FIRST PRACTICE TEST- 2019-20
Class-X
Subject: Mathematics(BASIC)

Time allowed: 3 hours **Maximum Marks :80**

General Instructions:

(i) **All questions are compulsory.**

(ii) **The question paper consists of 40 questions divided into four sections - A, B, C and D.**

(iii) **Section A contains 20 questions of 1 mark each. Section B contains 6 questions of 2 marks each, Section C contains 8 questions of 3 marks each and Section D contains 6 questions of 4 marks each.**

(iv) **Use of calculators is not permitted.**

Section –A (1x20=20)

1. What is the HCF of smallest prime no. and smallest composite no,
(a)2 (b) 1 (c) 3 (d) 4

2. If 2 and 3 are the zeroes of the polynomial then the polynomial is

(a) x^2+5x+6 (b) x^2-5x+6 (c) x^2-6x+5 (d) $x^2-15x+6$

3. A ladder, leaning against a wall, makes an angle of 60° the horizontal. If the foot of the ladder is 2.5 m away from the wall, find the length of the ladder.
(a) 8m (b) 3m (c) 5m (d) 2.5m

4. If $\pi = \frac{22}{7}$, the distance covered by a wheel of diameter 35cm in one revolution is

(a) 100 cm (b) 1.1 cm (c) 17.5 cm (d) 110 cm

5. The area of circle inscribed in a square of side a is
(a) π a^2 /4 (b) π a^2 / 2 (c) π a^2 (d) $\pi a^2/3$

6. The value of k for which the pair of linear equation4x+6y-1=0 and 2x-ky=7 represent parallel line is
(a) -8 (b) -3 (c) -9 (d)-7

7. If $x=a\cos\theta$ $y=a\sin\theta$ then x^2+y^2
(a) a (b) a^3 (c) a^2 (d)1

8. If area of circle is numerically equal to twice the circumference, then the diameter of the circle is
(a) 16 (b)2 (c) 8 (d)4

9. $9(\sec A)^2 - 9(\tan A)^2$ =?
(a) 9 (b) 18 (c) 1 (d)1/9

10. Find the coordinate of the midpoint of the line segment joining the points A(-5,4) and B(7,-8)
(a) (2,-1) (b) (1,-2) (c) (-1,-2) (d) (3,-1)

11. The HCF and LCM of the two numbers are 9 and 360 respectively. If one number is 45 then other number is
(a) 9 (b) 18 (c) 72 (d)36

12. Find the value of k, so that quadratic equation $2x^2 + k x + 2 = 0$ has two equal roots.
(a)16 (b) 2 (c) 8 (d) 4

13. If $\cos A = \frac{4}{5}$, then the value of tan A is ;

(a)) $\frac{3}{5}$ (b)) $\frac{3}{4}$ (c) $\frac{4}{3}$ (d)- $\frac{5}{3}$

14. In an AP if the common difference is - 4 and seventh term is 4 then first term is

(a)2 (b) 28 (c) 5 (d)7

15. What is the value of $\cos^2 67 - \sin^2 23$

(a) 67 (b) 25 (c) 0 (d)1

16. Given ΔABC is similar to Δ PQR if $\frac{AB}{PQ} = \frac{1}{3}$ then find $\frac{ar(\Delta ABC)}{ar(\Delta pqr)}$

(a)1/16 (b) 1/10 (c) 1/9 (d)1/9

17. $\frac{2\tan 30^\circ}{1+tan30Xtan30^\circ}$ =

(a) sin60 (b) tan30 (c) tan45 (d) sin30

18. If 197a+173b=221 and 173a+197b=149 then (a,b) is

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

19. Area of sector of angle p (in degrees) of a circle with radius R is

(a) $\frac{p}{180}$ X2πR (b) $\frac{p}{180}$ XπR^2 (c) $\frac{p}{720}$ X2ΠR^2 (d) $\frac{p}{360}$ X2πR

20. The common point of a tangent to a circle and the circle is called ----------

Section –B (6x2=12)

21. ΔABC is an isosceles triangle, right angled at C prove that AB^2=2AC^2

22. Find two numbers whose sum is 27 and product is 182.

23. Find the area of sector of a circle with radius 6cm if angle of sector is 60°

24. Find the 20th term from the last term of the AP: 3, 8, 13,,……253.

25. Find the values of y for which the distance between them the points P (2, -3) and Q (10, y) is 10 units.

26 If the points (1, 2), (4, y), (x, 6) and (3, 5) are the vertices of a parallelogram taken in order, find x and y.

Section –C(3x8=24)

27 Determine the AP whose 5th term is 15 and sum of 3rd and 8th term is 34.

28. Prove that $3+2\sqrt{5}$ is irrational number

29. Prove that:

$$\frac{\text{Cos A}}{\text{1+Sin A}} + \frac{\text{1+ Sin A}}{\text{Cos A}} = 2 \text{ Sec A}$$

30 In a circle of radius 21 cm, an arc subtends an angle of 60° at the centre. Find:

(i) the length of the arc

(ii) area of sector formed by the arc

(iii) area of the segment formed by the corresponding chord

31 From the top of a 7 m high building, the angle of elevation of the top of a cable tower is 60° and the angle of depression of its foot is 45° . Determine the height of the tower.

32 Solve for x: $x-\frac{1}{x}=3 \quad (x \neq 0)$

33. Draw a circle of radius 4 cm. Draw two tangents to the circle inclined at an angle of 60° to each other.

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34 Find the ratio in which the line segment joining A (1, -5) and B (-4, 5) is divided by the x-axis. Also find the coordinates of the point of division.

Section –D(4x6=24)

35 Two water tapes together can fill a tank in $9\frac{3}{8}$ hours. The tap of larger diameter takes 10 hours less than the smaller one to fill the tank separately. Find the time in which each tap can separately fill the tank.

or

The taxi charges in a city consist of a fixed charge together with the charge for the distance covered. For a distance of 10 km, the charge paid is Rs105 and for a journey of 15 km, the charge paid is Rs 155. What are the fixed charges?

36. A statue 1.6m tall, stands on the top of pedestal. From a point on the ground the angle of elevation of the top of statue is 60° and from the same point the angle of elevation of the top of the pedestal is 45°. Find the height of the pedestal.

37 State and Prove Pythagoras theorem.

or

State and prove basic proportionality theorem

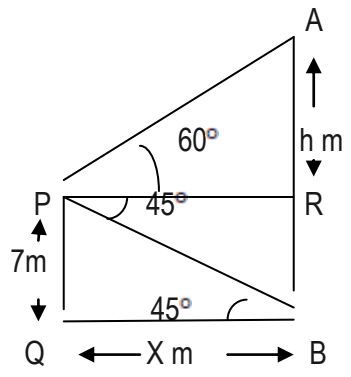
38.. From each corner of a square of side 4cm a quadrant of a circle of radius 1cm is cut and also a circle of diameter 2cm is cut from middle of square. Find the area of the remaining portion of the square

39 Draw a triangle ABC with side BC = 7 cm, $\angle B$ =45°, $\angle$ A = 105° . Then construct a triangle whose sides are $\frac{4}{3}$ times the corresponding sides of ΔABC. (Also write steps of construction)

40 Find all other zeros of $3x^4+6x^3-2x^2-10x-5$, if two of its zeroes are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$

QUESTION PAPER : MATHEMATICS
CLASS – X
MARKING SCHEME

QUESTION NUMBER	EXPECTED ANSWERS SECTION A	VALUE POINTS
1	a	1
2	b	1
3	c	1
4	d	1
5	a	1
6	b	1
7	c	1
8	d	1
9	a	1
10	b	1
11	c	1
12	d	1
13	a	1
14	b	1
15	c	1
16	d	1
17	a	1
18	b	1
19	c	1
20	point of contact	1

QUESTION NUMBER	EXPECTED ANSWERS SECTION B	VALUE POINTS
21	**GIVEN TO PROVE** **PROOF**	**1** **1**
22	Let the numbers are x and 27 – x. X .(27 –x) =182 X = 13 , 14 Numbers are **13** & **14**	(1) (1)
23	formula correct calculation	**1** **1**
24	formula correct calculation	**1** **1**
25	formula correct calculation	**1** **1**
26	formula correct calculation	**1** **1**
QUESTION NUMBER	**EXPECTED ANSWERS SECTION C**	**VALUE POINTS**
27	T_5 = 15 => a +4d =15 ……..(1) $T_3 + T_8 = 34$ => (a +2d) + (a +7d) = 34 2a +9d = 34 ……(2) Solving eq. (1) and (2) we get a = -1 and d= 4 **So -1, 3, 7, …….are in AP**	(1) (1) (1)
28	**given to prove** **proof**	**1** **2**
29	For Given, To prove and figure For correct proof	**1½** **1½**
30	(i) Length of arc = $\frac{60°}{360°}$ x 2π x 21 = **22 cm** (ii) Area of sector = $\frac{60°}{360°}$ x π x $(21)^2$ = **231 cm²** Area of segment = Area of sector – area of eq. triangle = **40.27 cm²**	(1) (1) (1)
31	For figure In ΔAPR, we have tan 60° = $\frac{AR}{PR}$ $\sqrt{3} = \frac{h}{x}$ => h = $\sqrt{3}$ x ……..(I) In ΔPBQ, we have tan 45° = $\frac{PQ}{QB}$ $1 = \frac{7}{x}$ => x = 7……..(II By solving (I) and (II) we get h =$7\sqrt{3}$ i.e. AR = $7\sqrt{3}$ m Height of the tower AB = **$7(\sqrt{3}+1)$m**  	(1) (1) ½ ½
32	**correct** equation solution	**1** **2**

33	Drawing of circle For complete construction	½ 2½
34	Let the required ratio be k : 1 .Then, the coordinate of the point of division is P($\frac{-4k+1}{k+1}$, $\frac{5k-5}{k+1}$) Since the point lies on x-axis. There its y-coordinate is zero. $\frac{5k-5}{k+1}$ = 0 => k =1 So **ratio = 1: 1** **Coordinate of point of division = P(-$\frac{3}{2}$, 0)**	(1) (1) (1)
QUESTION NUMBER	**EXPECTED ANSWERS SECTION C**	**VALUE POINTS**
35	Let the smaller tap fill the tank in x hours. Then larger tap fills the tank in (x-10) hours Part of tank filled by smaller tap in 1 hour =$\frac{1}{x}$ Part of the tank filled by the larger tap in 1 hour = $\frac{1}{x-10}$ Part of the tank filled by both taps together in 1 hour =$\frac{8}{75}$ A/Q $\frac{1}{x}+\frac{1}{x-10}=\frac{8}{75}$ and after solving we get $4x^2$ -115x + 375 =0 (x-25)(4x-15) =0 => x =25 or x= $\frac{15}{4}$ Now x = $\frac{15}{4}$ => x-10 < 0 so x = 25 Hence ,the time taken by smaller tap to fill the tank = **25 h** & the time taken by larger tap to fill the tank = **15 h**	(1) (1) (1) (1) (1)
36	**correct fig** correct values correct solution	**1** **1** **2**
37	Statement Given, To prove or Figure For correct proof	**1** **1** **2**
38	**correct formula** correct values correct solution	**1** **1** **2**
39	For construction of ΔABC Construction of triangle whose sides are $\frac{4}{3}$ times the corresponding sides of ΔABC For steps of construction	(1) (2) (1)
40	x^2+2x+1 zeroes x=-1 x=-1	**1** **1** **2**