CLASS – X (PRE - BOARD) TERM -I

(CODE–041)   TMC-TS-AG-TS-3-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.
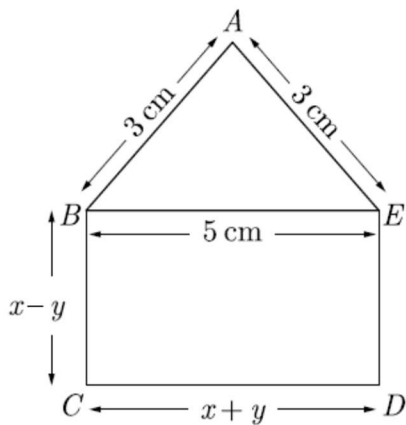6. All questions carry equal marks.

SECTION – A

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

Q.1	The least number which is a perfect square and is divisible by each of 16 , 20 and 24 is (a) 240 (b) 1600 (c) 2400 (d) 3600
Q.2	If $2^a + 3^b = 17$ and $2^{a+2} - 3^{b+1} = 5$, the values of a and b respectively are (a) -2,3 (b) 2, -3 (c) 2,3 (d) 3,2
Q.3	"If a line divides any two sides of a triangle in the same ratio, then the is parallel to the third side." This theorem is known as converse of (a) Area Theorem (b) Basic proportionality Theorem (c) Pythagoras Theorem (d) Laplace Theorem
Q.4	In an equilateral triangle ABC, D is a point on side BC & 4BD=BC. If $AD^2 = KBC^2$,find K (a) $\dfrac{4}{3}$ (b) $\dfrac{3}{4}$ (c) $\dfrac{13}{16}$ (d) NONE
Q.5	If a number x is chosen at random from the numbers -2,- 1, 0, 1, 2. Then, the probability that $x^2 < 2$ is (a) $\frac{2}{5}$ (b) $\frac{4}{5}$ (c) $\frac{1}{5}$ (d) $\frac{3}{5}$
Q.6	It is given that, $\Delta ABC \approx \Delta EDF$ such that AB=5 cm, AC=7 cm, DF=12 cm , then sum of the remaining sides of the triangles is: a. 23.05 cm b. 16.8 cm c. 6.25 cm d. 24 cm
Q.7	If $3\cos\theta = 2\sin\theta,$ then the value of $\dfrac{4\sin\theta - 3\cos\theta}{2\sin\theta + 6\cos\theta}$ is : (a) $\dfrac{1}{8}$ (b) $\dfrac{1}{3}$ (c) $\dfrac{1}{2}$ (d) $\dfrac{1}{4}$
Q.8	**MATCHING QUESTIONS** **DIRECTION : Each question contains statements given in two columns which have to be matched. Statement (A , B , C) in column I have to be matched with statement (p,q,r) in column II .**

	Column-I		Column-II
(A)	H.C.F. of the smallest composite number and the smallest prime number	(p)	6
(B)	H.C.F. of 336 and 54	(q)	5
(C)	H.C.F. of 475 and 495	(r)	2

(a) (A) – (q) , (B) - (p) , (C) - (r)
(b) (A) – (r) , (B) - (q) , (C) - (p)
(c) (A) – (r) , (B) - (p) , (C) - (q)
(d) none of these

Q.9 In the figure below ABCDE is a pentagon with BE //CD and BC //DE. BC is perpendicular to CD. If the perimeter of ABCDE is 21 cm, find the value of x

and y.
(A) $x = 5$, $y = 0$ (B) $x = 0, y = 5$ (C) $x = 20, y = 8$ (D) NONE

Q.10 The co – ordinates of the center of a circle passing through (1, 2), (3, -4) and (5, - 6) is
(A)(2, 11)   (B) (11, 2)   (C) (11, -2)   (D) (-2, 11)

Q.11 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.12 When 2^{256} is divided by 17 the remainder would be
(a) 1 (b) 16 (c) 14 (d) None of these

Q.13 $\left[\dfrac{\tan \theta}{\sec \theta - 1} + \dfrac{\tan \theta}{\sec \theta + 1} \right]$ is equal to

(a) $2 \tan \theta$ (b) $2 \tan \theta \sec \vartheta$ (c) $2 \sec \theta$ (d) $2 \cos ec \theta$

Q.14 $2\sec^2 \theta - \sec^4 \theta - 2\cos ec^2 \theta + \cos ec^4 \theta =$

(a) $\tan^4 \theta - \cot^4 \theta$ (b) $\cot^4 \theta + \tan^4 \theta$ (c) $\cot^4 \theta - \tan^4 \theta$ (d) none
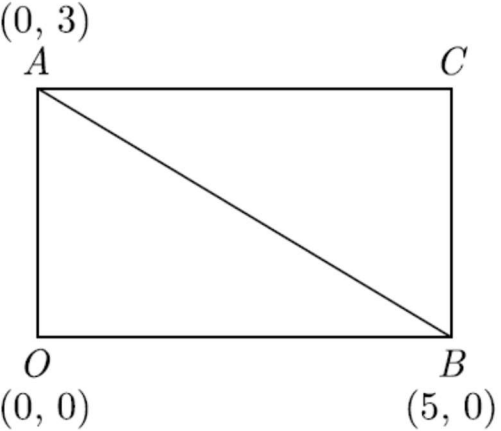
Q.15 The inner perimeter of a racetrack is 400m and the outer perimeter is 488 m. The length of each straight portion is 90m. The cost of developing the track at the rate of Rs 12.50 m^2
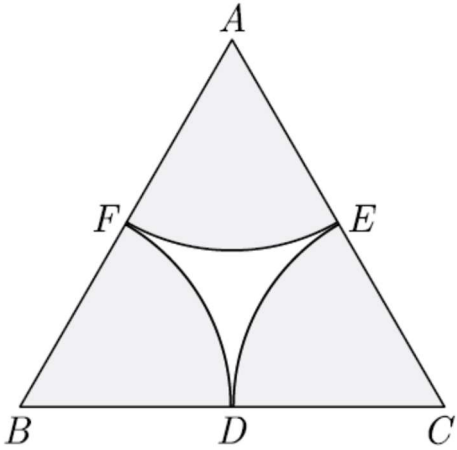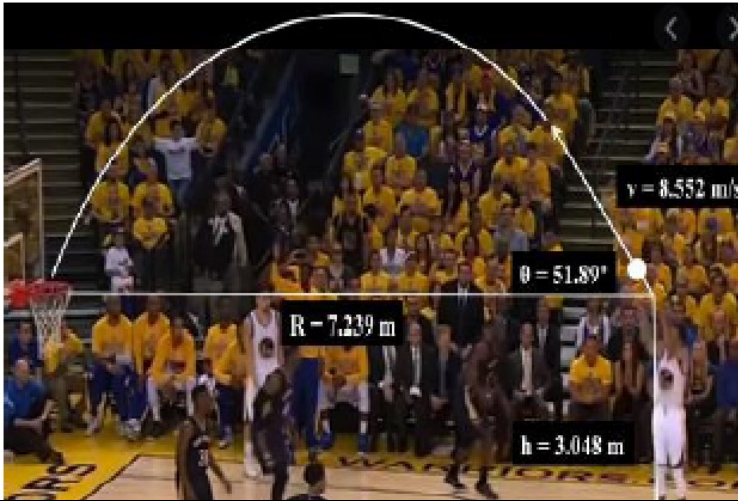(a) $Rs.6216$ (b) $Rs.77700$ (c) $Rs.7770$ (d) none

Q.16 In right triangle ABC, BC = a, AC = b, AB = c, $CD \perp AB$. If area of $\triangle ABC = A$, then CD =

(a) $\dfrac{2A}{c}$ (b) $\dfrac{A}{c}$ (c) $\dfrac{A}{2c}$ (d) $\dfrac{c}{A}$

Q.17 In a $\triangle ABC$, AD is the bisector of $\angle BAC$.If AB = 6 cm, AC =5cm and

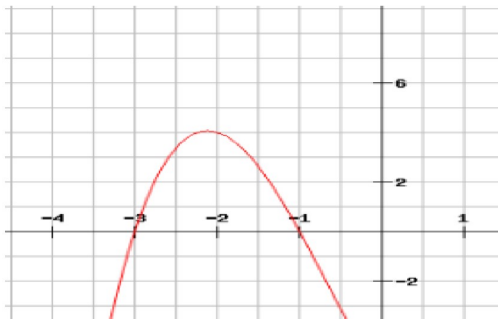|	
	BD=3 cm, then DC= **(a) 11.3 cm** **(b) 2.5 cm** **(c) 3.5 cm** **(d) 4.5 cm**
Q.18	$\sqrt{\dfrac{\cos ec\theta +1}{\cos ec\theta -1}}+\sqrt{\dfrac{\cos ec\theta -1}{\cos ec\theta +1}}=$ **(a)** $\sec \theta$ **(b)** $2\cos ec\theta$ **(c)** $2\sec \theta$ **(d)** none
Q.19	Solve the following system of equation for x and y . $\dfrac{x}{a}+\dfrac{y}{b}=2; ax-by=a^2-b^2$ (a) $x = a, y = b$ (b) $x = -a, y = b$ © $x = a, y = -b$ (d) none
Q.20	A letter is chosen at random from the letters of the word ASSASSINATION, then the probability that the letter chosen is a vowel is in the form of $\dfrac{6}{2x+1}$ then x is equal to (a) 5 (b) 6 (c) 7 (d) 8
SECTION – B	
	In this section, attempt any 16 questions out of the Questions 21 - 40. Each Question is of 1 mark weightage.
Q.21	Pens are sold in pack of 8 and notepads are sold in pack of 12. Find the least number of pack of each type that one should bye so that there are equal number of pens and notepads. (a) 3 and 2 (b) 2 and 5 (c) 3 and 4 (d) 4 and 5
Q.22	The value of k for which the pair of linear equations $4x + 6y - 1 = 0$ and $2x + ky - 7 = 0$ represents parallel lines is (a) $k = 3$ (b) $k = 2$ (c) $k = 4$ (d) $k = -2$
Q.23	If $4x = \sec A$ & $\dfrac{4}{x} = \tan A$ then the value of $4\left(x^2 - \dfrac{1}{x^2}\right)$ is (a) $\dfrac{1}{4}$ (b) $-\dfrac{1}{4}$ (c) 4 (d) none
Q.24	If $AOBC$ is a rectangle whose three vertices are $A(0, 3)$, $O(0, 0)$ and $B(5, 0)$, then the length of its diagonal is $(0, 3)$ A C O B $(0, 0)$ $(5, 0)$ (a) 5 (b) 3 (c) $\sqrt{34}$ (d) 4
Q.25	A number consists of two digits. When it is divided by the sum of its digits, the quotient is 6 with no remainder. When the number is diminished by 9, the digits are reversed. Find the number. (A) 54 (B) 45 (C) 63 (D) none
Q.26	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.27	The value of $\left(\sin^2 30° \cos^2 45° + 4 \tan^2 30° + \frac{1}{2} \sin^2 90° + \frac{1}{8} \cot^2 60° \right) = ?$ (a) $\frac{3}{8}$ (b) $\frac{5}{8}$ (c) 6 (d) 2
Q.28	A game consist of tossing a one-rupee coin 3 times and nothing the outcome each time. Ramesh will win the game if all the show the tosses same result, (i.e. either all three heads or all three tails) and loses the game otherwise. The probability that Ramesh will lose the game (A) 1/2 (B) 1/4 (C) 3//4 (D) NONE
Q.29	The distance between which two points is 2 units? (A)(-2, -3) and (-2, -4) (B) (0, 4) and (6, 0) (C)(7, 2) and (6, 2) (D)(4, -3) and (2, -3)
Q.30	Diagonal AC of a rectangle ABCD is produced to the point E such that AC : CE = 2.1, AB = 8 cm and BC = 6 cm. The length of DE is (a) $2\sqrt{19}cm$ (b) $15cm$ (c) $3\sqrt{17}cm$ (d) $13cm$
Q.31	X -axis divides the line segment joining $A(2,- 3)$ and $B(5, 6)$ in the ratio (a) 2 : 3 (b) 3 : 5 (c) 1 : 2 (d) 2 : 1
Q.32	If $\sqrt{3} \tan \theta = 3 \sin \theta$ then the value of $\sin^2 \theta - \cos^2 \theta =$ (a) 3 (b) 1/ 2 (c) 1 / 3 (d) none of thèse
Q.33	A number lies between 300 and 400. If the number is added to the number formed by reversing the digits, the sum is 888 and if the unit's digit and the ten's digit change places, the new number exceeds the original number by 9. Then the number is (a) 339 (b) 341 (c) 378 (d) 345
Q.34	 In fig. arcs are drawn by taking vertices A B, and C of an equilateral triangle of side 10 cm, to intersect the side BC , CA and AB at their respective mid-points D E, and F . The area of the shaded region. (Use π = 3.14). (a) 78.5 cm² (b) 39.25 cm² (c) 13.8 cm² (d) none
Q.35	The length of a line segment joining A(2, -3) and B is 10 units. If the abscissa of B is 10 units, then its ordinates can be (A)3 or -9 (B) -3 or 9 (C)6 or 27 (D) -6 or -27

Q.36	If the perimeter of a semi-circular protractor is 36 cm, find its diameter (a) 14cm (b) 7cm (c) 21cm (d) none
Q.37	The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand from 9 a.m. to 9.35 a.m. (a) 320cm^2 (b) 210cm^2 (c) 259.33cm^2 (d) none
Q.38	How many time, graph of the polynomial f(x) = x^3 - 1 will intersect X-axis – (A) 3 (B) 1 (C) 2 (D) 4
Q.39	Sides of a right triangular field are 25 m, 24 m and 7 m. At the three corners of the field, a cow, a buffalo and a horse are tied separately with ropes of 3.5 m each to graze in the field. Find the area of the field that cannot be grazed by these animals (a) 19.25m^2 (b) 84m^2 (c) 64.75m^2 (d) none
Q.40	One equation of a pair of dependent linear equations is –5x + 7y = 2. The second equation can be a) 10x+14y +4 = 0 b) –10x –14y+ 4 = 0 c) –10x+14y + 4 = 0 (d) 10x – 14y = –4
	SECTION – C Case study based questions: Section C consists of 10 questions of 1 mark each. Any 8 questions are to be attempted.
	Basketball and soccer are played with a special ball. Even though an athlete dribbles the ball in both sports, a basketball player uses his hands and a soccer player uses his feet. Usually, soccer is played outdoors on a large field and basketball is played indoors on a court made out of wood. The projectile (path traced) of soccer ball and basketball are in the form of parabola representing quadratic polynomial.
Q.41	The shape of the path traced shown is **(a)** Spiral **(b)** Ellipse **(c)**linear **(d)** Parabola
Q.42	The graph of parabola opens upwards, if _____ **(a)** $a = 0$ **(b)** $a < 0$

	(c) $a > 0$
	(d) $\qquad a \geq 0$

Q.43	Observe the following graph and answer
	
	 In the above graph, how many zeroes are there for the polynomial?
	    (a) 0
	
	    (b) 1
	
	    (c) 2
	
	    (d) 3

Q.44	The three zeroes in the above shown graph are
	
	    (a) 2,3,-1
	
	    (b) -2,3,1
	
	    (c)-3,-1,2
	
	    (d) -2,-3,-1

Q.45	What will be the expression of the polynomial?
	
	    (a) $x^3 + 2x^2 - 5x - 6$
	
	    (b) $x^3 + 2x^2 - 5x + 6$
	
	    (c) $x^3 + 2x^2 + 5x - 6$
	
	    (d) $x^3 + 2x^2 + 5x + 6$

	CASE STUDY **Spreading Awareness on Plastic Use:** Students of residential society undertake to work for the campaign "Say no to Plastics". Group *A* took region under the coordinates (3,3), (6,*y*), (*x*,7) and (5,6) and group *B* took the region under the coordinates (1,3), (2,6), (5,7) and (4,4).

Based on the above information, answer the following questions.

Q.46	If the region covered by group A forms a parallelogram, where the coordinates are taken in the given order, then
	(a) $x = 8, y = 4$ (b) $x = 4, y = 8$ (c) $x = 2, y = 4$ (d) $x = 4, y = 2$
Q.47	Perimeter of the region covered by group A is
	(a) $\sqrt{10}$ units (b) $\sqrt{13}$ units (c) $\left(\sqrt{10} + \sqrt{13}\right)$ units (d) None of these
Q.48	If the coordinates of the region covered by group B, taken in the same order from a quadrilateral, then the length of the each diagonals is
	(a) $4\sqrt{2}$ units, $2\sqrt{2}$ units (b) $6\sqrt{2}$ units, $\sqrt{2}$ units
	(c) $3\sqrt{2}$ units, $2\sqrt{2}$ units (d) None of these
Q.49	If the region covered by group B forms a parallelogram, where the coordinates are taken in the given order, then the perimeter of this region is
	(a) $\sqrt{10}$ units (b) $2\sqrt{10}$ units (c) $3\sqrt{10}$ units (d) $4\sqrt{10}$ units
Q.50	The coordinates of the point which divides the join of the points $P(x_1, y_1)$ and $Q(x_2, y_2)$ internally in the ratio $m : n$ is
	(a) $\left(\dfrac{mx_2 + ny_2}{m + n}, \dfrac{mx_1 + ny_1}{m + n}\right)$ (b) $\left(\dfrac{mx_1 + ny_1}{m + n}, \dfrac{mx_2 + ny_2}{m + n}\right)$
	(c) $\left(\dfrac{mx_2 + nx_1}{m + n}, \dfrac{my_2 + ny_1}{m + n}\right)$ (d) None of these
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