KENDRIYA VIDYALAYA SANGATHAN, LUCKNOW REGION

Session Ending Examination (2018-19) (Set 2)

LUCKNOW REGION

Class – IX

Subject - Mathematics

Time : 3 Hrs **M.M.: 80**

General Instructions:

(i) All the questions are compulsory.

(ii) The question paper consists of 30 questions divided into 4 sections A, B, C and D.

(iii) Section A comprises of 6 questions of 1 mark each. Section B comprises of 6 questions of 2 marks each. Section C comprises of 10 questions of 3 marks each. Section D comprises of 8 questions of 4 marks each.

(iv) There is no overall choice. However, an internal choice has been provided in two questions of 1 mark each, two questions of 2 marks each, four questions of 3 marks each and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.

(v) Use of calculators is not permitted.

Section – A (1 Mark each)

Q1. Find a rational number between 2 and 3.

Q2. Find remainder when x^3+3x^2+3x+1 is divided by $x+1$.

Q3. Write the quadrant of (-1,-3) and (4,-4).

OR

Write the abscissa of any point on y-axis.

Q4. Check whether (2,-2) is a solution of $2x-y = 6$ or not.

Q5. In a ΔPQR, if $\angle Q = \angle R = 45^\circ$, which is the longest side?

Q6. Write the total surface area of a hemisphere of radius r.

OR

Find the ratio of volumes of a cylinder and a cone having equal radii of their bases and of equal heights.

Section – B (2 Marks each)

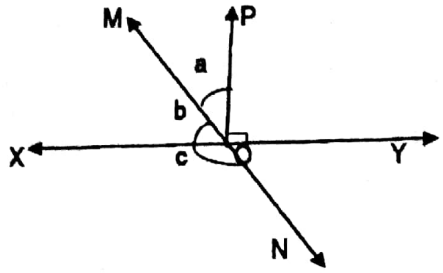
Q7. Evaluate using identity: $(102)^3$

OR

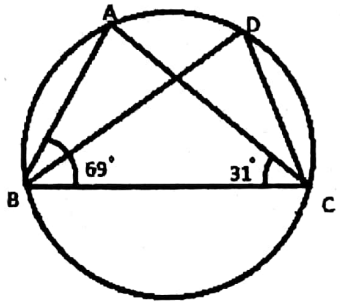
Expand using identity: $(4a - 2b - 3c)^2$

Q8. Write any two Euclid's postulates.

Q9. In given figure, lines XY and MN intersect at O. If $\angle POY = 90°$ and a:b =2:3, find c.



Q10.In figure, $\angle ABC = 69°$, $\angle ACB = 31°$,find $\angle BDC$.



Q11. The length, breadth and height of a room are 5m ,4m and 3m respectively. Find the cost of white washing the walls of the room and the ceiling at the rate of Rs. 7.50 per m^2.

OR

A joker's cap is in the form of a right circular cone of base radius 7 cm and height 24 cm. Find the area of the sheet required to make 10 such caps.

Q12. The record of a weather station shows that out of the past 250 consecutive days, its weather forecasts were correct 175 times.

(i) What is the probability that on a given day it was correct?

(ii) What is the probability that it was not correct on a given day?

Section – C (3 Marks each)

Q13. Express 1.272727..... in the form p/q.

Q14. Find 'a' for which $x^4 - x^3 - 11x^2 - x + a$ is divisible by x+3.

Q15. Factorise $x^3 - 23x^2 + 142x - 120$.

OR

Without actually calculating the cubes, find the value of $(28)^3 + (-15)^3 + (-13)^3$

Q16. Solve $2x + 1 = x - 3$ and represent it on (i) the number line (ii) the Cartesian plane.

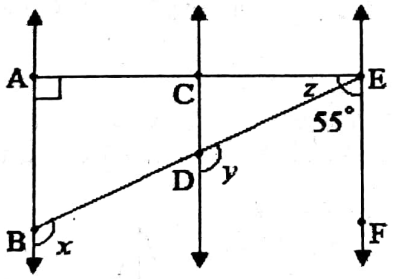
Q17. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.

OR

If the non-parallel sides of a trapezium are equal, prove that it is cyclic.

Q18. Plot the points A(-2,2), B(3,2), C(3,-1) and D(-2,-1) and join them in given order ABCD. Name the figure and find its area also.

Q19. In a given figure, AB||CD and CD||EF. Also EA ⊥ AB. If ∠BEF = 55°, find the value of x, y and z.

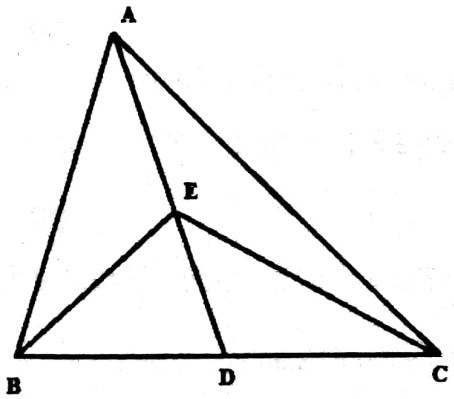


OR

It is given that ∠XYZ = 64° and XY is produced to point P. Draw a figure from the given information. If ray YQ bisects ∠ZYP, find ∠XYQ and reflex ∠QYP.

Q20. In ΔABC ,E is the mid-point of median AD. Show that

ar(ΔBED) = ¼ ar (ΔABC)



Q21. Sides of a triangle are in the ratio of 25:12:17 and its perimeter is 540cm. Find its area.

OR

An isosceles triangle has perimeter 30 cm and each of the equal sides is 12 cm. Find the area of the triangle.

Q22. The diameter of a roller is 84cm and its length is 120cm. It takes 500 complete revolutions to move once over to level a playground. Find the area of the playground in m^2 .

Section D – (4 marks each)

Q23. If $x = 3+\sqrt{8}$, find the value of $x^2 + \frac{1}{x^2}$

OR

Rationalise the denominator of: $\frac{3+\sqrt{7}}{3-\sqrt{7}}$

Q24. Draw the graph of linear equation 3x+2y=6. Find the coordinates of the points where the line intersects x-axis and y-axis.

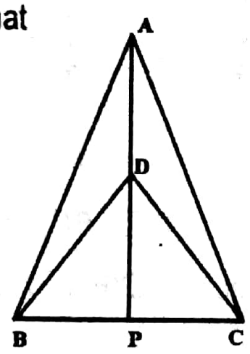
Q25. ΔABC and ΔDBC are two isosceles triangles on same base BC and vertices A and D are on same side BC. If AD is extended to intersect BC at P, show that

(i) $\Delta ABD \cong \Delta ACD$

(ii) $\Delta ABP \cong \Delta ACP$

(iii) AP bisects $\angle A$ as well as $\angle D$.

(iv) AP is perpendicular bisector of BC.



Q26. Two parallel lines l and m are intersected by a transversal p. Show that the quadrilateral formed by the bisectors of interior angles is a rectangle.

OR

Show that the bisectors of angles of a parallelogram form a rectangle.

Q27. Construct a triangle PQR in which QR=6cm, $\angle Q = 60^\circ$ and PR – PQ = 2cm.

OR

Construct a Δ XYZ in which $\angle Y = 30^\circ$, $\angle Z = 90^\circ$ and XY+YZ+ZX = 11cm.

Q28. The diameter of the moon is approximately one-fourth of the diameter of the earth. Find the ratio of

(i) volume of the earth to the volume of the moon?

(ii) surface area of the earth to the surface area of the moon?

Q29. Three coins are tossed simultaneously 200 times with the following frequencies of different outcomes:

Outcome	3 heads	2 heads	1 head	No head
Frequency	23	72	77	28

Find the probability of getting:-

(i) 2 heads

(ii) Either 2 head or 1 head

(iii) More than 1 head

(iv) 3 Tails

Q30. The following table gives the distribution of students of two sections according to the marks obtained by them

Section A		**Section B**	
Marks	Frequency	Marks	Frequency
0-10	3	0-10	5
10-20	9	10-20	19
20-30	17	20-30	15
30-40	12	30-40	10
40-50	9	40-50	1

Represent the marks of the students of both the sections on the same graph by two frequency polygons.

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