



ITL PUBLIC SCHOOL
ANNUAL EXAMINATION (2019-20)

Date: 28.02.20

Class: IX

MATHEMATICS (041) – SET A

Time: 3 hrs

M. M: 80

General Instructions:

- Read the question paper carefully and answer legibly.
- All questions are compulsory.
- The question paper consists of 40 questions divided into four sections A, B, C and D.
- Section A comprises of 20 questions of 1 mark each, Section B comprises of 6 questions of 2 marks each, Section C comprises of 8 questions of 3 marks each and Section D comprises of 6 questions of 4 marks each.
- Use of calculators is not permitted.

SECTION – A

MULTIPLE CHOICE QUESTIONS

Select the correct option out of the four possible options given after the statement of the question:

- 1 The value of $(512)^{\frac{-2}{9}}$ is: 1
(a) $\frac{1}{4}$ (b) $\frac{1}{8}$ (c) $\frac{1}{2}$ (d) $\frac{1}{512^{\frac{2}{9}}}$
- 2 A chord is at a distance of 8 cm from the centre of a circle of radius 17 cm. The length of the chord is: 1
(a) 25 cm (b) 12.5 cm (c) 30 cm (d) 9 cm
- 3 The zeroes of the polynomial $x(x - 1)(x + 2)$ are: 1
(a) 0, -1, -2 (b) 0, 1, -2 (c) 0, -1, 2 (d) 0, 1, 2
- 4 The perimeter of equilateral triangle is 60 m. The area is: 1
(a) $10\sqrt{3} \text{ m}^2$ (b) $15\sqrt{3} \text{ m}^2$ (c) $20\sqrt{3} \text{ m}^2$ (d) $100\sqrt{3} \text{ m}^2$
- 5 If the total surface area of a sphere is 5544 cm^2 , then the diameter of the sphere is: 1
(a) 21 cm (b) 42 cm (c) 10.5 cm (d) 63 cm
- 6 If the coordinates of two points A and B are (10, 5) and (-7, -4) respectively. Then the value of (abscissa of A – ordinate of B) is: 1
(a) -14 (b) 14 (c) -10 (d) -12

FILL IN THE BLANKS

Complete the following statements with appropriate answer(s) in the blank space(s):

- 7 The range of the data 14, 27, 29, 61, 45, 15, 9, 18 is _____. 1
- 8 An exterior angle of a triangle is 110° and its two interior opposite angles are equal. Then, the measure of each of equal angles is _____. 1

- 9 A diagonal of a parallelogram divides it into two _____ triangles. 1

OR

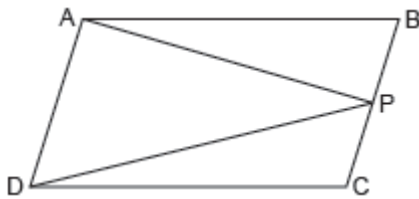
Diagonals of rhombus bisect each other at _____ angles.

- 10 The construction of a triangle is possible only if the sum of two sides is _____ than the third side. 1
- 11 The probability of choosing a vowel from the English alphabets is _____. 1

VERY SHORT ANSWER QUESTIONS

Each of the following questions have to be answered in one word or one sentence:

- 12 If area of parallelogram ABCD is 80 cm^2 , then find area($\triangle ADP$). 1

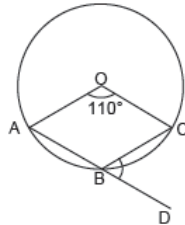


- 13 In $\triangle ABC$, if $\angle A = 45^\circ$ and $\angle B = 70^\circ$, then name the smallest side of the triangle. 1
- 14 Write a binomial of degree 5. 1

OR

Find the value of $515^2 - 512^2$.

- 15 If O is the centre of the circle as shown in figure, find $\angle CBD$. 1



- 16 Find the mean of first five prime numbers. 1
- 17 Give the equation of a line passing through (3, 7). 1

TRUE OR FALSE

State whether the following statements are true or false:

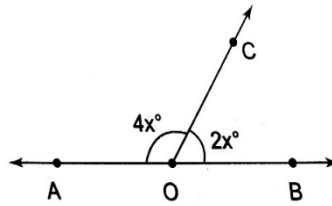
- 18 If four sides of a quadrilateral are equal, it is a parallelogram. 1
- 19 $\sqrt{25}$ is an irrational number. 1
- 20 The point of the form $(-a, a)$ always lie on the line $x - y = 0$. 1

SECTION – B

- 21 A cuboidal water tank is 6 m long, 5 m wide and 4.5 m deep. How many litres of water can it hold? 2
- 22 In $\triangle ABC$, $\angle A + \angle B = 110^\circ$, $\angle C + \angle A = 135^\circ$. Find $\angle A$. 2

OR

In the given figure, find the value of x .



- 23 Construct an angle of measure 60° . Also, justify the construction. 2
- 24 Express $0.\overline{26}$ in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$. 2

OR

Represent $\sqrt{10}$ on the number line.

- 25 Prove that if chords of congruent circles subtend equal angles at their centres, then the chords are equal. 2
- 26 a) Factorise : $9x^2 - 12x + 4$ 2
b) Expand $(3a - 2b)^3$

SECTION – C

- 27 The sides of a triangle are in the ratio 12:17:25 and its perimeter is 540 cm. Find its area. 3

OR

If the sides of a rhombus are 6 cm each and one diagonal is 8 cm long. Find the height of the rhombus.

- 28 A part of monthly expenses of a family on milk is fixed as Rs. 500 and the remaining varies with the quantity of milk taken extra at the rate of Rs. 20 per Kg. Taking the quantity of milk required extra as x kg and the total expenditure as Rs. y , write a linear equation for this information and draw its graph. 3
- 29 Show that $(x - 2)$ is a factor of the polynomial $2x^3 - 3x^2 - 17x + 30$ and hence find its other factors. 3

OR

Using a suitable identity, factorize $p^3(q - r)^3 + q^3(r - p)^3 + r^3(p - q)^3$

- 30 The table shows the number of people visited the “Good living Pavilion” in a trade fair during different times of a day: 3

Time	Number of People
9 am to 11 am	175
11 am to 1 pm	125
1 pm to 3 pm	225
3 pm to 5 pm	200
5 pm to 7 pm	120

Find the probability that a randomly chosen person visited the pavilion

- a) after 9 am but before 1 pm
b) between 11 am and 3 pm
c) after 3 pm

- 31 The points scored by a basketball team in a series of matches are as follows: 3
17, 2, 7, 27, 25, 5, 14, 18, 10, 24, 48, 10, 8, 7, 10, 28.

Find the median and mode for the given data.

- 32 The volume of a right circular cone is 9856 cm^3 . If the diameter of the base is 28 cm, find 3
a) height of the cone
b) slant height of the cone
c) curved surface area of the cone

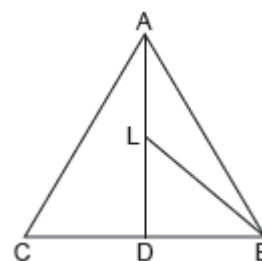
OR

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 meter, find the

- a) inside surface area of the dome.
b) volume of the air inside the dome.

- 33 In the given figure, D is the mid-point of BC and L is the mid-point of AD. Prove that 3

$$\text{ar}(\triangle ABL) = \frac{1}{4} \text{ar}(\triangle ABC)$$



- 34 Plot the points A(0, 0), B(0, 6) and C(5, 0) on graph paper and join them in order. Also find the area of the figure so obtained. 3

SECTION – D

- 35 The heights of 50 students measured to the nearest centimeters found to be as follows: 4
161, 150, 154, 165, 168, 161, 154, 162, 150, 151, 162, 164, 171, 165, 158, 154, 156, 172, 160, 170, 153, 159, 161, 170, 162, 165, 166, 168, 165, 164, 154, 152, 153, 156, 158, 162, 160, 161, 173, 166, 161, 159, 162, 167, 168, 159, 158, 153, 154, 159

- a) Represent the data given above by a grouped frequency distribution table, taking the class intervals as 160 - 165, 165 - 170 etc.
b) Draw a histogram from the table so obtained.

- 36 Construct a triangle ABC, given its perimeter is 10.4 cm and two angles are 45° and 120° . 4

OR

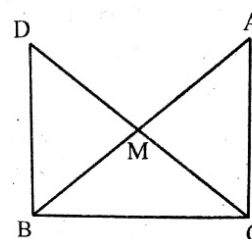
Construct a triangle ABC in which $BC = 8 \text{ cm}$, $\angle B = 45^\circ$ and $AB - AC = 3.5 \text{ cm}$.

- 37 A metal pipe is 77 cm long. The inner diameter of a cross-section is 4 cm, the outer diameter being 4.4 cm. Find the total surface area of the metal used. 4

- 38 In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that $DM = CM$. Point D is joined to point B. Show that: 4

(i) $\triangle AMC \cong \triangle BMD$

(ii) $\triangle DBC$ is a right angle



(iii) $\triangle DBC \cong \triangle ACB$

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

- 39 Prove that the angle subtended by an arc at the centre of the circle is double the angle subtended by it at any point on the remaining part of the circle. 4

OR

If two equal chords of a circle intersect within the circle, prove that the segments of one chord are equal to corresponding segments of the other chord.

- 40 If $(4x)^{2x-1} - (16)^{x-1} = 384$ then, find the value of x. 4

OR

Show that:

$$\frac{1}{\sqrt{4}+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{6}} + \frac{1}{\sqrt{6}+\sqrt{7}} + \frac{1}{\sqrt{7}+\sqrt{8}} + \frac{1}{\sqrt{8}+\sqrt{9}} = 1$$