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Shree Swaminarayan Gurukul, Zundal

HALF YEARLY (2020 - 21)					
Student's Name:		**Grade**	**X**	**Roll No.**	
Date:	**10/09/2020 (Wednesday)**	**Time**	**3 hrs.**	**Subject**	**Maths**
Teacher's Sign.				**Total Marks**	**80**

Section – A **[1X 20= 20]**

Solve 1 to 20 questions each carry 1 mark

1. What is the LCM of 4 and 19 is

(A) 1 (B) 4 (C) 19 (D) 76

2. The zero of p(x) = ax + b is

(A) a (B) b (C) -a/b (D) -b/a

3 The maximum number of zeros that a polynomial of degree3 can have is

(A) 1 (B) 2 (C) 3 (D) None

4. The pair of zeros of the polynomial $2x^2 + 14x + 20$ is

(A) 2 and 5 (B) -2 and -5 (C) 2 and -5 (D) -2 and 5

5. How many tangents can a circle have?

(A) Two (B) infinitely many (C) One (D) Zero

6 ABC and BDE are two equilateral triangles such that D is the midpoint of BC. The ratio of the areas of triangles ABC and BDE is:

(A) 2: 1 (B) 1: 2 (C) 4: 1 (D) 1: 4

7. If three points (0,0), (3, $\sqrt{3}$) and (3,m)form an equilateral triangle, then m equals

(A) 2 (B) -3 (C) -4 (D) None

8. If cosA = 4/5, then the value of tanA is

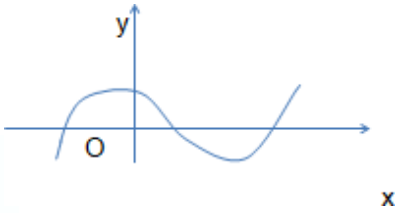
(A) 3/5 (B) 3/4 (C) 4/3 (D)5/3

9. One card is drawn from a well shuffled deck of 52 cards. The probability that it is black queen is

(A) 1/26 (B) 1/13 (C) 1/52 (D) 2/13

10. The following figure shows the graph of y = p(x), where p(x) is a polynomial in variable x. The number of zeroes of the polynomial p(x) is

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



Fill the blank

11. The point which divides the line segment joining the points A (0, 5) and B (5, 0) internally in the ratio 2:3 is _____

12. A line intersecting a circle in two points is called a _____.

13. A circle can have _____ parallel tangents at the most.

14. If the quadratic equation $x^2 - 2x + k = 0$ has equal roots, then value of k is _____

15. All circles are _____ (congruent, similar)

16. If is one root of the quadratic equation $x^2-2kx-6=0$, then find the value of k

17. What is the HCF of the smallest prime number and the smallest composite number?

18. Find the distance of a point (x, y) from the origin.

19. If the distance between the point (4 , k) and (1, 0) is 5, then what can be the possible values of k?

20. Prove that $\sqrt{2}$ is irrational number

Section – B **[2X6=12]**

Solve any 6 question each carry 2 marks

21. Using Euclid's division algorithm, find the HCF of 405 and 2520

22. Using prime factorization, find the HCF and LCM of 36 and 84

23. Find the zeros of the given quadratic polynomial and verify the relationship between the zer*os* and the coefficients: $4x^2 - 9x + 5$

24 If two coins are tossed simultaneously. Find the probability of getting 2 heads

25. Two concentric circles are of radii 13 cm and 5 cm. Find the length of the chord of the larger circle, which touches the smaller circle

26. E and F are points on the sides PQ and PR respectively of a ΔPQR. For each of the following cases, state whether EF ∥ QR:

(i) PE = 3.9 cm, EQ = 4 cm, PF = 3.6 cm and FR = 2.4 cm
(ii) PE = 4 cm, QE = 4.5 cm, PF = 8 cm and RF = 9 cm

27. Draw a circle and two lines parallel to a given line such that one is a tangent and the other, a secant to the circle.

28. Find a quadratic polynomial with the given numbers as the sum and product of its zeroes respectively:

$\frac{1}{4}$, -1

Section – C **[3X8=24]**

Solve any 8 question each carry 3 marks

29 A lot of 25 bulbs contain 5 defective ones. One bulb is drawn at random from the lot. What is the probability that the bulb is good.

30.. If a line drawn parallel to one side of a triangle to intersect the other two side in distinct point, other two sides are divided in the same ratio. (B P T Theorem)

31 Show that tan 48º tan 23º tan 42º tan 67º = 1.

32 If tangents PA and PB from a point P to a circle with centre O are inclined to each Other at angle of 80°, then find value ∠POA.

33. Evaluate cos 48º cos 42º − sin 48º sin 42º

34. The HCF of two numbers is 145 and their LCM is 2175. If one of the numbers is 725, find the other.

35. Write Pythagoras theorem.

36. As observed from the top of a 75m high light house above the sea level, the angles of depression of two ships are 30^{O} and 45^{O} respectively If one ship is exactly behind the other on the same side of the light house and in the same straight line , find the distance between the two ships. (use √3 = 1.732)

37. Whether (5, –2), (6, 4) and (7, –2) are the vertices of an isosceles triangle.

38. A bag contains lemon flavoured candles only. Malini takes out one candy without looking into the bag. What is the probability that she takes out: (i) an orange flavoured candy? (ii) a lemon flavoured candy?

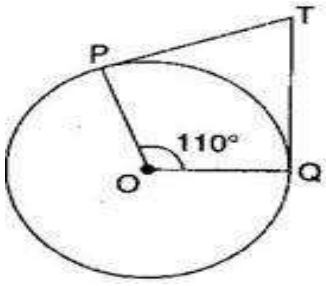
Section – D **(4 X 6 = 24)**

Solves any 6 question each carry 4 marks

39. A tangent PQ at a point P of a circle of radius 5 cm meets a line through the centre O at a Point Q so that OQ = 12 cm. Then find length PQ.

40. If a line drawn parallel to one side of a triangle to intersect the other two side in distinct point, other two sides are divided in the same ratio. (B P T Theorem)

41.In figure, if TP and TQ are the two tangents to a circle with centre O so that ∠POQ = 180° Then ∠PTQ is equal to:



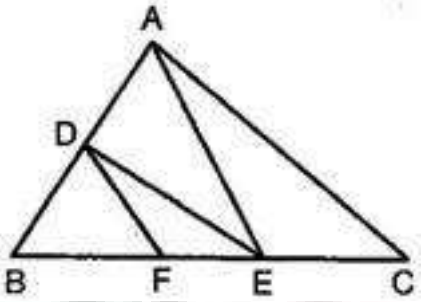
42 Name the type of quadrilateral formed, if any, by the following points, and give reasons for your answer.

(–1, –2), (1, 0), (–1, 2), (–3, 0)

43. Two dice are thrown simultaneously at random. Find the probability of getting a sum of eight.

44. A piggy bank contains hundred 50 p coins, fifty Re. 1 coins, twenty Rs. 2coins and ten Rs. 5 coins. If it is equally likely that of the coins will fall out when the bank is turned upside down, what is the probability that the coin: (i) will be a 50 p coin? (ii) will not be a Rs.5 coin?

45 In the given figure, DE ∥ AC and DF ∥ AE. Prove that $\frac{BF}{FE} = \frac{BE}{EC}$



46 If tangents PA and PB from a point P to a circle with centre O are inclined to each

Other at angle of 80°, then find value ∠POA.

$$\frac{BF}{FE} = \frac{BE}{EC}.$$