

**KENDRIYA VIDYALAYA GACHIBOWLI, GPRA CAMPUS, HYD-32**  
**SAMPLE PAPER TEST 04(BASIC) (2019-20)**

**SUBJECT: MATHEMATICS**  
**CLASS : X**

**MAX. MARKS : 80**  
**DURATION : 3 HRS**

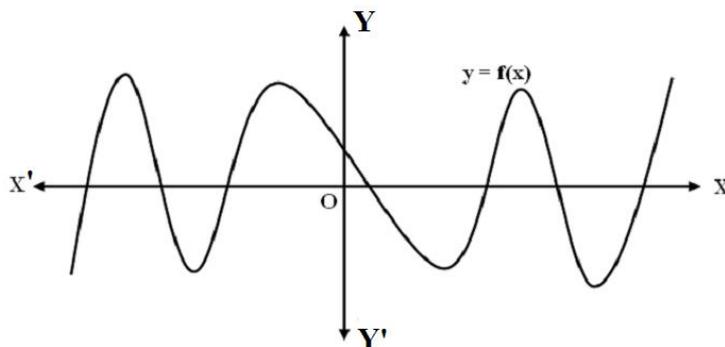
**General Instruction:**

- (i) All the questions are compulsory.
- (ii) The question paper consists of 40 questions divided into 4 sections A, B, C, and D.
- (iii) **Section A** comprises of 20 questions of **1 mark** each. **Section B** comprises of 6 questions of **2 marks** each. **Section C** comprises of 8 questions of **3 marks** each. **Section D** comprises of 6 questions of **4 marks** each.
- (iv) There is no overall choice. However, an internal choice has been provided in two questions of 1 mark each, two questions of 2 marks each, three questions of 3 marks each, and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.
- (v) Use of calculators is not permitted.

**SECTION – A**

**Questions 1 to 20 carry 1 mark each.**

1. The HCF of 52 and 130 is  
(a) 52                      (b) 130                      (c) 26                      (d) 13
2. The decimal expansion of  $\frac{63}{72 \times 175}$  is  
(a) terminating                                              (b) non-terminating  
(c) non termination and repeating                      (d) an irrational number
3. If HCF and LCM of two numbers are 4 and 9696, then the product of the two numbers is:  
(a) 9696                      (b) 24242                      (c) 38784                      (d) 4848
4. The number of zeroes of the polynomial  $f(x)$  from the below graph is  
(a) 0                      (b) 1                      (c) 2                      (d) none of these



5. The zeroes of the polynomial  $x^2 + 7x + 10$  are  
(a) 2 and 5                      (b) -2 and 5                      (c) -2 and -5                      (d) 2 and -5
6. If the origin is the mid-point of the line segment joined by the points (2,3) and (x,y), then the value of (x,y) is  
(a) (2, -3)                      (b) (2, 3)                      (c) (-2, 3)                      (d) (-2, -3)
7. The distance of the point P(2, 3) from the x-axis is:  
(a) 2                      (b) 3                      (c) 1                      (d) 5
8. Find the length of tangent drawn to a circle with radius 7 cm from a point 25 cm away from the centre.  
(a) 24 cm                      (b) 27 cm                      (c) 26 cm                      (d) 25 cm

9. One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting a king of red colour  
 (a)  $\frac{1}{26}$       (b)  $\frac{2}{13}$       (c)  $\frac{1}{13}$       (d)  $\frac{3}{26}$
10. The abscissa of the point of intersection of the less than type and of the more than type ogives gives its  
 (a) mean      (b) median      (c) mode      (d) all three
11. The coordinates of the point on y-axis which is nearest to the point  $(-2, 5)$  is \_\_\_\_\_
12. The value of  $9 \sec^2 A - 9 \tan^2 A$  is \_\_\_\_\_
13. If  $\cos A = \frac{24}{25}$ , then the value of  $\sin A$  is \_\_\_\_\_
14. The values of  $k$  for quadratic equation  $2x^2 + kx + 3 = 0$ , so that they have two equal roots is \_\_\_\_\_

**OR**

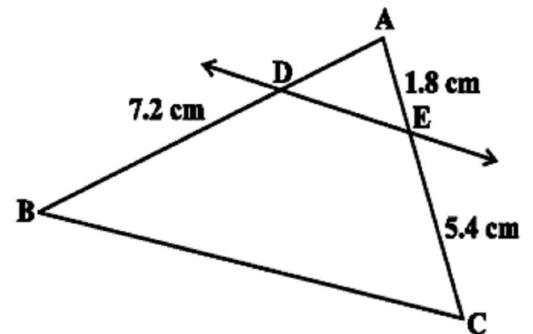
The value of  $k$  for which the system of equations  $2x + 3y = 5$  and  $4x + ky = 10$  has infinite many solution is \_\_\_\_\_

15. It is given that  $\Delta ABC \sim \Delta PQR$  with  $\frac{BC}{QR} = \frac{1}{3}$ , then  $\frac{ar(\Delta ABC)}{ar(\Delta PQR)}$  is \_\_\_\_\_
16. If  $\sin A = \frac{1}{2}$ , find the value of  $\frac{2 \sec A}{1 + \tan^2 A}$ .

**OR**

If  $\sin \theta = \cos \theta$ , then find the value of  $2 \tan \theta + \cos^2 \theta$

17. The radii of two circles are 19 cm and 9 cm respectively. Find the radius of the circle which has circumference equal to the sum of the circumferences of the two circles.
18. If  $P(E) = 0.35$ , what is the probability of 'not E'?
19. In the adjoining figure,  $DE \parallel BC$  then find the value of AD.
20. Which term of the AP: 3, 8, 13, 18, ..... is 78?



### SECTION – B

**Questions 21 to 26 carry 2 marks each.**

21. A box contains cards numbered 1 to 100. A card is drawn at random from the box. Find the probability that the number on the drawn card is (i) a square number (ii) a multiple of 5
- OR**
- A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is (i) red ? (ii) not red?
22. A die is thrown once. Find the probability of getting (i) an odd number; (ii) a number lying between 2 and 6;
23. Find the area of a quadrant of a circle whose circumference is 22 cm.

24. If  $\tan 2A = \cot (A - 18^\circ)$ , where  $2A$  is an acute angle, find the value of  $A$ .

OR

If  $\sin (A - B) = \frac{1}{2}$ ,  $\cos (A + B) = \frac{1}{2}$ ,  $0^\circ < A + B \leq 90^\circ$ ,  $A > B$ , find  $A$  and  $B$ .

25. Find a quadratic polynomial, whose zeroes are  $-3$  and  $2$ .

26. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

### SECTION – C

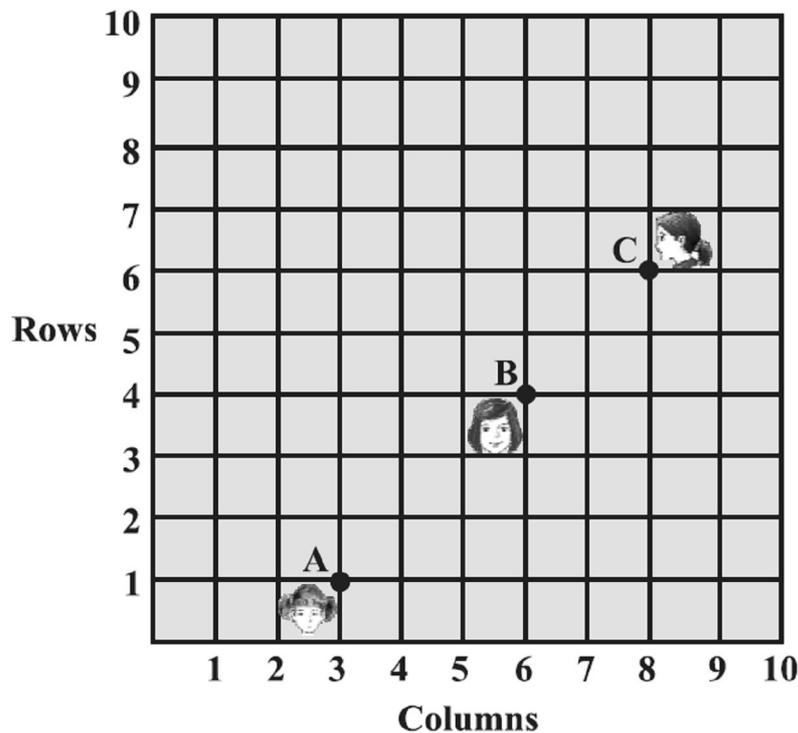
Questions 27 to 34 carry 3 marks each.

27. Prove that  $5 - 2\sqrt{3}$  is an irrational number.

OR

In a morning walk, three persons step off together. Their steps measure 80 cm, 85 cm and 90 cm respectively. What is the minimum distance each should walk so that all can cover the same distance in complete steps?

28. The below figure shows the arrangement of desks in a classroom. Ashima, Bharti and Camella are seated at  $A(3, 1)$ ,  $B(6, 4)$  and  $C(8, 6)$  respectively. Do you think they are seated in a line? Give reasons for your answer.



29. Find the zeroes of the quadratic polynomial  $x^2 - 2x - 8$ , and verify the relationship between the zeroes and the coefficients.

30. Solve  $2x + 3y = 11$  and  $2x - 4y = -24$  and hence find the value of ' $m$ ' for which  $y = mx + 3$ .

31. Prove that:  $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$

OR

Prove that:  $\sqrt{\frac{1 + \sin A}{1 - \sin A}} = \sec A + \tan A$ .

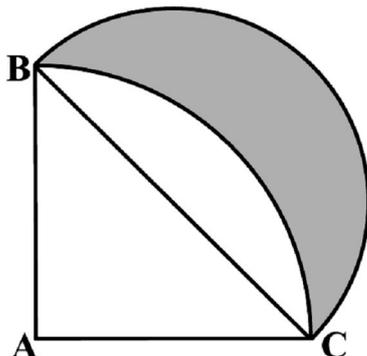
32. Construct a triangle with sides 5 cm, 6 cm and 7 cm and then another triangle whose sides are  $\frac{4}{7}$  of the corresponding sides of the first triangle.

**OR**

Draw a line segment of length 7.6 cm and divide it in the ratio 5 : 8. Measure the two parts.

33. Prove that the parallelogram circumscribing a circle is a rhombus.

34. In the below figure, ABC is a quadrant of a circle of radius 14 cm and a semicircle is drawn with BC as diameter. Find the area of the shaded region.



### **SECTION – D**

**Questions 35 to 40 carry 4 marks each.**

35. Two poles of equal heights are standing opposite each other on either side of the road, which is 80 m wide. From a point between them on the road, the angles of elevation of the top of the poles are  $60^\circ$  and  $30^\circ$ , respectively. Find the height of the poles and the distances of the point from the poles.

36. A motor boat whose speed is 18 km/h in still water takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream.

37. If the sum of first 7 terms of an AP is 49 and that of 17 terms is 289, find the sum of first n terms.

**OR**

How many terms of the AP : 24, 21, 18, . . . must be taken so that their sum is 78?

38. Prove that in a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

**OR**

State and prove Basic proportionality theorem.

39. 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 30 minutes, if 8 cm of standing water is needed?

**OR**

A toy is in the form of a cone of radius 3.5 cm mounted on a hemisphere of same radius. The total height of the toy is 15.5 cm. Find the total surface area of the toy.

40. Draw more than ogive for the following frequency distribution:

<b>Marks</b>	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
<b>Number of students</b>	5	8	6	10	6	6

Also find the median from the graph.