INDIAN CENTRAL SCHOOL - KUWAIT
ANNUAL EXAMINATION – FEBRUARY 2024

CLASS IX
11-02-24

MATHEMATICS (041)

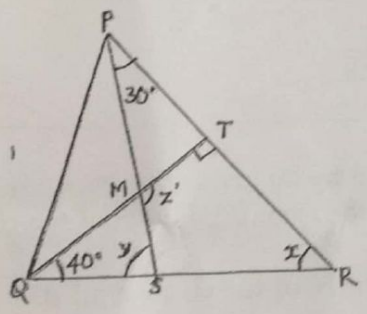
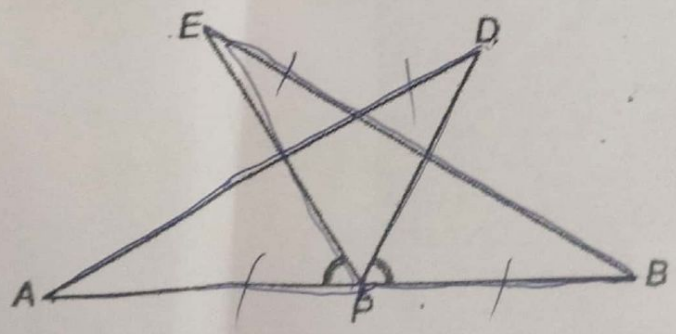
TIME: 3 Hrs
Maximum Marks : 80

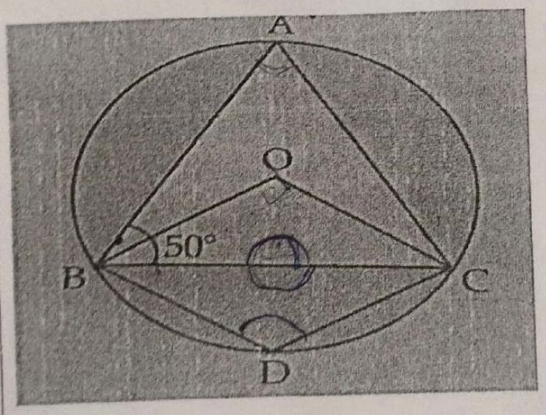
GENERAL INSTRUCTIONS:

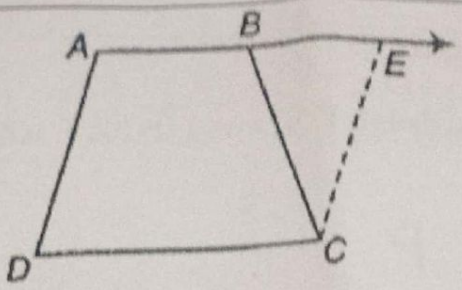
1. This Question Paper has 5 Sections A-E. [pages 1-6]
2. Section A has 20 MCQ's carrying 1 mark each.
3. Section B has 5 Questions carrying 2 marks each.
4. Section C has 6 Questions carrying 3 marks each.
5. Section D has 4 Questions carrying 5 marks each.
6. Section E has 3 case based integrated units of assessment (4 marks each) with subparts of the values of 1,1 and 2 marks each respectively.
7. All Questions are compulsory.
8. Draw neat figures wherever required. Take $\pi = \frac{22}{7}$ wherever required if not stated.

	SECTION A	
	Section A consists of 20 Questions of 1 mark each.	
S.NO.		MARKS
1.	Which of the following numbers is an irrational number ? a) $\sqrt{23}$ b) $\sqrt{225}$ c) 0.3796 d) 7.478478478.....	1
2.	The value of the polynomial x^2-x-1 at $x= -1$ is : a) -3 b) 1 c) -1 d) 0	1
3.	Zero of the zero polynomial is : a) 0 b) 1 c) Any real number d) Not defined	1
4.	$x^2-4x-21$= ? a) (x-7) (x+3) b) (x-7) (x-3) c) None of these d) (x+7) (x-3)	1
5.	The abscissa of any point on y-axis is : a) 1 b) any number c) -1 d) 0	1
6.	The co-ordinate of the point which lies on y-axis at a distance of 4 units in negative direction of y-axis is : a) (0 , 4) b) (4 , 0) c) (0 , -4) d) (-4 , 0)	1
7.	If (-2,5) is a solution of $2x + my = 11$, then the value of 'm' is : a) -2 b) 2 c) 3 d) -3	1
8.	An exterior angle of a triangle is equal to 100° and two interior opposite angles are equal. Each of these angles is equal to : a) 40° b) 80° c) 75° d) 50°	1
9.	In ΔABC , if $\angle A = 53°$ and $\angle C = 44°$ then the value of $\angle B$ is : a) 73° b) 83° c) 93° d) 46°	1
10.	In ΔABC and ΔPQR , $AB = PR$ and $\angle A = \angle P$. The two triangles will be congruent by SAS axiom if : a) $BC = QR$ b) $AC = PQ$ c) $AC = QR$ d) $BC = PR$	1
11.	E and F are mid-points of the sides AB and AC of ΔABC. If AB = 6cm, BC = 5cm , AC = 6cm then EF = ? a) 4cm b) 3cm c) 2.5cm d) None of these	1

12.	A chord of length 12cm of a circle is at a distance of 8cm from its centre. The radius of the circle is : a) 4cm b) 6cm c) 8cm d) 10cm	1
13.	ABCD is a cyclic quadrilateral such that $\angle ADB = 30°$ and $\angle DCA = 80°$, then $\angle DAB = ?$ a) 125° b) 70° c) 100° d) 150°	1
14.	Find the length of side of an equilateral triangle whose area is $9\sqrt{3}$ cm^2. a) 1cm b) 2cm c) 3cm d) 6cm	1
15.	The height of a cone is 16cm and the base radius is 12cm. The measure of the slant height of the cone is : a) 18cm b) 20cm c) 25cm d) 30cm	1
16.	If the TSA of cylinder is 450cm^2 and its base circumference is 50cm then the sum of its height and radius is : a) 9cm b) 50cm c) 45cm d) 55cm	1
17.	If the volume of a sphere is numerically equal to its surface area , then the diameter of the sphere is : a) 6cm b) 8cm c) 4cm d) 12cm	1
18.	Class mark of a class interval 15 – 25 is : a) 10 b) 20 c) 40 d) 5	1
19.	DIRECTION: In question number 19 and 20 , a statement of assertion(A) is followed by a statement of Reason (R). Choose the correct option Assertion(A) : 0.271 is a terminating decimal and we can express this number as $\frac{271}{1000}$ which is of the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$. Reason (R) : A terminating or non-terminating decimal expansion can be expressed as rational number. 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	1
20.	Assertion(A) : ABCD is a square.AC and BD intersect at O. The measure of $\angle AOB = 90°$. Reason (R) : Diagonals of a square bisect each other at right angles. 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	1
	SECTION B	
	Section B consists of 5 questions of 2 marks each	
21.	Factorise using suitable identity: $125x^3+27y^3+8z^3-90xyz$	2
22.	Cost of 2 kg apples and 3 kg oranges together is Rs 125. Write a linear equation to represent this by taking price of 1 kg apple as x and that of 1 kg orange as y. Write the equation in standard form and identify the values of a,b and c.	2
23.	Show that each angle of a rectangle is a right angle.	2

	OR Prove that the bisectors of any two adjacent angles of a parallelogram intersect at right angle.	
24.	Prove that a cyclic parallelogram is a rectangle. OR ABCD is a cyclic quadrilateral whose diagonals intersect at E. If $\angle DBC = 55°$ and $\angle BAC = 45°$, find $\angle BCD$	2
25.	The slant height and base diameter of a conical tomb are 25m and 14m respectively. Find the cost of white washing its curved surface at the rate of Rs 210 per 100 m^2.	2
	SECTION C	
	Section C consists of 6 questions of 3 marks each.	
26.	Expand using suitable identity : (a) $(3a-7b-c)^2$ (b) $(2x+1)^3$	3
27.	If QT ⊥ PR, $\angle TQR = 40°$ and $\angle SPR = 30°$, find angles x, y and z. 	3
28.	AB is a line segment and P is its midpoint. D and E are points on the same side of AB such that $\angle BAD = \angle ABE$ and $\angle EPA = \angle DPB$. Show that i) $\Delta DAP \cong \Delta EBP$ ii) AD = BE  OR AD is an altitude of an isosceles triangle ABC in which AB = AC. Show that i) AD bisects BC ii) AD bisects $\angle A$	3
29.	If two circles intersect at two points, prove that their centres lie on the perpendicular bisector of the common chord.	3

	OR PQ and RS are two parallel chords of a circle whose centre is O and radius is 10cm. If PQ = 16cm and RS = 12cm, find the distance between PQ and RS when they lie on the same side of centre O.	
30.	The sides of a triangle are in the ratio 13:14:15 and its perimeter is 84cm.Find the area of the triangle.	3
31.	A dome of a building is in the form of a hemisphere. From inside , it was white-washed at the cost of Rs 498.96.If the cost of white-washing is Rs 2 per square metre, find the i) inside surface area of the dome ii)volume of the air inside the dome.	3
	SECTION D	
	Section D consists of 4 questions of 5 marks each.	
32.	Find the values of 'a' and 'b' if $\frac{7+3\sqrt{5}}{3+\sqrt{5}} - \frac{7-3\sqrt{5}}{3-\sqrt{5}} = a + \sqrt{5}\,b$ OR Simplify the following by rationalising the denominator: $\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} - \frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}} - \frac{3\sqrt{2}}{3\sqrt{2}+\sqrt{15}}$	5
33.	a)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. b)In the given figure, O is the centre of the circle and BA = AC. If ∠ABC = 50°, find ∠BOC and ∠BDC.  	3 2
34.	ABCD is a trapezium in which AB ∥ CD and AD=BC. Show that i) ∠A = ∠B ii) ∠C = ∠D iii) ΔABC ≅ ΔBAD	



OR

ABCD is a rectangle and P,Q,R and S are mid-points of the sides AB, BC , CD and DA respectively. Show that the quadrilateral PQRS is a rhombus .

35. Draw a histogram and a frequency polygon for the following data in the same graph: 5

Height (in cm)	120-130	130-140	140-150	150-160	160-170	170-180
Number of persons	12	24	33	15	10	8

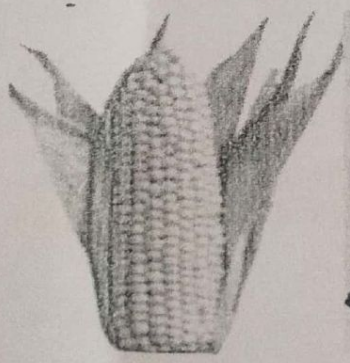
SECTION E

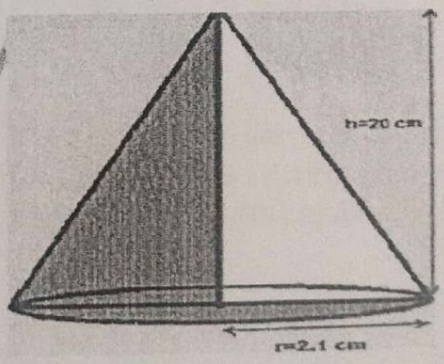
Case study based questions are compulsory

36. Read the text carefully and answer the questions:

Once upon a time in Ghaziabadwas a corn cob seller. During the lockdown period in the year 2020, his business was almost lost. So, he started selling corn grains online through Amazon and Flipcart.Just to understand how many grains he will have from one corn cob, he started counting them.

Let's assume that one corn cob shaped somewhat like a cone, has the radius of its broadest end as 2.1cm and length as 20cm. { $\sqrt{404.41} = 20.11$ }

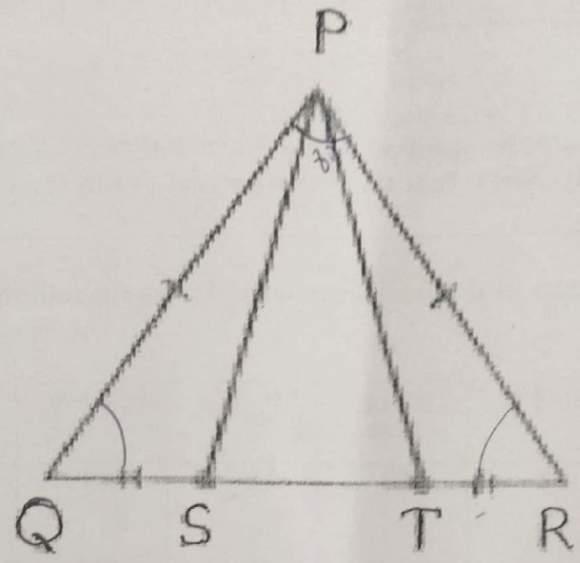




(i)Find the curved surface area of the cone cob.

(ii)Find the volume of a cone cob.

(iii)How many such cobs can be stored approximately in a carton of size 20cm x 25cm x 20cm.

37.	**Read the text carefully and answer the questions:** **A children's park is in the shape of isosceles triangle PQR with PQ=PR, S and T are points on QR such that QT = RS.**  **i)State the conditions required to prove Δ PQS ≅ Δ PRT** **ii)Name the type of Δ PST** **iii)If ∠ QPR = 80° find ∠ PQR**	**2** **1** **1**
38.	**Read the text carefully and answer the questions:** **In countries like USA and Canada, temperature is measured in Fahrenheit, whereas in countries like India , it is measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius:** $F = \frac{9}{5}C + 32$ **i)Express C in terms of F .** **ii)If the temperature is 0°C , what is the temperature in Fahrenheit.** **iii)At what temperature , both Celsius and Fahrenheit are numerically equal.**	**1** **1** **2**

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