ARMY PUBLIC SCHOOL, OLD CANTT, PRAYAGRAJ
ANNUAL EXAMINATION (2024-25)
CLASS-9th

TIME – 3 hrs MATHEMATICS M.M.- 80

General Instructions:

- This Question Paper has 5 Sections A-E.
- Section **A** has 20 MCQs carrying 1 mark each.
- Section **B** has 5 questions carrying 02 marks each.
- Section **C** has 6 questions carrying 03 marks each.
- Section **D** has 4 questions carrying 05 marks each.
- Section **E** has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 2, 1 and 1 marks each respectively.
- 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.

SECTION-A

Section A consists of 20 questions of 1 mark each.

1. Which of the following is an irrational number?
(a) 3.14 (b) 3.141414... (c) 3.1444444.... (d) 3.14114111411114....

2. The number obtained by rationalising the denominator of $\frac{1}{\sqrt{5}-2}$ is
(a) $\sqrt{5}+2$ (b) $\frac{\sqrt{5}+2}{3}$ (c) $\frac{\sqrt{5}-2}{3}$ (d) $\frac{\sqrt{5}+2}{21}$

3. $\sqrt{5}$ is a polynomial of degree :
(a) 0 (b) 2 (c) $\frac{1}{2}$ (d) 1

4. Zero of the zero polynomial is :
(a) 0 (b) 1 (c) any real number (d) not defined

5. In class interval 10 - 20, 20 - 30, 20 is taken in :
(a) the interval 10-20 (b) the interval 20-30 (c) both the intervals 10-20, 20-30 (d) none of these intervals

6. A point on the x-axis is of the form
(a) (x , y) (b) (0 , y) (c) (x , 0) (d) (x , x)

7. Two complementary angle are such that two times the measure of one is equal to three times the measure of the other. The measure of the smaller angle, is :
(a) 45^0 (b) 30^0 (c) 36^0 (d) 50^0

8. We get a rhombus by joining the midpoint of the sides of a
(a) parallelogram (b) rhombus (c) rectangle (d) triangle

9. If the surface area of a sphere is $144\pi\ m^2$, then its volume is :
(a) $288\pi\ m^3$ (b) $188\pi\ m^3$ (c) $300\pi\ m^3$ (d) $316\pi\ m^3$

10. The ordinate of any point on x-axis is
(a) 0 (b) 1 (c) -1 (d) any number

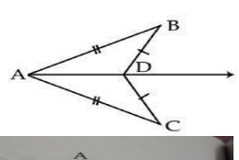
11. Things which are double of the same thing are :
(a) equal (b) unequal (c) halves of the same thing (d) double of the same thing

12. The area of an equilateral triangle with side $6\sqrt{3}$ cm is :
(a) 27 cm^2 (b) $27\sqrt{3}\ cm^2$ (c) $18\sqrt{3}\ cm^2$ (d) $54\sqrt{3}\ cm^2$

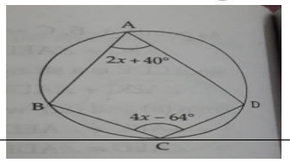
13. The sides of a triangle are 56 cm, 60 cm and 52 cm. Area of the triangle is :
(a) 1322 cm^2 (b) 1311 cm^2 (c) 1344 cm^2 (d) 1392 cm^2

14. If $\Delta ABC \cong \Delta PQR$, then which of the following is true?
(a) AB = RP (b) CA = RP (c) AC = RQ (d) CB = QP

15. If Δ ABD $\cong \Delta$ACD, AB = AC , BD = CD. Name the criteri- by which the triangles are congruent?
(a) SSS (b) RHS
(c) SAS (d) ASA

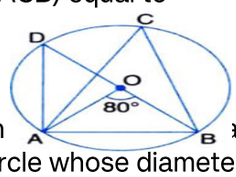


16. If ABCD is a cyclic quadrilateral, then x equal to



(a) 43^0 (b) 30^0
(c) 34^0 (d) 40^0

17. If O is the centre of the circle. If ∠AOB, then (∠ADB + ∠ACB) equal to



(a) 80^0 (b) 40^0
(c) 60^0 (d) 100^0

18. Which of the following needs a proof?
(a) Axiom (b) Theorem (c) Definition ate

19. Assertion (A) : AB and CD are two parallel chords of a circle whose diameter is AC then
AB ≠ CD
Reason (R) : Perpendicular from the centre bisect the chord.
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 radii of two cones are in the ratio 1 : 3, then ratio of their height is 3 : 2.
Reason (R) : Volume of the cone is $\frac{1}{3}\pi r^2 h$.
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

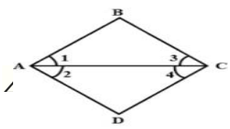
SECTION-B

Section B consists of 5 questions of 2 marks each.

21. Express 1.272727... in the form of $\frac{p}{q}$, where p and q are integers and q ≠ 0.

22. It is know that x + y = 10 and x = z. Show that z + y = 10.

OR

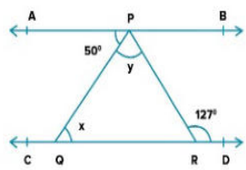


In the given figure, we have ∠1 = ∠2 and ∠2 = ∠3. Show that ∠1 = ∠

23. Use suitable identities to find the following products:
(2x + 4) (2x - 10)

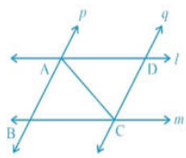
OR

Factorise the following using appropriate identities:
$4y^2 - 4y + 1$



24. In Fig. if AB // CD, ∠APQ = 50^0 and ∠PRD = 127^0, find x + y.

25. l and m are two parallel lines intersected by another pair of pa liness p and q. Show that ΔABC ≅ ΔCDA.



SECTION- C

Section C consists of 6 questions of 3 marks each.

26. A conical tent is 10 m high and the radius of its base is 24 m . Find
(i) Slant height of the tent
(ii) Cost of the canvas required to make the tent, if the cost of 1 m^2 canvas is Rs. 70.

OR

A hemispherical bowl made of brass has inner diameter 10.5 cm. Find the cost of tin - plating it on the inside at the rate of Rs 16 per 100 cm^2.

27. The sides of a triangular ground are 5m, 7 m and 8m respectively. Find the cost of levelling the ground at the rate of Rs. 10 per m^2 (use $\sqrt{3}$ = 1.73)

OR

The sides of a triangle are in the ratio of 12 : 17 : 25 and its perimeter is 540 cm. Find its area.

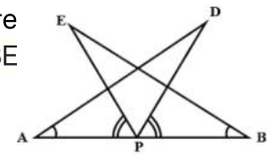
28. Prove that a cyclic parallelogram is rectangle.

29. ABC is triangle right angled at C. A line through the mid - point M of hypotenuse AB and parallel to BC intersects AC at D. Show that
(i) D is the mid - point of AC

(ii) MD is perpendicular to AC

(iii) CM = MA = $\frac{1}{2}$ AB

30. AB is a line segment and P is its mid - point. D and E are points on the same side of AB such that ∠BAD = ∠ABE and ∠EPA = ∠DPB . Show that



(i) ΔDAP ≅ ΔEBP

(ii) AD = BE

31. If x = 1 and y = 6 is a solution of the equation 8x – ay + a^2 = 0, find the values of a.

SECTION- D

Section D consists of 4 questions of 5 marks each.

32. Draw histogram of the following data:

No. of letters	1 - 4	4 - 6	6 - 8	8 – 12	12 - 20
No. of surnames	6	30	44	16	4

33. Monica has a piece of canvas whose area is 551 m^2. She uses it to have a conical tent made, with a base radius of 7 m . Assuming that all the stitching margins and the wastage incurred while cutting, amounts to approximately 1 m^2, find the volume of the tent that can be made with it.

OR

The volume of a right circular cone is 9856 cm^2. If the diameter of the base is 28 cm, find

(i) Height of the cone **(ii)** Slant height of the cone **(iii)** Curved surfaced area of the cone.

34. To prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point of the remaining part of the circle.

OR

Three girls Reshma, Salma and Mandip are playing a game by standing on a circle of radius 5m drawn in a park. Reshma throws a ball to Salma, Salma to Mandip, Mandip to Reshma. If the distance between Reshma and Salma and between Salma and Mandip is 6m each, what is the distance between Reshma and Mandip?

35. Prove that: $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} - \frac{1}{\sqrt{5}-2} = 5$

SECTION- E

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.

36. Maths teacher draw a straight line AB shown on the blackboard as per the following figure.

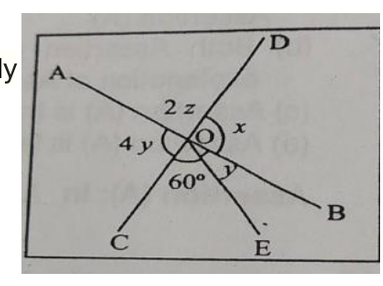
(a) Now he told to draw another line CD as in the fig.

(b)The teacher told Ajay to mark ∠AOD as 2z

(c) Suraj was told to mark ∠AOC as 4y

(d) Clive made an angle ∠COE = 60^0

(e) Peter marked ∠BOE and ∠BOD as y and x respectively



Now answer the following questions:

(i) What is the value of x?

(ii) What is the value of y?

(iii) What should be the value of x + 2z + 4y?

OR

What is the relation between y and z

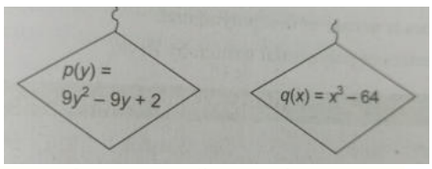
37. A school organized a mathematical exhibition in the school premises. To make the decoration more attractive, children made hangings related to Mathematics. One

of the students made 2 hangings with polynomials written on them.
Based on the given information, answer the following questions:

(i) What type of polynomials are p(y) and q(x).

(ii) Write the coefficients of y^2 and x^3.

(iii) What is the value of p(-2) ?



OR

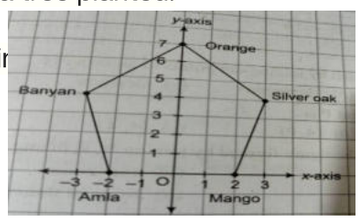
What is the value of q(7) ?

38. On environment day, class IX students got five plants of mango, silver oak, orange, banyan and amla from soil department. Student planted the plants and noted heir locations as (x, y). Observing the given graph, answer the following.

(i) In the given figure, the abscissa of point, where the Amla tree planted.

(ii) The distance of Silver Oak tree from x-axis.

(iii) The coordinates, where the line joining the location poi
Banyan and Silver Oak tree meet the y-axis.



OR

What is the abscissa and ordinate of mango tree .