TARGET MATHEMATICS by Dr. AGYAT GUPTA

The Excellence Key...

(M.Sc, B.Ed., M.Phill, P.hd)

CODE:1001- AG-PB-6

पंजियन क्रमांक

REG.NO:-TMC -D/79/89/36

General Instructions :-

(i)   **All** Question are compulsory :

(ii)   This question paper contains **40** questions.

(iii)   Question **1-20** in **PART-A** are Objective type question carrying **1** mark each.

(iv)   Question **21-26** in **PART-B** are sort-answer type question carrying **2** mark each.

(v)   Question **27-34** in **PART-C** are long-answer-**I** type question carrying **3** mark each.

(vi)   Question **35-40** in **PART-D** are long-answer-**II** type question carrying **4** mark each

(vii)   You have to attempt only one lf the alternatives in all such questions.

(viii) Use of calculator is not permitted.

(ix)   Please check that this question paper contains 8 printed pages.

(x)   Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.

PRE-BOARD EXAMINATION 2019 -20

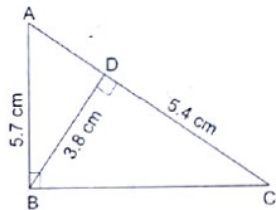| Time : 3 Hours	Maximum Marks : 80
CLASS – X	**MATHEMATICS**

PART – A   (Question 1 to 20 carry 1 mark each.)

SECTION I : Single correct answer type

This section contain 10 multiple choice question . Each question has four choices (A) , (B) , (C) &(D) out of which ONLY ONE is correct .

Q.1	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.2	The median of the scores 13,23,12,18,26,19,14,25,11 is (A) 14 (B) 18 (C) 19 (D) 23
Q.3	If the number 91876y2 is completely divisible by 8, then the smallest whole number in place of y will be: (A)2(B) 4(C) 3(D)1
Q.4	Which is not a solution of $5x + 2y = 23$

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	(a) $x = 0, y = \dfrac{23}{2}$ (b) $x = 3, y = 4$ (c) $x = 4, y = \dfrac{3}{2}$ (d) $x = 5, y = 1$
Q.5	In $\triangle$PQR, PQ = 12 cm and PR = 13 cm. $\angle$Q=90° Find tan P - cot R (A) –(119/60)(B) 119/60(C) 0(D) 1
Q.6	The angle of elevation of the top of a building from the foot of the tower is $30°$ and the angle of elevation of the top of the tower from the foot of the building is $60°$. If the tower is 60 m high, find the height of the building. (A) 30m(B) 40m(C) 20m(D) 10m
Q.7	(sec A+tan A)(1-sin A) = ----- ? (a) sin A (b) cos A(c) sec A (d) cos ecA
Q.8	Find the values of k, if the points A (k+1, 2k), B (3k, 2k+3) and C (5k-1,5k) are collinear. (A) k = 5, 1/5 (B) k = 4, 1/4 (C) k = 3, 1/3 (D) k = 2, 1/2
Q.9	The probability of an event of a trial (A) is greater than 1(B) 0(C) lies between 0 and 1 (both inclusive)(D) 1
Q.10	The area of a quadrilateral whose vertices taken in order are (–4, –2), (–3, –5), (3, –2) and (2, 3) is (A) 26 sq. units(B) 28 sq. units(C) 30 sq. units(D) 27 sq. units
	(Q11 – Q15) Answer the following questions
Q.11	A pendulum swings through on angle of 30○ and describes an arc 8.8 cm in length. Find the length of pendulum in cm.
Q.12	Remaining zeroes of $3x^4 + 6x^3 - 2x^2 - 10x - 5,$ if two of its zeroes are $\sqrt{\dfrac{5}{3}}$ & $-\sqrt{\dfrac{5}{3}}.$ (a) $- 1 , 1$ (b) $1 , 1$ (c) $-1 , -1$ (d) none OR If α, β are the zeros of the polynomial $f(x) = x^2 - 3x + 2$ then $\dfrac{\sqrt{\alpha}}{\sqrt{\beta}} - \dfrac{\sqrt{\beta}}{\sqrt{\alpha}} =$ (a) $-\dfrac{1}{\sqrt{2}}$ (b) $\dfrac{1}{\sqrt{2}}$ & $-\dfrac{1}{\sqrt{2}}$ (c) $\dfrac{1}{\sqrt{2}}$ (d) none of these
Q.13	A 1.8 m tall girl stands at a distance of 4.6 m from a lamp post and casts a shadow of 5.4m on the ground. Height of the lamp post is : (A) 1.53 m (B) $\dfrac{10}{3} m$ (C) 13.8 m (D) 0.8 m
Q.14	The first term of an AP is 5, the last term is 50 and the sum is 440. Find the number of terms and the common difference . **31**
Q.15	The length of the median through A of $\triangle ABC$ with vertices A(7, – 3), B(5, 3) and C(3,

	– 1) is a. 5 units b. 3 units c. 7 units d. 25 units
	Fill in the blanks (Q16 – Q20)
Q.16	A number = -------------- when divided by 143 leaves 31 as remainder. What will be the remainder when the same number is divided by 13?
Q.17	"If a line divides any two sides of a triangle in the same ratio, then the line is par 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.18	In the given figure, ABCD is a cyclic quadrilateral and PQ is a tangent to the circle at C. If BD is a diameter, $\angle OCQ = 40^o$ and $\angle ABD = 60^o$, find $\angle BCP$ OR In given figure, if PQR is a tangent to a circle at Q whose center is O, AB is a chord parallel to PR and $\angle BQR = 50°$ then $\angle AQB$ is equal to :- 80° (B) 40° (C) 20° (D) 50°
Q.19	The sum of first ten terms of an A.P. is four times the sum of its first five terms, then ratio of the first term and common difference is ……………
Q.20	A quadratic polynomial $f(x)$ has two zeros namely $\alpha \, and \, \beta$. If $(\alpha + \beta) = 19$ & $(\alpha - \beta) = 5$ then $f(x)$ has--------------------
	PART – B (Question 21 to 26 carry 2 mark each.)
Q.21	If 7 times the 7th term of an AP is equal to 11 times its 11th term, show that its 18th term is 0.
Q.22	Prove that the tangents drawn at the ends of a diameter of a circle are parallel.
Q.23	P and Q are points on sides AB and AC respectively of $\triangle ABC$. If AP = 3 cm, PB = 6cm, AQ = 5 cm and QC = 10cm, show that BC = 3PQ. OR

In the given figure, $\angle ABC = 90^0$ and $BD \perp AC$. If AB = 5.7cm, BD = 3.8cm and CD = 5.4cm, find BC.

Q.24	The angles of elevation and depression of the top and bottom of a light house from the top of a building, 60m high, are 30^0 and 60^0 respectively. Find (i) The difference between the heights of the light house and building.(ii) Distance between the light house and the building.
Q.25	What is the probability of not picking a face card when you draw a card at random from a pack of 52 cards?
Q.26	The diameter of a sphere is 6 cm. It is melted and drawn into a wire of diameter 2 mm. The length of the wire . OR Water in a canal, 6 m wide and 1.5 m deep, is flowing with a speed of 10 km/h. How much area will it irrigate (in m2) in 30 minutes, if 8 cm of standing water is needed?

PART – C (Question 27 to 34 carry 3 mark each.)

Q.27	What is the least number that is divisible by all the natural numbers from 1 to 10 (both inclusive)? **OR** Three pieces of timber 42m, 49m and 63m long have to be divided into planks of the same length. What is the greatest possible length of each plank? How many planks are formed?
Q.28	Find the number of identical term the two AP 's 3 , 7 , 11 , …..407 . & 2 , 9 , 16 , …………..709 .Also find its sum.
Q.29	The boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, it can go 40 km upstream and 55 km downstream. Determine the speed of stream and that of the boat in still water . **OR** Determine, algebraically, the vertices of the triangle formed by the lines $5x - y = 5$, $x + 2y = 1$ and $6x + y = 17$.
Q.30	Without actual division apply the division algorithm to find the quotient and remainder on diving p(x) by g (x) where $p(x) = x^4 - 3x^2 + 4x + 5 \,\&\, g(x) = x^2 + 1 - x$.
Q.31	If A (5, 2), B(2,– 2) and C(–2, t) are the vertices of a right angled triangle with $\angle B = 90°$, then find the value of t.

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Q.32	If $(\cosec\theta - \sin\theta) = a^3$ and $(\sec\theta - \cos\theta) = b^3$, prove that $a^2 b^2 (a^2 + b^2) = 1$ OR If $\left(\dfrac{x}{a}\sin\theta - \dfrac{y}{b}\cos\theta\right) = 1$ and $\left(\dfrac{x}{a}\cos\theta + \dfrac{y}{b}\sin\theta\right) = 1$, prove that $\left(\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2}\right) = 2$.
Q.33	In the figure below, AB and CD are two diameters of a circle (with center O) perpendicular to each other and OD is the diameter of the smaller circle. If OA = 7 cm, find the area of the shaded region.

Q.34	Find the mean marks from the following data :

Marks	Below 10	Below 20	Below 30	Below 40	Below 50	Below 60	Below 70	Below 80	Below 90	Below 100
No. of Students	5	9	17	29	45	60	70	78	83	85

PART – D (Question 35 to 40 carry 4 mark each.)

Q.35	Construct an isosceles triangles whose base is 8 cm and altitude 4 cm and then another triangle whose sides are 3/2 times the corresponding sides of the isosceles triangle.
Q.36	ABC is a right triangle, right-angled at C. Let BC = a, CA b, AB = c and let p be the length of perpendicular form C on AB, prove that (i) cp = ab (ii) $\dfrac{1}{p^2} = \dfrac{1}{a^2} + \dfrac{1}{b^2}$ OR In the given figure , in $\triangle ABC$, XY∥ AC and XY divides the $\triangle ABC$ into two regions such that ar $(\triangle BXY) = 2ar(ACYX)$. Determine $\dfrac{AX}{AB}$.
Q.37	Had Ajita scored 10 more marks in her mathematics test out of 30 marks, 9 times these marks would have been the square of her actual marks. How many marks did she get in the test ?

	Or If the equation $\left(1 + m^2\right)n^2 x^2 + 2\,mncx + \left(c^2 - a^2\right) = 0$ has equal roots of x, prove that $c^2 = a^2\left(1 + m^2\right)$.
Q.38	A juice seller was serving his customers. The inner diameter of the cylindrical glass was 5cm but the bottom of the glass had a hemispherical raised portion which reduce the capacity of the glass if the height of the glass was 10cm. find the apparent capacity and actual capacity of the glass (use π =3.14) **OR** A hemispherical tank full of water is emptied at the rate of $7\frac{1}{7}$ liters per second. How much time will it take to make the tank half empty, if the tank is 3m in radius? (Use $\pi = \frac{22}{7}$)
Q.39	A boy is standing on the ground and flying a kite with 100 m of string at an elevation of 30^0. Another boy is standing on the roof of a 10 m high building and is flying his kite at an elevation of 45^0. Both the boys are on opposite sides of both the kites. Find the length of the string that the second boy must have so that the two kites meet.
Q.40	Find the missing frequencies in the following frequency distribution table, if N=100 and median is 32. | Marks obtained	0-10	10-20	20-30	30-40	40-50	50-60	Total
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No. of students	10	?	25	30	?	10	100	
	" THE TWO MOST POWERFUL WARRIORS ARE PATIENCE AND TIME "

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