CLASS – X (PRE - BOARD) TERM -I

(CODE–041) TMC-TS-AG-TS-9-OBJ-(MCQ)

Time : 90 MINUTES Maximum Marks : 40

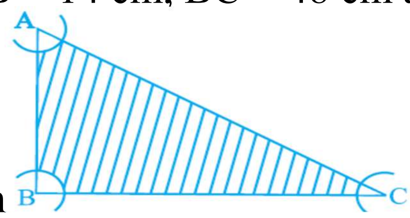
General Instructions:

1. This question paper contains three sections – A, B and C. Each part is compulsory.
2. Section - A has 20 MCQs, attempt any 16 out of 20.
3. Section - B has 20 MCQs, attempt any 16 out of 20
4. Section - C has 10 MCQs, attempt any 8 out of 10.
5. There is no negative marking.
6. All questions carry equal marks.

SECTION – A

In this section, attempt any 16 questions out of Questions 1 – 20. Each Question is of 1 mark weightage.

Q.1	An electronic device makes a beep after every 60 seconds. Another device makes a beep after every 62 seconds. They beeped together at 10 a.m. At what time will they beep together at the earliest a) 10 : 31 a.m. b) 10 : 30 a.m. c) 10 : 32 a.m. d) NONE
Q.2	Solution of $\frac{x+1}{2}+\frac{y-1}{3}=8; \frac{x-1}{3}+\frac{y+1}{2}=9$ is (a) $x=6, y=14$ (b) $x=7, y=13$ (c) $x=5, y=12$ (d) $x=14, y=16$.
Q.3	What is the length of an altitude of an equilateral triangle of side 8cm? (a) $2\sqrt{3}$ cm (b) $3\sqrt{3}$ cm (c) $4\sqrt{3}$ cm (d) $5\sqrt{3}$ cm
Q.4	In an equilateral ΔABC, AD ⊥ BC, & $AD^2 = K\,BD^2$, find K **(a) 3** **(b)** $\frac{3}{4}$ (c) **7** (d) NONE
Q.5	If a card is selected from a deck of 52 cards, then the probability of its being a red face card is (a) $\frac{3}{26}$ (b) $\frac{3}{13}$ (c) $\frac{2}{13}$ (d) $\frac{1}{2}$
Q.6	ΔABC~ΔPQR. If AM and PN are altitudes of ΔABC and ΔPQR respectively and $AB^2 : PQ^2 = 4 : 9$, then AM:PN = (a) 16:81 (b) 4:9 (c) 3:2 (d) 2:3
Q.7	$\frac{1}{\cos ec\theta-1}-\frac{1}{\cos ec\theta+1}=$ (a) $2\tan^2\theta$ (B) $2\sec^2\theta$ (C) $2\cot^2\theta$ (d) none
Q.8	An army contingent of 616 members is to march behind an army band of 32 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march? (A) 8(B) 7(C) 6(D) 9
Q.9	If p + q = 1 and the ordered pair (p, q) satisfy 3x + 2y = 1 then is also satisfies : (A) 3x + 4y = 5 (B) 5x + 4y = 4 (C) 5x + 5y = (D) None of these.
Q.10	If the points A(1,2), B(4,q), C(p,6) and D(3,5) are vertices of a parallelogram ABCD, find the values of p and q (a) p= -6 & q = 3 (b) p= 6 & q = - 3 (c) p= 6 & q = 3 (d)none .

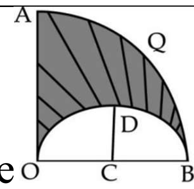
Q.11	$241/(2^5 \times 5^3)$ is a __________ decimal. (a) Terminating (b) Recuring (c) Non-terminating and Non-ricurring (d) None of these
Q.12	With the vertices A, B and C of a triangle ABC as centers, arcs are drawn with radii 5 cm each as shown in Fig. If AB = 14 cm, BC = 48 cm and CA = 50 cm,  then find the area of the shaded region . (Use π = 3.14) (a) $39.25cm^2$ (b) $336cm^2$ (c) $296.75cm^2$ (d) none
Q.13	If $\sin\theta - \cos\theta = 0$, then the value of $(\sin^4\theta + \cos^4\theta)$ is (a) 1 (b) $\frac{3}{4}$ (c) $\frac{1}{2}$ (d) $\frac{1}{4}$
Q.14	Given that $\tan\theta = \frac{1}{\sqrt{3}}$, then the value of $\frac{\operatorname{cosec}^2\theta - \sec^2\theta}{\operatorname{cosec}^2\theta + \sec^2\theta}$ is (a) $\frac{1}{3}$ (b) 3 (c) $\frac{8}{3}$ (d) $\frac{1}{2}$
Q.15	On dividing a polynomial p(x) by a non-zero polynomial q(x), let g(x) be the quotient and r(x) be the remainder, then p(x) = q(x). g(x) + r(x), where (a) r(x) = 0 always (c) either r(x) = 0 or deg r(x) < deg g(x) (b) deg r(x) < deg g(x) always (d) r(x) = g(x)
Q.16	Which is correct? (a) Two figures are similar if they have the same shape and same size. (b) All similar triangles are congruent. (c) Two polygons are similar if their corresponding sides are proportional. (d) Two triangles are similar if their corresponding sides are proportional.
Q.17	If ΔABC is an equilateral triangle such that $AD \perp BC$, then $AD^2 =$ (a) $\frac{3}{2}DC^2$ (b) $2DC^2$ (c) $3DC^2$ (d) $4DC^2$
Q.18	Given that $\sin A = \frac{1}{2}$ and $\cos B = \frac{1}{\sqrt{2}}$ then the value of A + B is (a) 30° (b) 45° (c) 75° (d) 15°
Q.19	There are two examination halls, P and Q. If 10 students are sent from P to Q, then the number of students in each room is same. If 20 students are sent from Q to P, then the number of students in P is double of that in Q. The number of students in P and Q respectively are (a) 60, 40 (b) 70, 50 (c) 80, 60 (d) 100, 80
Q.20	Out of one digit prime numbers, one number is selected at random. The probability of selecting an even number is (a) $\frac{1}{3}$ (b) $\frac{1}{4}$ (c) $\frac{3}{4}$ (d) $\frac{2}{3}$
	SECTION – B In this section, attempt any 16 questions out of the Questions 21 - 40. Each Question is of 1 mark weightage.

Q.21	When 2^{256} is divided by 17 the remainder would be (a) 1 (b) 16 (c) 14 (d) None of these
Q.22	On solving $\frac{25}{x+y}-\frac{3}{x-y}=1, \frac{40}{x+y}+\frac{2}{x-y}=5$ we get : (A) x = 8, y = 6 (B) x = 4, y = 6(C) x = 6, y = 4(D) None of these
Q.23	The value of $\frac{\tan^2 45°-1}{\tan^2 45°+1}$ is. (a) 0 (b) 1 (c) 2 (d) -1
Q.24	If $x=0.\overline{7}$ then $2x$ is (a) $1.\overline{4}$ (b) $1.\overline{5}$ (c) $1.\overline{54}$ (d) $1.\overline{45}$
Q.25	If 217x + 131y = 913, 131x + 217y = 827, then x + y is (a) 5 (b) 6 (c) 7 (d) 8
Q.26	Ramesh buys a fish from a shop for his aquarium. The shopkeeper takes out one fish at random a tank containing 5 male fish and 9 female fish. Then, the probability that the fish taken out is a male fish, is (a) $\frac{5}{13}$ (b) $\frac{5}{14}$ (c) $\frac{6}{13}$ (d) $\frac{7}{13}$
Q.27	If x $\sin^3\theta$ + y $\cos^3\theta$ = $\sin\theta\cos\theta$ and x $\sin\theta$ = y $\cos\theta$, prove $x^2 + y^2$ = (a) 0 (b) - 1 (c) 1 (d) none
Q.28	There are 1000 sealed envelopes in a box. 10 of them contain a cash prize of Rs 100 each, 100 of them contain a cash prize of Rs 50 each and 200 of them contain a cash prize of Rs 10 each and rest do not contain any cash prize. If they are well-shuffled and an envelope is picked up out, then the probability that is contains no cash prize is (a) 0.65 (b) 0.69 (c) 0.54 (d) 0.57
Q.29	The segment AB is divided into 4 equal parts. C is nearer to A and E is nearer to B. The co-ordinates of A and B, if the co-ordinates of C, D and F are (5/2,-1/2), (3, 0) and (7/2, 1/2) respectively (a) A (2 , -1) & B (4, 1) (b) A (2 , -1) & B (-4, 1) (c) A (2 , -1) & B (4, -1) (d) NONE .
Q.30	In $\Delta ABC \,\&\, \Delta DEF, \frac{AB}{EF}=\frac{AC}{DE}, \&\angle A=\angle E,$ then symbolically we write (a) $\Delta ABC \sim \Delta DEF$ (b) $\Delta ABC \sim \Delta EDF$ (c) $\Delta ABC \sim \Delta EFD$ (d) $\Delta ABC \cong \Delta EFD$
Q.31	The co – ordinates of the circum-center of the triangle formed by the points O(0, 0), A(a, 0) and B(0, b) are (A)(a, b) (B) $\left(\frac{a}{2},\frac{b}{2}\right)$ (C) $\left(\frac{b}{2},\frac{a}{2}\right)$ (D) (b, a)
Q.32	$\frac{\sin A}{\sec A+\tan A-1}+\frac{\cos A}{\operatorname{cosec} A+\cot A-1}=$ (a) -1 (b) 1 (c) 0 (d) none
Q.33	Find the biggest number which can divide both 324 and 144. (A) 18(B) 36(C) 9(D) 21
Q.34	If the circumference of a circle increases from 4 π to 8 π , then its area is (a) halved (b) doubled (c) tripled (d) quadrupled
Q.35	The perimeter of the triangle formed by the points (0, 0), (1, 0) and (0, 1) is

(A) $1\pm\sqrt{2}$ (B) $\sqrt{2}+1$ (C) 3 (D) $2+\sqrt{2}$

Q.36 Euclid's division lemma states "Given positive integers a and b, there exist unique integers q and r satisfying a= bq+ r". Which of the following is true for r?
(A) $r > a$ (B) $r < 0$ (C) $0 \le r < b$ (D) $r > b$

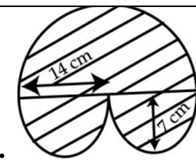
Q.37 OAQB is a quadrant of a circle with center O. (see figure) C is mid point of OB. CD=CO= 7cm find the area of the shaded region



(A) $770cm^2$ (B) $154cm^2$ (C) $77cm^2$ (D) none

Q.38 Remaining zeroes of $3x^4+6x^3-2x^2-10x-5,$ if two of its zeroes are $\sqrt{\frac{5}{3}}$ & $-\sqrt{\frac{5}{3}}$.
(a) – 1 , 1 (b) 1 , 1 (c) -1 , -1 (d) none

Q.39 Find the area of the shaded region in the given figure.



(A) $462cm^2$ (B) $452cm^2$ (C) $196cm^2$ (D) none

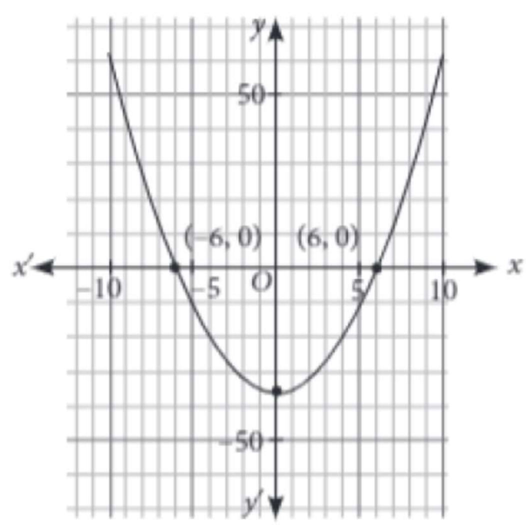
Q.40 A part of monthly expenses of a family is constant and the remaining varies with the price of wheat. When the rate of wheat is Rs. 250 a quintal, the total monthly expenses of the family are Rs. 1000 and when it is Rs. 240 a quintal, the total monthly expenses are Rs. 980. Find the total monthly expenses of the family when the cost of wheat is Rs.350 a quintal.
(a) Rs. 1400 (b) Rs. 1200 (c) Rs. 1000 (d) Rs. 800

SECTION – C

Case study based questions: Section C consists of 10 questions of 1 mark each. Any 8 questions are to be attempted.

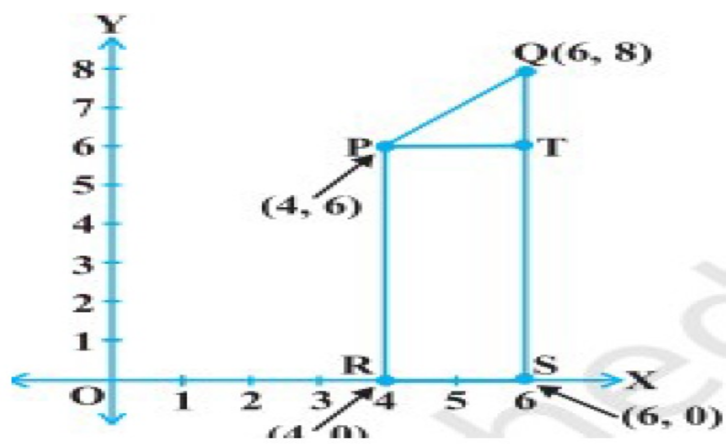
Case study

While playing in garden, sahiba saw a honeycomb and ask her mother what is that. She replied that it's a honeycomb made by honey bees to store honey. Also, she told her that the shape of the honeycomb formed is parabolic. The mathematical representation of the honeycomb structure is shown in the graph.



Based on the above information, answer the following questions.

Q.41 Graph of a quadratic polynomial is __________ in shape.
(a) Straight line (b) Parabolic
(C) Circular (d) None of these

Q.42	The expression of the polynomial represented by the graph is (a) x^2-49 (b) x^2-64 (C) x^2-36 (d)none
Q.43	Find the value of the polynomial represented by the graph when $x=6$. (a) -2 (b)-1 (C)0 (d)1
Q.44	The sum of zeroes of the polynomial x^2+2x-3 is (a) -1 (b) -2 (C) 2 (d) 1
Q.45	If the sum of zeroes of polynomial $at^2+5t+3a$ is equal to their product, then find the value of a. (a) -5 (b) -3 (C) $\frac{5}{3}$ (d) $-\frac{5}{3}$
	CASE STUDY  A crane places a huge piece of cloth in triangular shape on a tower as shown in the above image. Its a tent made on the terrace of the tower for the christmas vacation. Now, this whole part is assumed in a cartesian coordinate system. Using Cartesian Coordinates we mark a point on a graph by how far along and how far up it is. The left-right (horizontal) direction is commonly called X-axis. The up-down (vertical) direction is commonly called Y-axis. Answer the questions for the given info.
Q.46	Find the area of triangle shown in the image. (a) 5 sq. units (b) 4 sq. units (c) 2 sq. units (d) 6 sq. units
Q.47	Find the area of rectangle shown in the image. (a) 10 sq. units (b) 12 sq. units (c)14 sq. units (d) 16 sq. units
Q.48	Find the area of the figure shown in the image. (a) 10 sq. units (b) 12 sq. units (c)14 sq. units (d) 16 sq. units
Q.49	Find the length of the slope PQ for tent. (a) 2.1 units (b) 2.828 units (c) 3.256 units (d) none
Q.50	The whole system in the above image is in which cartesian quadrant ? (a) I (b) II (c) III (d) IV
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