CODE:1602- AG-TS-7

REG.NO:-TMC -D/79/89/36/63

General Instructions :-

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

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

(iii) Question **1-20**in **PART-A** areObjective 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.

Time : 3 Hours | Maximum Marks : 80

CLASS – X | **MATHEMATICS**

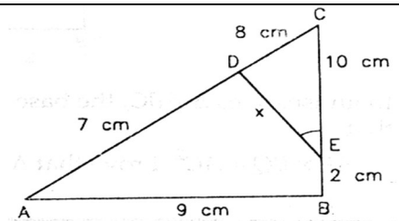
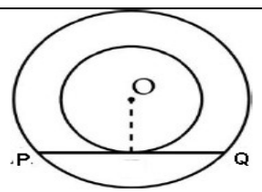
PRE-BOARD EXAMINATION 2019 -20

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	Which of the following is a non-terminating repeating decimal ? **(A)** $\frac{35}{14}$ **(B)** $\frac{14}{35}$ **(C)** $\frac{1}{7}$ **(D)** $\frac{7}{8}$
Q.2	The mean of the median of 2, 8, 3, 7, 4, 6, 7 and the mode of 2, 9, 3, 4, 9, 6, 9, is (a) 9 (b) 8 (c) 6 (d) 7.5.
Q.3	If d is the HCF of 758 and 242, then x ,y if , d = 242x + 758 y (a) (53 , -166) (b) (-166 , 53) (c) (-166 , 53) (d) none of these
Q.4	For what value of k, do the equations $3x - y + 8 = 0$ and $6x - ky = -16$ represent coincident lines? (a) $\frac{1}{2}$ (b) $-\frac{1}{2}$ (c) 2 (d) -2
Q.5	If two poles 2 m and 8 m high are 100 m apart, then the height of the point of intersection of the line joining the top of each pole to the foot of the opposite pole is (a) 1.4 m (b) 1.6 m (c) 1.7 m (d) 1.2 m.
Q.6	If two towers of height $h1$ and $h2$ subtend angles of 60 and 30 respectively at the mid-point of the line joining their feet, then $h1 : h2$ is (A) 3 : 1 (B) $\sqrt{3}:1$ (C) $1:\sqrt{3}$ (D) 1 : 3
Q.7	The triangle having vertices (-2, 5), (3, -4), (7, 10) is (A) isosceles (B) equilateral . (C) scalene (D) isosceles right - angle triangle.
Q.8	If the points (7, -2), (5, 1), (3, k) are collinear, then k = (A)3 (B) 4 (C) -3 (D) -4
Q.9	If $\tan 2A = \cot(A - 18^0)$, then the value of A is (a) 18° (b) 36° (c) 24° (d) 27°
Q.10	To divide a given line segment AB=6cm such that $\frac{AP}{AB} = \frac{2}{5}$

	We shall divided the line segment AB in the ratio: (a) 3:5 (b) 2:5 (c) 2:3 (d) 3:2
(Q11 – Q15) Answer the following questions	
Q.11	The least number divisible by 2,3,7 and 9 is……
Q.12	 In fig. if ∠A = ∠CED, prove that ΔCAB ~ΔCED. Also, find the value of x.
Q.13	 In fig. 1 are two concentric circles of radii 5 cm and 3 cm. PQ ia a chord of larger circle which touches the smaller. The length of the PQ is (A) 3 cm (B) 4 cm (C) 5 cm (D) 8 cm **OR** The length of the tangent drawn from a point 8 cm away from the center of a circle of radius 6 cm is. (A) $\sqrt{5}$ cm (B) $2\sqrt{5}$ cm (C) 10 cm (D) $2\sqrt{7}$ cm
Q.14	Which term of the Arithmetic Progression 3, 10, 17, …… will be 84 more than its 13th term.
Q.15	If the roots of the equation $3x^2 - (4K + 3)x + 5 = 0$ is equal in magnitude but opposite in sign .Find k .
Fill in the blanks (Q16 – Q20)	

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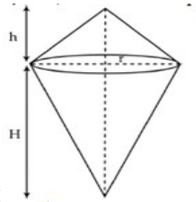
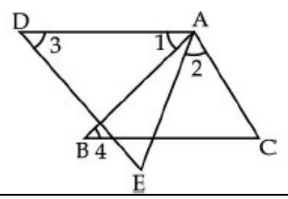
Q.16	A solid metallic object is shaped like a double cone as shown in figure. Radius of base of both cones is same but their heights are different. If this cone is immersed in water, the quantity of water it will displace is  equal to: (A) $\frac{1}{3}\pi r^2 hH unit^3$ (B) $\frac{1}{3}\pi r^2 (h+H) unit^3$ (C) $\frac{1}{3}\pi r^2 (H-h) unit^3$ (D) $\pi r^2\left(H+\frac{h}{3}\right) unit^3$
Q.17	Qquadratic equation with rational coefficients, one of whose roots is $\frac{2-\sqrt{3}}{5}$, is …….. **OR** What real number should be subtracted from the polynomial $3x^3 + 10x^2 - 14x + 9$ so that the polynomial $3x - 2$ divides it exactly?
Q.18	ABC and DEF are two similar triangles such that AB = 2DE and area of ΔABC is 56sq.cm, the area of ΔDEF …….
Q.19	If the nth term of an AP is $\frac{3+n}{4}$, then its 8th term is ---------
Q.20	Tickets are numbered from 1 to 100.They are well shuffled and a ticket is drawn at random. Probability that the drawn ticket has a number 5 or multiple of 5 is (a) $\frac{1}{2}$ (b) $\frac{1}{5}$ (c) $\frac{1}{25}$ (d) $\frac{3}{25}$
PART – B (Question 21 to 26 carry 2 mark each.)	

Q.21	Show that 6^n can't end with 0 for any integer n.
Q.22	In the figure, ABC is an isosceles triangle in which AB = AC. A circle through B touches the side AC at D and intersect the side AB at P. If D is the midpoint of side AC, Then AB = 4AP. **OR** ABC is a right triangle in which $\angle B = 90^\circ$. A circle is inscribed in the triangle. If AB = 8 cm and BC = 6 cm find the radius r of in circle.
Q.23	Two Isosceles triangles have equal vertical angles and their areas are in the ratio 16 : 25. Find ratio of their corresponding heights. **OR** In the given figure, $\angle 1 = \angle 2$ and $\angle 3 = \angle 4$. Show that AE.BC = AC.DE. 
Q.24	A boy of height 1.7 m is standing 30 m away from a flagstaff on the same level ground. He observes that the angle of elevation of the top of the flagstaff is 30°. Calculate the height of the flagstaff.
Q.25	From a well shuffled pack of 52 cards, two black kings and two black jacks are removed. From the remaining cards, a card is drawn at random. Find the probability that the drawn card is not a king. or A mobile phones shopkeeper has 48 mobile phones of which 40are good, 5 have only minor defect and 3 have major defect. He sells all the phones at same cost Paridhi will buy a phone is selected at random from the shop. What are the probabilities that it is (i) good phone (ii) major defect ? Which phone should not sell the shopkeeper at the same rate and why?

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Q.26	A conical empty vessel is to be filled up completely by pouring water into it successively with the help of a cylindrical can of diameter 6 cm and height 12 cm. The radius of the conical vessel if 9 cm and its height is 72 cm. How many times will it required to pour water into the conical vessel to fill it completely, if, in each time, the cylindrical can is filled with water completely ?

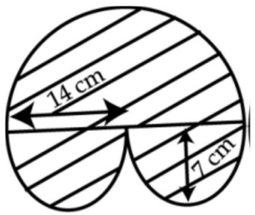
PART – C (Question 27 to 34 carry 3 mark each.)

Q.27	Two reservoirs contain 850 litres and 680 litres of water respectively . find the maximum capacity of the container which can measure the water of reservoir in exact number of times . **OR** If d is the HCF of 56 and 72 . Find x and y which satisfied d = 56 x + 72 y. Also prove that x and y is not unique.
Q.28	Which term of the A.P. is first negative $24, 23\frac{1}{4}, 22\frac{1}{2}, 21\frac{3}{4}, \ldots\ldots$ is first negative term
Q.29	Solve graphically the system of linear equations: 4 x+ 6 y = 9 & 2 x + 3 y = 11 .
Q.30	If α and β are the zeroes of the polynomial $x^2 - 3x + 6$, then find the polynomial whose zeroes are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$.
Q.31	Prove that the coordinates of the pint which divided the line segment joining the pints (x_1, y_1) and (x_2, y_2) internally in the ratio **m : n** are given by $x = \frac{mx_2 + nx_1}{m+n}, y = \frac{my_2 + my_1}{m+n}$.
Q.32	Prove that : $\frac{1}{\sec A + \tan A} - \frac{1}{\cos A} = \frac{1}{\cos A} - \frac{1}{\sec A - \tan A}$

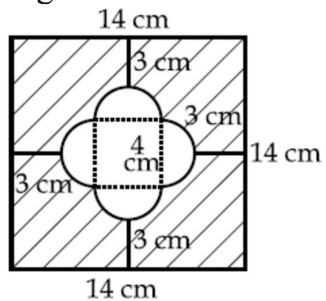
OR

Prove that : $\frac{\cot A + \cos ecA - 1}{\cot A - \cos ecA + 1} = \frac{1 + \cos A}{\sin A}$.

Q.33 Find the area of the shaded region in the given figure.



OR



In Fig. , find the area of the shaded region [Use $\pi = 3.14$]

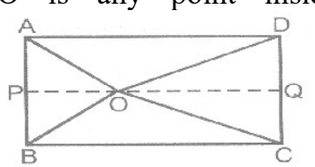
Q.34 Calculate the median for the following distribution class :

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	10	20	7	8	5

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

Q.35 Construct a ΔABC in which CA = 6 cm, AB = 5 cm and $\angle BAC = 45°$, then construct a triangle similar to the given triangle whose sides are $\frac{6}{5}$ of the corresponding sides of the ΔABC .

Q.36 O is any point inside a rectangle ABCD (shown in the figure)



. Prove that $OB^2 + OD^2 = OA^2 + OC^2$.

OR

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State and prove PYTHAGOREOUS THEOREM .

Q.37 Solve : $\frac{a}{ax-1} + \frac{b}{bx-1} = a + b$.

OR

The sum of the ages of a father and his son is 50 years. Five years ago the product of their ages was 175.find their present ages.

Q.38 From a solid cylinder whose height is 7cm and radius 6cm, a conical cavity of height 7cm and base radius 6cm is taken out. Find the volume of the remaining solid.

OR

Water flows at the rate of 10 m per minute through a cylindrical pipe having its diameter as 5 mm. How much time till it take to fill a conical vessel whose diameter of the base is 40 cm and depth 24 cm ?

Q.39 The angles of depression of the top and bottom of an 8 m tall building from the top of a multistoreyed building are 30° and 45 °respectively. Find the height of the multi-storeyed building and the distance between the two buildings.

Q.40 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

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महानता कभी न गिरने में नहीं बल्कि हर बार गिरकर उठ जाने में है