TARGET MATHEMATICS by Dr. AGYAT GUPTA
The Excellence Key...
(M.Sc, B.Ed., M.Phill, P.hd)

CLASS – X (PRE - BOARD) TERM -I

(CODE-041) TMC-TS-AG-TS-10-OBJ-(MCQ)

Time : 90 MINUTES **Maximum Marks : 40**

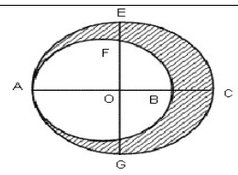
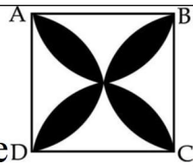
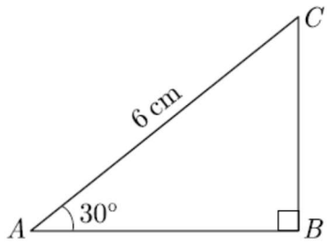
General Instructions:

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 dimensions of the room are 8 m 25 cm, 6 m 75 cm and 4 m 50 cm. Find the length of largest measuring road which can measure the dimensions of room exactly. (a) 1 m 25 cm (b) 75 cm (c) 90 cm (d) 1 m 35 cm
Q.2	Solve for x and y: 99 x + 101 y = 499 , 101 x + 99 y = 501 (a) $x=3, y=1$ (b) $x=3, y=-2$ (c) $x=3, y=2$ (d)NONE
Q.3	The perpendicular AD on the base BC of a ΔABC meets BC at D so that DB = 2CD. If $3AB^2 = K\,AC^2 + BC^2$,find K (a)3 cm (b) 1 cm (c) 2 cm (d) NONE
Q.4	The area of a right angled triangle is 40 sq. cm and its perimeter is 40 cm. The length of its hypotenuse is (a) 16 cm (b) 18 cm (c) 17 cm (d) data insufficient
Q.5	The probability that an leap year has 53 Sunday or Mondays, is (a) $\frac{2}{7}$ (b) $\frac{1}{7}$ (c) $\frac{3}{7}$ (d) $\frac{4}{7}$
Q.6	It is given that $\Delta ABC \sim \Delta PQR$ with $\frac{BC}{QR}=\frac{1}{3}$. Then $\frac{ar(\Delta PQR)}{ar(\Delta BCA)}$ is equal to (a) 9 (b) 3 (c) $\frac{1}{3}$ (d) $\frac{1}{9}$
Q.7	$(1+\tan A\tan B)^2+(\tan A-\tan B)^2 =$ (a) $co\sec^2 A.co\sec^2 B$ (b) $\sec^2 A.\sec^2 B$ (c) $\tan^2 A.\tan^2 B$ (d) none of these
Q.8	Preethi picked up $\sqrt{6}$ and her question was- which of the following is not irrational? (a) $15+3\sqrt{6}$ (b) $\sqrt{24}-9$ (c) $5\sqrt{150}$ (d) None of these
Q.9	The number of solutions of $3^{x+y} = 243$ & $243^{x-y} = 3$ is (a) 0 (b) 1 (c) 2 (d) infinite
Q.10	If two vertices of a parallelogram are (-3,5) and (- 4,7) and the diagonals intersect at (-2,-3) then find the other two vertices a) $(-1,-11)\&(0,-13)$ (b) $(-1,11)\&(0,-13)$ (c) $(-1,-11)\&(0,13)$ (d)none

Q.11	 In the given figure , O is the center of the bigger circle and AC is its diameter. Another circle with AB as diameter is drawn. If AC=54 cm and BC=10 cm, Find the area of the shaded region (A) $770cm^2$ (B) $385cm^2$ (C) $77cm^2$ (D) none
Q.12	Six bells commence tolling together and toll at intervals of 2, 4, 6, 8, 10, 12 minutes respectively. In 30 hours, how many times do they toll together a) 17 b) 15 c) 16 d) NONE
Q.13	$\cos^4 A - \sin^4 A$ is equal to (a) $2\cos^2 A + 1$ (b) $2\cos^2 A - 1$ (c) $2\sin^2 A - 1$ (d) $2\sin^2 A + 1$
Q.14	$\cos^2 30° \cos^2 45° + 4\sec^2 60° + \frac{1}{2}\cos^2 90° - 2\tan^2 60° = ?$ (a) $\frac{73}{8}$ (b) $\frac{75}{8}$ (c) $\frac{81}{8}$ (d) $\frac{83}{8}$
Q.15	 In given figure, find the area of the shaded region, where ABCD is a square of side 7 cm and semicircles are drawn with each side of the square as diameter. (use $\pi = 22/7$) (A) $21cm^2$ (B) $49cm^2$ (C) $28cm^2$ (D) none
Q.16	In an equilateral triangle ABC, if $AD \perp BC$, then $\frac{AB^2}{AD^2} =$ (a) $\frac{3}{4}$ (b) $\frac{4}{3}$ (c) $\frac{1}{2}$ (d) $\frac{2}{1}$
Q.17	In two triangles ABC and DEF, $\angle A = \angle E$ and $\angle B = \angle F$. Then, $\frac{AB}{AC}$ is equal to **a.** $\frac{DE}{DF}$ **b.** $\frac{ED}{EF}$ **c.** $\frac{EF}{ED}$ **d.** $\frac{EF}{ED}$
Q.18	 In the adjoining figure, the length of BC is (a) $2\sqrt{3}$ cm (b) $3\sqrt{3}$ cm (c) $4\sqrt{3}$ cm (d) 3 cm
Q.19	The pairs of linear equations $3x + 4y + 5 = 0$ and $12x + 16y + 15 = 0$ have: (a)unique solution (b) many solutions © no solution (d) exactly two solutions.
Q.20	Match option of Column I with the appropriate option of Column II.

	Column-I		Column-II
(A)	Probability of getting number 5 in throwing a dice.	(p)	0
(B)	Probability of obtaining three heads in a single throw of a coin.	(q)	$\frac{6}{36}$
(C)	Probability of getting the sum of the numbers as 7, when two dice are thrown	(r)	1
(D)	Probability of occurrence of two sure independent events.	(s)	$\left(\frac{1}{2}\right)^0$
		(t)	$\frac{1}{6}$

(a) (A) – p, (B) – (q, r), (C) – s, (D) – t
(b) (A) – (q, t), (B) – p, (C) – (q, t), (D) – (r, s)
(c) (A) – (q, t), (B) – (r, s), (C) – p, (D) – r
(d) (A) – p, (B) – (q, t), (C) – (q, s), (D) – r

SECTION – B

In this section, attempt any 16 questions out of the Questions 21 - 40. Each Question is of 1 mark weightage.

Q.21 $441/\left(2^2\times5^7\times7^2\right)$ is a _____ decimal.

(a) Terminating (b) Recuring
(c) Non-terminating and Non-ricurring (d) None of these

Q.22 One equation of a pair of dependent linear equations is $-5x+7y=2,$ the second equation can be:

(a) $10x+14y+4=0$ (b) $-10x-14y+4=0$ © $-10x+14y+4=0$ (d) $10x-14y=-4$

Q.23 If $x=3\sec^2\theta-1, y=\tan^2\theta-2,$ then $x-3y$ is equal to

(a) 3 (b) 4 (c) 8 (d) 5

Q.24 If $a=2^3\times3,\ b=2\times3\times5,\ c=3^n\times5$ and LCM $(a,b,c)=2^3\times3^2\times5$, then n is

(a) 1 (b) 2 (c) 3 (d) 4

Q.25 In a $\Delta ABC, \angle A=x^0, \angle B=(3x)^0$ and $\angle C=y^0$ .If $3y-5x=30,$ then the triangle is

(a) acute angled (b) obtuse angled (c) right angled (d) equilateral

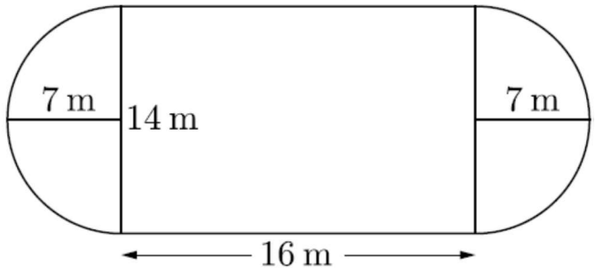
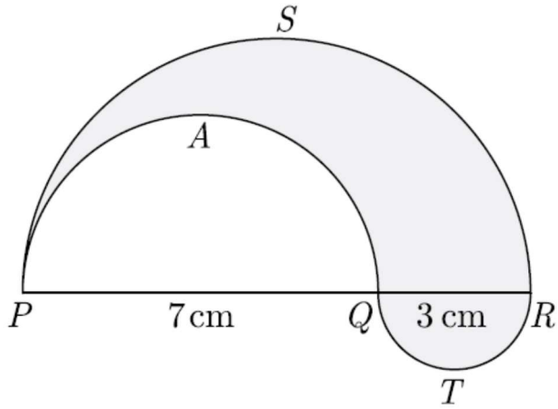
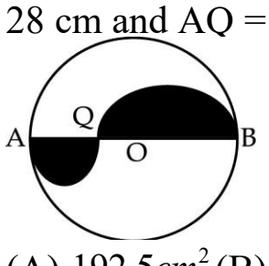
Q.26 From a book containing 100 pages, one page is selected randomly. The probability that the sum of the digits of the page number of the selected page is 11, is

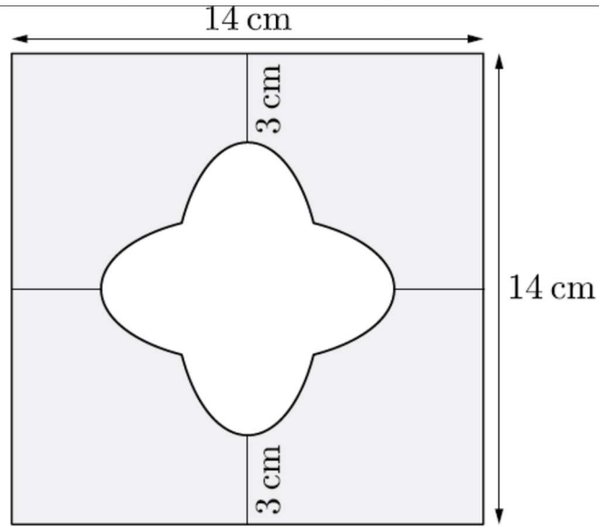
(a) $\frac{2}{25}$ (b) $\frac{9}{100}$ (c) $\frac{11}{100}$ (d) None of these

Q.27 The value of $\sqrt{\frac{1+\cos\theta}{1-\cos\theta}}$ *is*

(a) $\cot\theta-\cos ec\,\theta$ (b) $\cos ec\theta+\cot\theta$
(c) $\cos ec^2\theta+\cot^2\theta$ (d) $(\cot\theta+\cos ec\,\theta)^2$

Q.28 Vishal buys 4 cartons of apple juice, 3 cartons of orange juice and 3 cartons of guave juice. A customer comes to vishal's shop and picks a tetrapack of juice at random. The probability that the customer picks a guava juice, if each carton has 10 tetrapacks of juice, is

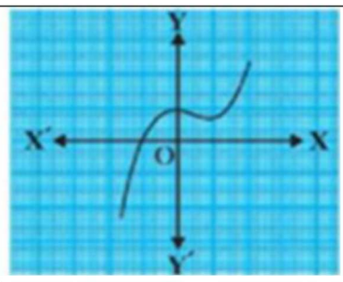
	(a) $\frac{1}{10}$ (b) $\frac{2}{10}$ (c) $\frac{3}{10}$ (d) $\frac{2}{5}$
Q.29	Distance of point $P(3, 4)$ from x -axis is (a) 3 units (b) 4 units (c) 5 units (d) 1 units
Q.30	ΔABC is an equilateral triangle with each side of length 2p. If AD $\perp$ BC then the value of AD is (a) $\sqrt{3}$ (b) $\sqrt{3}p$ (c) $2p$ (d) $4p$
Q.31	The point $(2, y)$ divide the line segment joining the points A (–2, 2) and B (3, 7) the value of y. (a) 6 (b) -6 (c) 4 (d) NONE
Q.32	$\sqrt{\frac{\sec A + \tan A}{\sec A - \tan A}} + \sqrt{\frac{\sec A - \tan A}{\sec A + \tan A}} =$ (a) $\sec A$ (b) $2\operatorname{cosec} A$ (c) $2\sec A$ (d) none
Q.33	If a and b are two positive integers such that the least prime factor of a is 3 and the least prime factor of b is 5. Then, the least prime factor of (a + b) is (a) 2 (b) 3 (c) 5 (d) 8
Q.34	Find the area of the adjoining diagram  (a) $224m^2$ (b) $154m^2$ (c) $378m^2$ (d) none
Q.35	The coordinates of a point A on y -axis, at a distance of 4 units from x -axis and below it are (a) (4, 0) (b) (0, 4) (c) (-4, 0) (d) (0, -4)
Q.36	In the fig., PSR R, TQ and PAQ are three semi-circles of diameters 10 cm, 3 cm and 7 cm region respectively. Find the perimeter of shaded region. (Use π = 22/7)  (a) $31.4cm$ (b) $3.14cm$ (c) $15.7cm$ (d) none
Q.37	Find the area of the shaded region, if the diameter of the circle with center O is 28 cm and AQ = 1/4AB. (use $\pi = 22/7$)  (A) $192.5cm^2$ (B) $385cm^2$ (C) $490cm^2$ (D) none

Q.38	If $4x^4 - 3x^3 - 3x^2 + x - 7$ is divided by $1 - 2x$ then remainder will be (A) $\frac{57}{8}$ (B) $-\frac{59}{8}$ (C) $\frac{55}{8}$ (D) $-\frac{55}{8}$
Q.39	 In fig. , find the area of the shaded region ($\pi = 3.14$). (a) $196cm^2$ (b) $154.88cm^2$ (c) $41.12cm^2$ (d) none
Q.40	Yesh scored 40 marks in a test , receiving 3 marks for each right answer and losing one marks for each wrong answer . Had 4 marks been awarded for each correct answer and 2 marks been deducted for each in wrong answer , then Yesh would have scored 50 marks .How many question were there in the test (A) 5 (B) 15 (C) 20 (D) none
	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  Polynomials are everywhere. They play a key role in the study of algebra, in analysis and on the whole many mathematical problems involving them. Since, polynomials are used to describe curves of various types engineers use polynomials to graph the curves of roller coasters. Based on the given information, answer the questions NO.
Q.41	If the Roller Coaster is represented by the following graph y=p(x) , then name

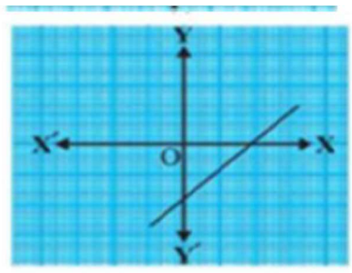
the type of the polynomial it traces.
(a) Linear (b) Quadratic (c) Cubic (d) Bi-quadratic

Q.42 The Roller Coasters are represented by the following graphs y=p(x). Which Roller Coaster has more than three distinct zeroes?

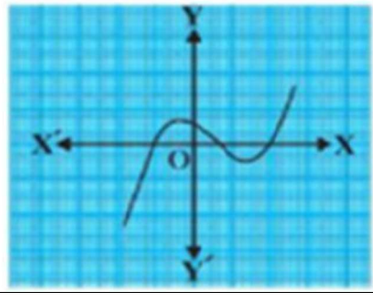
(a)



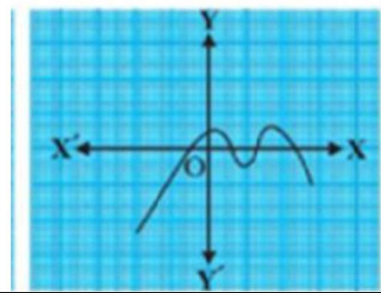
(b)



(c)

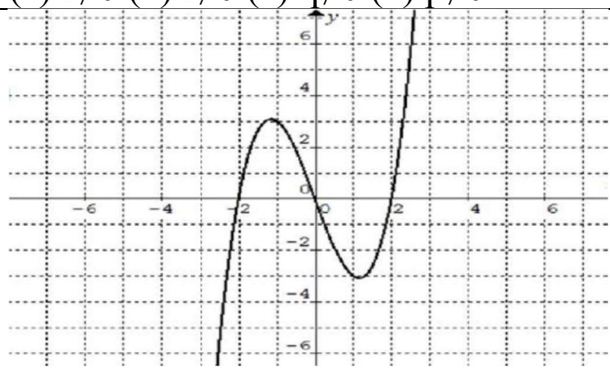


(d)



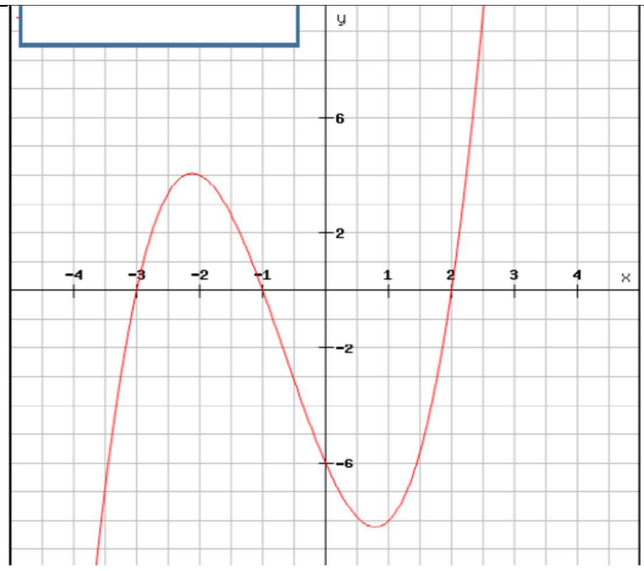
Q.43 If the Roller Coaster is represented by the cubic polynomial t(x)= px3+qx2+rx+s ,then which of the following is always true
(a) s≠0 (b) r≠0 (c) q≠0 (d) p≠0

Q.44



If the path traced by the Roller Coaster is represented by the above graph y=p(x), find the number of zeroes?
(a) 0 (b) 1 (c) 2 (d) 3

Q.45



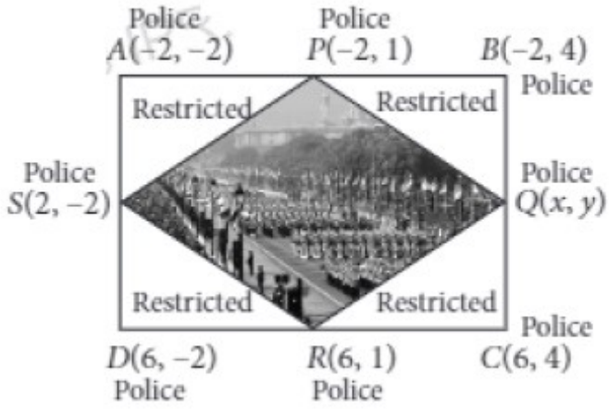
If the path traced by the Roller Coaster is represented by the above graph y=p(x), find its zeroes?

(a) -3, -6, -1 (b) 2, -6, -1 (c) -3, -1, 2 (d) 3, 1, -2

CASE STUDY

Republic Day Parade Programme:

In order to facilitate smooth passage of the parade, movement of the traffic on certain road leading to the route of the Parade and Tableaux always restricted. To avoid traffic on the road Delhi Police decided to construct a rectangular route plan, as shown in figure.



Based on the above information, answer the following questions.

Q.46 If Q is the mid-point of BC, then coordinates of Q are

(a) $(2,4)$ (b) $(2,-4)$ (c) $(1,-1)$ (d) $(-1,1)$

Q.47 Quadrilateral $PQRS$ is a

(a) Trapezium (b) Square (c) Rectangle (d) Rhombus

Q.48 What is the length of the sides of quadrilateral $PQRS$?

(a) 5 units each (b) 3, 4, 5, 6 units (c) 4, 5, 6, 7 units (d) 8 units each

Q.49 What is the length of route $PQRS$?

(a) 20 units (b) 25 units (c) 35 units (d) 45 units

Q.50 What is the length of route $ABCD$?

(a) 26 units (b) 27 units (c) 28 units (d) 29 units

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Target Mathematics

Dr. Agyat Gupta