ILAHI ORIENTAL ARABIC HIGH SCHOOL - CUMBUM

9TH MATHS QUATERLY EXAM (2019-20)

MODEL QUESTION PAPER

MARKS : 100.
TIME : 2½ HR

I CHOOSE THE CORRECT ANSWER

① which of the following is correct?

(1) $\{7\} \in \{1,2,3,4,5,6,7,8,9,10\}$

(2) $7 \in \{1,2,3,4,5,6,7,8,9,10\}$ (3) $7 \notin \{1,2,3,4,5,6,7,8,9,10\}$

(4) $\{7\} \notin \{1,2,3,4,5,6,7,8,9,10\}$

② If $B - A$ is B, then $A \cap B$ is

(1) A (2) B (3) U (4) $\emptyset$

③ If $n(A \cup B \cup C) = 100$, $n(A) = 4x$, $n(B) = 6x$, $n(C) = 5x$, $n(A \cap B) = 20$, $n(B \cap C) = 15$, $n(A \cap C) = 25$ and $n(A \cap B \cap C) = 10$, then the value of x is

(1) 10 (2) 15 (3) 25 (4) 30

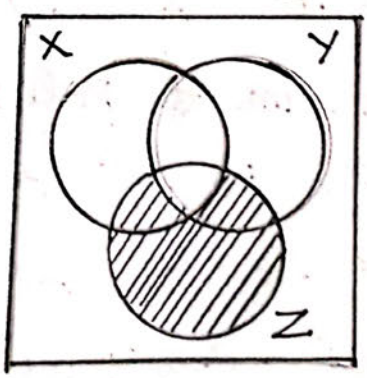
④ The shaded region in the Venn diagram is

(1) $Z - (X \cup Y)$

(2) $(X \cup Y) \cap Z$

(3) $Z - (X \cap Y)$

(4) $Z \cup (X \cap Y)$



(5) Which one of the following is an irrational number

(1) $\sqrt{25}$ (2) $\sqrt{9/4}$ (3) $\frac{7}{11}$ (4) π

(6) If $\frac{1}{7} = 0.\overline{142857}$ then the value of $\frac{5}{7}$ is

(1) $0.\overline{142857}$ (2) $0.\overline{714285}$ (3) $0.\overline{571428}$ (4) 0.714285

(7) When written with a rational denominator, the expression $\frac{2\sqrt{3}}{3\sqrt{2}}$ can be simplified as:

(1) $\frac{\sqrt{2}}{3}$ (2) $\frac{\sqrt{3}}{2}$ (3) $\frac{\sqrt{6}}{3}$ (4) $\frac{2}{3}$

(8) $(0.000729)^{\frac{-3}{4}} \times (0.09)^{\frac{-3}{4}} =$ _____

(1) $\frac{10^3}{3^3}$ (2) $\frac{10^5}{3^5}$ (3) $\frac{10^2}{3^2}$ (4) $\frac{10^6}{3^6}$

(9) If $x^3 + 6x^2 + Kx + 6$ is exactly divisible by $(x+2)$, then $K = ?$

(1) -6 (2) -7 (3) -8 (4) 11

(10) The sum of polynominals $p(x) = x^3 - x^2 - 2$, $q(x) = x^2 - 3x + 1$

(1) $x^3 - 3x - 1$ (2) $x^3 + 2x^2 - 1$ (3) $x^3 - 2x^2 - 3x$

(4) $x^3 - 2x^2 + 3x - 1$

(11) If $p(a)=0$ then $(x-a)$ is a _____ of $p(x)$

(1) divisor (2) quotient (3) reminder (4) factor

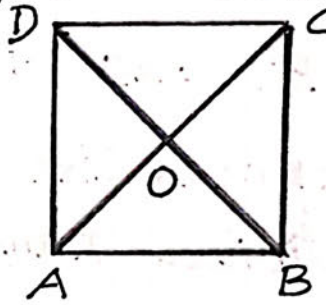
(12) $(a+b-c)^2$ is equal to

(1) $(a-b+c)^2$ (2) $(-a-b+c)^2$ (3) $(a+b+c)^2$

(4) $(a-b-c)^2$

(13) ABCD is a square; diagonals AC and BD meet at O. The number of pairs of congruent triangles with vertex O are

(1) 6 (2) 8 (3) 4 (4) 12



(14) If bisectors of $\angle A$ and $\angle B$ of a quadrilateral ABCD meet at o, then $\angle AOB$ is

(1) $\angle C + \angle D$ (2) $\frac{1}{2}(\angle C + \angle D)$

(3) $\frac{1}{2}\angle C + \frac{1}{3}\angle D$ (4) $\frac{1}{3}\angle C + \frac{1}{2}\angle D$

PART II

Answers any 10 Questions only $10 \times 2 = 20$

(Q.no: 28 is compulsory)

(15) If $A = \{6, 7, 8, 9\}$ and $B = \{8, 10, 12\}$, find $A \Delta B$.

(16) Let $U=\{0,1,2,3,4,5,6,7\}$, $A=\{1,3,5,7\}$ and $B=\{0,2,3,5,7\}$ find the following sets.

(i) $A' \cup B'$ (ii) $(A \cap B)'$

(17) Test for the commutative property of union and intersection of the sets.

$P=\{x : x$ is a real number between 2 and 7$\}$ and

$Q=\{x : x$ is an irrational number between 2 and 7$\}$

(18) If $n(A)=25$, $n(B)=40$, $n(A \cup B)=50$ and $n(B')=25$ find $n(A \cap B)$ and $n(U)$.

(19) Express the following decimal expression into rational numbers.

(i) -5.132 (ii) $17.2\overline{15}$

(20) Find any two irrational numbers between

$$\frac{6}{7} \text{ and } \frac{12}{3}$$

(21) Simplify : $\sqrt{63}-\sqrt{175}+\sqrt{28}$

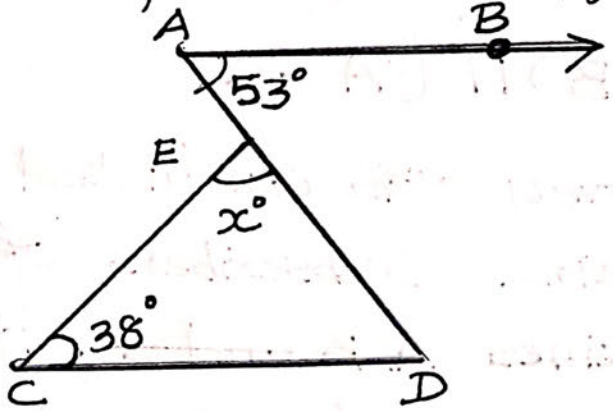
(22) Find the value of a and b if $\frac{\sqrt{7}-2}{\sqrt{7}+2}=a\sqrt{7}+b$

(23) The length of a rectangle is $(3x+2)$ units and it's breadth is $(3x-2)$ units. Find its area in terms of x. what will be the area if $x=20$ units.

(24) Find the value of m, if $(x-2)$ is a factor of the polynominal $2x^3 - 6x^2 + mx + 4$

(25) Factorise : $\frac{1}{x^2} + \frac{1}{y^2} + \frac{2}{xy}$

(26) In the figure, AB is parallel to CD, find x



(27) The lengths of the diagonals of a Rhombus are 12 cm and 16 cm. Find the side of the rhombus.

(28) If $\left[y - \frac{1}{y}\right]^3 = 27$, then find the value of $y^3 - \frac{1}{y^3}$

PART - III

Answers any 10 Questions only $10 \times 5 = 50$

(Q.no: 42 is compulsory)

(29) Verify the associative property of intersection of sets for $A = \{-11, \sqrt{2}, \sqrt{5}, 7\}$ $B = \{\sqrt{3}, \sqrt{5}, 6, 13\}$ and $C = \{\sqrt{2}, \sqrt{3}, \sqrt{5}, 9\}$

(30) Verify $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ using Venn diagrams.

(31) If $A = \{-2, 0, 1, 3, 5\}$, $B = \{-1, 0, 2, 5, 6\}$ and $C = \{-1, 2, 5, 6, 7\}$, then show that $A - (B \cup C) = (A - B) \cap (A - C)$

(32) A Survey was conducted among 200 Magazine Subscribers of three different magazines A, B and C. It was found that 75 members do not subscribe magazine A, 100 members do not subscribe Magazine B, 50 members do not subscribe magazine C and 125 subscribe atleast two of the three magazines. Find

(i) Number of members who subscribe exactly two magazines

(ii) Number of members who subscribe only One magazine.

(33) (a) Find any two irrational numbers between

(i) 0.30100110001111.... and 0.30200200002....

(ii) $\sqrt{2}$ and $\sqrt{3}$

(b) Find any two rational numbers between 2.2360679..... and 2.236505500....

(34) (a) Simplify : $2\sqrt[3]{40} + 3\sqrt[3]{625} - 4\sqrt[3]{320}$

(b) Simplify : $\left[\sqrt{\frac{225}{729}} - \sqrt{\frac{25}{144}}\right] \div \sqrt{\frac{16}{81}}$

(35) Given $\sqrt{2} = 1.414$, find the value of

$\frac{8-5\sqrt{2}}{3-2\sqrt{2}}$ (to 3 places of decimals)

(36) Represent the following numbers in scientific notation:

$\{(0.00003)^6 \times (0.00005)^4\} \div \{(0.009)^3 \times (0.05)^2\}$

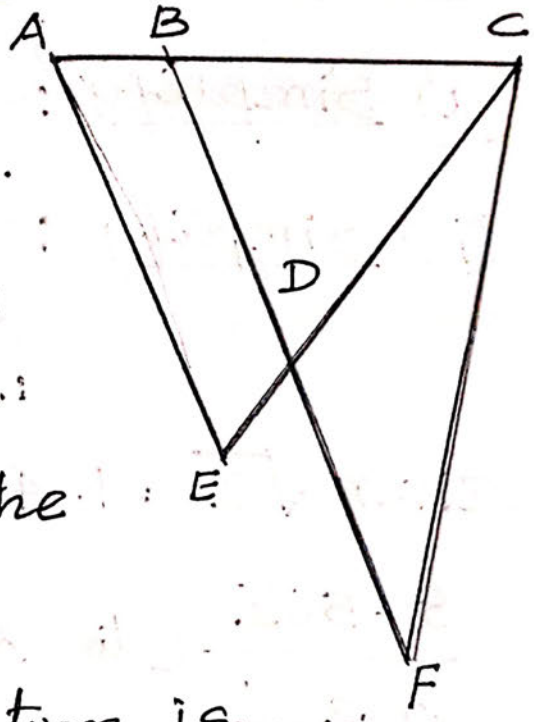
(37) Without actual division, prove that $f(x) = 2x^4 - 6x^3 + 3x^2 + 3x - 2$ is exactly divisible by $x^2 - 3x + 2$

(38) If $(x+a)(x+b)(x+c) = x^3 + 14x^2 + 59x + 70$, Find the value of $\frac{a}{bc} + \frac{b}{ac} + \frac{c}{ab}$

(39) Factorise : $x^3 - 5x^2 - 2x + 24$

(40) $\triangle ABC$ and $\triangle DEF$ are two triangles in which $AB = DF$, $\angle ACB = 70^\circ$, $\angle ABC = 60^\circ$. $\angle DEF = 70^\circ$ and $\angle EDF = 60^\circ$ Prove that the triangles are congruent.

(41) In the given Figure, if AB=2, BC=6, AE=6, BF=8, CE=7 and CF=7, Compute the ratio of the area of quadrilateral ABDE to the area of Δ CDF.



(42) The sum of (x+5) observation is (x^3+125). Find the mean of the observations.

PART - IV

Answer any two Questions: 2×8=16

(43) (a) Construct the centroid of Δ PQR whose sides are PQ = 8 cm; QR = 6 cm; RP = 7cm

[OR]

(b) Draw the Δ ABC, where AB = 6cm, $\angle B = 110^\circ$ and AC = 9 cm and construct the centroid.

(44) (a) Draw the graph for the following:

$$y = \left[\frac{2}{3}\right]x + 3$$

[OR]

(b) (i) The base of a parallelogram is $(5x+4)$. Find its height, if the area is $25x^2-16$.

(ii) If $x^2+\frac{1}{x^2}=23$, then find the value of $x+\frac{1}{x}$ and $x^3+\frac{1}{x^3}$.

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