AL JANOUB INTERNATIONAL SCHOOL
Total Commitment to Excellence
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PB No. 51029   KHAMIS MUSHAYT   KINGDOM OF SAUDI ARABIA
CBSE DELHI Affln. No 5730023   SCHOOL CODE:90151
Ministry of Education KSA Lic. No. 5205357 (BOYS')   4373140012 (GIRLS')

مدارس الجنوب العالمية
(فرع شركة صيدلية أبو النواء)
خميس مشيط المملكة العربية السعودية
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ترخيص وزارة التربية والتعليم للبنين رقم 5205357
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وزارة التعليم
Ministry of Education
VISION 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

SUBJECT: MATHEMATICS (041/241)

CLASS: X (Session 2022-23)   **Max. Marks: 80**   **Time: 3Hr.**

General Instructions:

(i)   This Questions Paper has *5 sections A, B, C, D and E.*

(ii)   Section A has 20 MCQs carrying 1 mark each.

(iii)   Section B has 5 questions carrying 2 marks each with 2 internal choices.

(iv)   Section C has 6 questions carrying 3 marks each with 2 internal choices.

(v)   Section D has 4 question carrying 5 marks each with 2 internal choices.

(vi)   Section E has 3 Case Based integrated units of assessment (4 marks) with sub-parts of the values of 1, 1 and 2 marks each respectively. An internal choice has been provided in the 2 marks question.

Section A

1.   In the adjoining figures $RS||DB||PQ$. If CP = PD = 11 and DR = RA = 3. Then.   **[1]**

   a) x = 10, y = 7   b) x = 14, y = 6
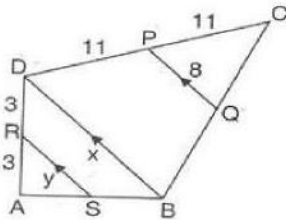
   c) x = 16, y = 8   d) x = 12, y = 10

2.   A polynomial of degree _____ is called a cubic polynomial.   **[1]**

   a) 2   b) 0

   c) 1   d) 3

3.   Aruna has only Re 1 and Rs 2 coins with her. If the total number of coins that she has is 50 and the amount of money with her is Rs 75, then the number of Rs 1 and Rs 2 coins are, respectively   **[1]**

   a) 35 and 15   b) 35 and 20

   c) 15 and 35   d) 25 and 25

4.   The sum of two numbers is 35 and their difference is 13. The numbers are   **[1]**

   a) 24 and 11   b) 23 and 12   c) 25 and 12   d) 15 and 35

5. In the given figure if PS||QR and PQ||SR and AT = AQ = 6, AS = 3, TS = 4, then **[1]**
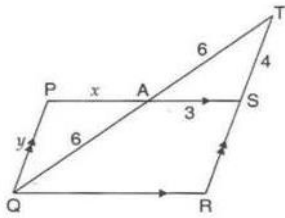
    a) x = 2, y = 3.   b) x = 1, y = 2.

    c) x = 3, y = 4.   d) x = 4, y = 5.

6. A number is selected at random from the numbers 3, 5, 5, 7, 7, 7, 9, 9, 9, 9. The probability that the selected **[1]**
number is their average is

    a) $\frac{7}{10}$ b) $\frac{3}{10}$

    c) $\frac{9}{10}$ d) $\frac{1}{10}$

7. If sin A = $\frac{1}{2}$, then the value of cot A is **[1]**

    a) $\sqrt{3}$ b) $\frac{\sqrt{3}}{2}$
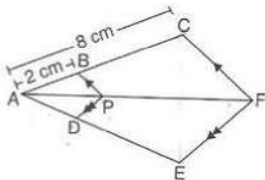
    c) $\frac{1}{\sqrt{3}}$ d) 1

8. In a data, if l = 60, h = 15, f_1 = 16, f_0 = 6, f_2 = 6, then the mode is **[1]**

    a) 67.5   b) 72

    c) 60   d) 62

9. In the given figure if $BP||CF$, $DP||$EF,then AD : DE is equal to **[1]**

    a) 1 : 3   b) 1 : 4

    c) 3 : 4   d) 2 : 3

10. If HCF (26,169) = 13, then LCM (26,169) = **[1]**

    a) 13   b) 26

    c) 52   d) 338

11. If one root of the equation $2x^2 + ax + 6 = 0$ is 2 then a = ? **[1]**

    a) -7   b) $\frac{7}{2}$

    c) $\frac{-7}{2}$ d) 7

12. The mid-point of the line segment joining the points A (-2, 8) and B (- 6, - 4) is **[1]**

    a) (- 4, -6)   b) (4, 2)

    c) (2, 6)   d) (– 4, 2)

13. Which of the following cannot be determined graphically? [1]

    a) Mode
    b) Median

    c) Mean
    d) None of these

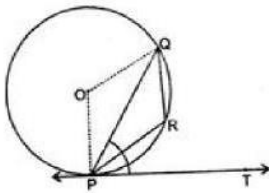14. $9 \sec^2 A - 9 \tan^2 A =$ [1]

    a) 1
    b) 9

    c) 0
    d) 8

15. The _____ is the angle between the horizontal and the line of sight to an object when the object is below the [1] horizontal level.

    a) angle of projection
    b) angle of elevation

    c) None of these
    d) angle of depression

16. In the given figure, PQ is a chord of a circle and PT is the tangent at P such that $\angle QPT = 60^o$, Then $\angle PRQ$ [1] is equal to:

    a) 150°
    b) 120°

    c) 140°
    d) 110°

17. If the diagonals of a quadrilateral divide each other proportionally then it is a [1]
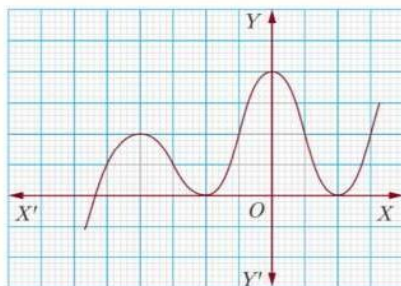
    a) square
    b) rectangle

    c) trapezium
    d) parallelogram

18. The roots of a quadratic equation $x^2 - 4px + 4p^2 - q^2 = 0$ are [1]

    a) 2p + q, 2p - q
    b) p + 2q, p - 2q

    c) 2p + q, 2p + q
    d) 2p - q, 2p - q

19. **Assertion (A):** The graph y = f(x) is shown in figure, for the polynomial f(x). The number of zeros of f(x) is 3. [1]

    Reason (R): The number of zero of the polynomial f(x) is the number of point of which f(x) cuts or touches the axes.

    a) Both A and R are true and R is the correct
       explanation of A.
    b) Both A and R are true but R is not the
       correct explanation of A.

   c) A is true but R is false.
    d) A is false but R is true.

20. **Assertion (A):** Two identical solid cubes of side 5 cm are joined end to end. The total surface area of the [1]

resulting cuboid is 300 cm².

Reason (R): Total surface area of a cuboid is 2(lb + bh + lh)

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

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Section B

21. Find the roots of the quadratic equation $15x^2 - 10\sqrt{6}x + 10 = 0$. **[2]**

22. Find the ratio in which line formed by joining (-1, 1) and (5, 7) is divided by the line x + y = 4. **[2]**

OR

Find the co-ordinates of the points which divide the line segment joining the points (–4, 0) and (0, 6) in four equal parts.

23. Find the HCF and LCM of 612 and 1314 using prime factorisation method. **[2]**

24. In a ΔABC right angled at B, if AB = 4 and BC = 3, find all the six trigonometric ratios of $\angle A$ **[2]**

25. In the given figure, $LM\|CB$ and $LN\|CD$. Prove that $\frac{AM}{AB} = \frac{AN}{AD}$. **[2]**
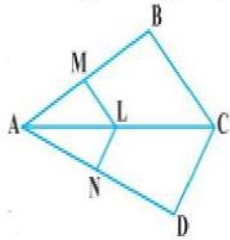

OR

In the given figure, $\angle A = \angle B$ and AD = BE. Show that DE ‖AB.
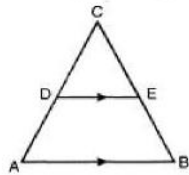
Section C

26. A train covers a distance of 90 km at a uniform speed. Had the speed been 15 km/hour more, it would have taken **[3]** 30 minutes less for the journey. Find the original speed of the train.

27. In a right triangle ABC, right-angled at B, D is point on hypotenuse such that $BD \perp AC$. If $DP \perp AB$ and **[3]** $DQ \perp BC$ then prove that

a. $DQ^2 = DP \cdot QC$

b. $DP^2 = DQ \cdot AP$.
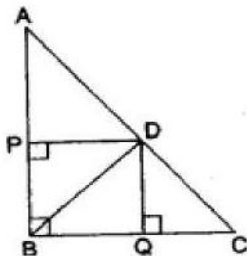
28. The line segment joining the points P (3,3) and Q (6, - 6) is trisected at the points A and B such that A is nearer **[3]** to P. If A also lies on the line given by 2x + y + k = 0, find the value of k.

OR

The base AB of two equilateral triangles ABC and ABC' with side 2a lies along the X-axis such that the mid-point of AB is at the origin. Find the coordinates of the vertices C and C' of the triangles.
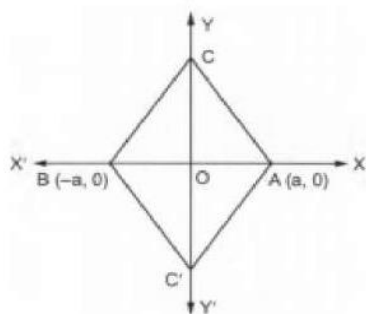
29. If two positive integers p and q are written as $p = a^2b^3$ and $q = a^3 b$, a and b are a prime number then. **[3]**
Verify. LCM $\times$ (p.q.) $\times$ HCF (p.q.) = pq

30. A peacock is sitting on the top of a tree. It observes a serpent on the ground making an angle of depression of **[3]**
30°. The peacock catches the serpent in 12 s with the speed of 300 m/min. What is the height of the tree?

OR

From an aeroplane vertically above a straight horizontal road, the angles of depression of two consecutive mile stones on opposite sides of the aeroplane are observed to be α and β. Show that the height in miles of aeroplane above the road is given by $\frac{\tan \alpha \tan \beta}{\tan \alpha + \tan \beta}$.

31. Compute the mode of the following data: **[3]**

| Class Interval	1 - 5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50
Frequency	3	8	13	18	28	20	13	8	6	4

Section D

32. A fraction becomes $\frac{1}{3}$ if 1 is subtracted from both its numerator and denominator. If 1 is added to both the **[5]**
numerator and denominator, it becomes $\frac{1}{2}$. Find the fraction.

OR

A person invested some amount at the rate of 12% simple interest and the remaining at 10%. He received yearly interest of ₹ 130 but if he had interchanged the amount invested, he would have received ₹ 4 more as the interest. How much money did he invest at different rates?

33. In figure AB and CD are two parallel tangents to a circle with centre O. ST is tangent segment between the two **[5]**
parallel tangents touching the circle at Q. Show that $\angle SOT = 90^o$
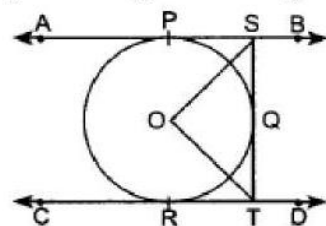
34. Find upto three places of decimal the radius of the circle whose area is the sum of the areas of two triangles **[5]**
whose sides are 35, 53, 66 and 33, 56, 65 measured in centimetres (Use $\pi = 22/7$).

OR

Two circular beads of different sizes are joined together such that the distance between their centres is 14 cm. The sum of their areas is 130π cm^2. Find the radius each bead.

35. One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting **[5]**

   i. a king of red suit

ii. a face card

iii. a red face card

iv. a queen of black suit

v. a jack of hearts

vi. a spade.

Section E

36. **Read the text carefully and answer the questions:** [4]

A hot air balloon is rising vertically from a point A on the ground which is at distance of 100m from a car parked at a point P on the ground. Amar, who is riding the balloon, observes that it took him 15 seconds to reach a point B which he estimated to be equal to the horizontal distance of his starting point from the car parked at P.
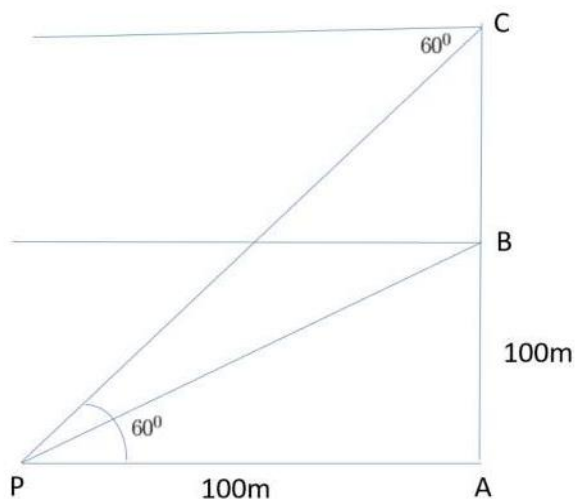
(i) Find the angle of depression from the balloon at a point B to the car at point P.

(ii) Find the speed of the balloon?

(iii) After certain time Amar observes that the angle of depression is $60°$. Find the vertical distance travelled by the balloon during this time.

OR

Find the total time taken by the balloon to reach the point C from ground?

37. **Read the text carefully and answer the questions:** [4]

The students of a school decided to beautify the school on an annual day by fixing colourful flags on the straight passage of the school. They have 27 flags to be fixed at intervals of every 2 metre. The flags are stored at the position of the middlemost flag. Ruchi was given the responsibility of placing the flags. Ruchi kept her books where the flags were stored. She could carry only one flag at a time.

(i) How much distance did she cover in pacing 6 flags on either side of center point?

(ii) Represent above information in Arithmetic progression

(iii) How much distance did she cover in completing this job and returning to collect her books?

OR

What is the maximum distance she travelled carrying a flag?

38. **Read the text carefully and answer the questions:**

Shanta runs an industry in a shed which was in the shape of a cuboid surmounted by half cylinder. The dimensions of the base were 15 m × 7 m × 8 m.

The diameter of the half cylinder was 7 m and length was 15 m.
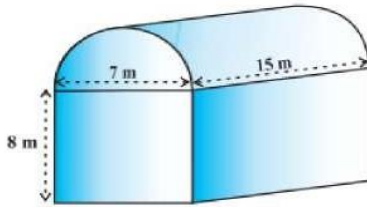
(i) Find the volume of the air that the shed can hold.

(ii) If the industry requires machinery which would occupy a total space of 300 m^3 and there are 20 workers each of whom would occupy 0.08 m^3 space on an average, how much air would be in the shed when it is working?

(iii) Find the surface area of the cuboidal part.

OR

Find the surface area of the cylindrical part.