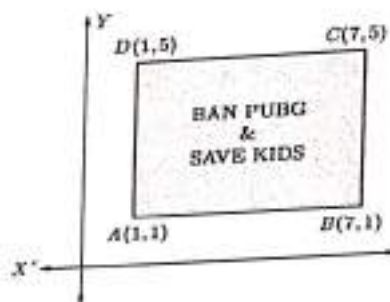
i) Find the coordinates of the point of intersection of diagonals AC and BD. (1mark)

ii) Find the length of the diagonal AC. (1mark)

iii) a) Find the area of the campaign Board ABCD. (2marks)

OR

b) Find the ratio of the length of side AB to the length of the diagonal AC.

37. Salary: In investigating different job opportunities, firm A will start you at Rs 25,000 per year and guarantee you a raise of Rs 1,200 each year whereas firm B will start you at Rs 28,000 per year but will guarantee you a raise of only Rs 800 each year.

i) What would be your annual salary at firm A for the tenth year? (1mark)

ii) What would be your annual salary at firm B for the tenth year? (1mark)

iii) a) Over a period of 15 years, how much would you receive from firm A? (2marks)

OR

b) Over a period of 15 years, how much would you receive from firm B?

38. Ravish got a clinometer from school lab and started the measuring elevation angle in surrounding. He saw a building on which society logo is painted on wall of building.
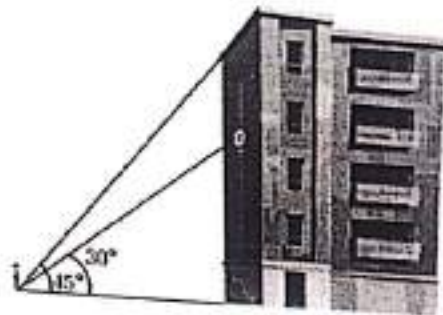
From a point P on the ground level, the angle of elevation of the roof of the building is 45^0. The angle of elevation of the Centre of logo is 30^0 from same point. Point P is at a distance of 24 m from the base of the building. (draw a labelled diagram for the above information).

i) What is the height of the building logo from ground? (1mark)

ii) What is the height of the building from ground? (1mark)

iii)   a) What is the distance of point P from the top of the building? (2marks)

OR

    b) Find the vertical distance between the logo and the top of the building.