## <u>GENIUS HIGH SCHOOL :: BHUVANAGIRI</u> <u>PERIODIC TEST - II</u>

Class : X <u>Subject : MATHEMATICS</u> General Instructions:					Time: 1 1/2Hrs <u>Max marks: 40</u>		
1. The ques	tion paper con	tains thre	e parts A, B	and C			
2. Section A	consists of 20	questions	of 1 mark e	ach. An	ny 16 questions are to be attempted		
3. Section B	consists of 20	questions	of 1 mark e	ach. An	ny 16 questions are to be attempted		
4 Section C	consists of 10	questions	based on two	o Case S	Studies. Attempt any 8 questions.		
5. There is 1	no negative ma	rking.					
			SEC .	TION	- A		
<b>1. The dista</b> (a) 2	nce of the poin (b) 3	nt P(2, 3) f (c) 1	rom the x-ax (d) 5	cis is			
2.The perim	neter of a circl	e having r	adius 5cm is	equal t	to:		
30 cm	b)3.14 cm.	© 31.4	4 cm.	(d) 40 c	cm		
<b>3. The dista</b> (a) 4	nce between th (b) 5	ne point P (c) 6	(1, 4) and Q( (d) $3\sqrt{3}$	(4, 0) is	;		
4. Area of tl	he circle with	radius 5cm	n is equal to:				
60 sq.cm.	b) 75.5 sq.	cm.	© 78.5 sq.cr	n.	(d) 10.5 sq.cm		
5. The poin the value of (a) 3	tts (-5, 1), (1, p p is (b) 2	) and (4, -2 (c) 1	2) are colline (d) -1	ear if			
6. The large	est triangle ins	cribed in a	ı semi-circle	of radi	ius r, then the area of that triangle is;		
(a) r <sup>2</sup> .	(b) 1/2r <sup>2</sup>	(c) 2r <sup>2</sup>	(d) √2r				
<b>7. The area</b> (a) 63	<b>of the triangl</b> (b) 35	e ABC wit (c) 53	h the vertice (d) 3	es A(-5,	, 7), B(-4, -5) and C(4, 5) is		
8. If the per	imeter of the o	circle and	square are e	qual, th	hen the ratio of their areas will be equal to:		
a) 14:11	b) 22:7	c) 7:22	2. d) 11	:14			
9. The dista (a) $\alpha + \beta$ .	nce of the poin (b) $\alpha^2 + \beta^2$	nt (α, β) fr	om the origin (c) $ \alpha  +  \beta $	n is (d) <sup>v</sup>	$\sqrt{\alpha^2 + \beta^2}$		
10. The area	a of the circle	that can b	e inscribed i	n a squa	are of side 8 cm is		
(a) $36 \pi \text{ cm}^2$	(b) 10	$6 \pi$ cm2.	(c) 12 π	cm2.	(d) $9 \pi \text{ cm} 2$		
<b>11. The area</b> (a) 11	a of the triang (b) 22	le whose v (c)	ertices are A 33 (d	( <b>1, 2), I</b> ) 21	B(-2, 3) and C(-3, -4) is		
12. The area	a of the square	that can	be inscribed	in a cir	rcle of radius 8 cm is		
(a) 256 cm <sup>2</sup> .	(b) 12	8 cm <sup>2</sup> .	(c) 642	cm <sup>2</sup> .	(d) 64 cm2		
13. The nam	e of the horizon	ntal line in	the cartesian	plane w	which determines the position of a point is called:		

a. Origin b. X-axis c. Y-axis d. Quadrants 14) The name of the vertical line in the cartesian plane which determines the position of a point is called:

a. Origin b. X-axis c. Y-axis d. Quadrants

14) The section formed by horizontal and vertical lines determining the position of the point in a cartesian plane is called:

a. Origin b. X-axis c. Y-axis d. Quadrants

15) The point of intersection of horizontal and vertical lines determining the position of a point in a cartesian plane is called:

a. Origin b. X-axis c. Y-axis d. Quadrants

16) If the coordinates of a point are (0, -4), then it lies in:

a. X-axis b. Y-axis c. At origin d. Between x-axis and y-axis

17) If the coordinates of a point are (3, 0), then it lies in:

a. X-axis b. Y-axis c. At origin d. Between x-axis and y-axis

18) If the coordinates of a point are (-3, 4), then it lies in:

a. First quadrant b. Second quadrant c. Third quadrant d. Fourth quadrant

19). The area of a sector of a circle with radius 6 cm if the angle of the sector is 60°.

a) 142/7 b) 152/7. © 132/7. (d) 122/7

**20).** The line 3x + y - 9 = 0 divides the line joining the points (1, 3) and (2, 7) internally in the ratio (a) 3 : 4 (b) 3 : 2 (c) 2 : 3 (d) 4 : 3

SECTION B. Attempt any 16 from 20 questions

21. In a circle of radius 21 cm, an arc subtends an angle of 60° at the centre. The length of the arc is;

(a) 20cm. (b) 21cm. (c) 22cm. (d) 25cm

**22.** If (a/3, 4) is the mid-point of the segment joining points P(-6, 5) and R(-2, 3), then the value of 'a' is (a) 12 (b) -6. (c) -12 (d) -4

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

(a)  $p/180 \times 2\pi R$ . (b)  $p/180 \times \pi R2$ . (c)  $p/360 \times 2\pi R$ . (d)  $p/720 \times 2\pi R2$ 

**24. If the distance between the points (x, -1) and (3, 2) is 5, then the value of x is** (a) -7 or -1 (b) -7 or 1 (c) 7 or 1 (d) 7 or -1

**25.** Two vertices of a triangle are (3, - 5) and (- 7,4). If its centroid is (2, -1), then the third vertex is (a) (10, 2) (b) (-10,2) (c) (10,-2) (d) (-10,-2)

26. The wheel of a motorcycle is of radius 35 cm. The number of revolutions per minute must the wheel make so as to keep a speed of 66 km/hr will be

(a) 50. (b) 100. (c) 500. (d) 1000

**27.** The area of the triangle formed by the points A(-1.5, 3), B(6, -2) and C(-3, 4) is (a) 0 (b) 1 (c) 2 (d) 3/2

28 The are.a of a quadrant of a circle with circumference of 22 cm is

(a) 77 cm2. (b) 77/8 cm2. (b) 35.5 cm2. (c) 77/2 cm2

**29. If the points P(1, 2), B(0, 0) and C(a, b) are collinear, then** (a) 2a = b. (b) a = -b. (c) a = 2b (d) a = b

30. diameter of the front and rear wheels of a tractor are 80 cm and 2 m respectively. Find the number of revolutions that a rear wheel makes to cover the distance which the front wheel covers in 800 revolutions.

a) 300 b) 310 c) 320. d) 230

31) area of a sector whose perimeter is four times its radius r units,

a)	$(r^2/4)$ sq. units.	b) $2r^2$ sq. units			
b)	c) $r^2$ sq. units	d) $(r^2/2)$ sq. uni	ts		
32). A wire ca	n be bent in the fo	rm of a circle of rac	lius 56 cm	. If it is bent in the f	orm of a square,
then its area w	vill be				
a) 3520 cm	<sup>2</sup> b). 6400	)cm <sup>2</sup> c) 7744	cm2	d) 8800 cm2	
33. The circur	nference of a circl	e is 100 cm. The sid	e of a squa	re inscribed in the c	ircle is
(a .) $\sqrt{2}$ cm.	(b) 100/π cm.	(c) $50\sqrt{2}/\pi$ cm.	(d) 100 <sup>5</sup>	2/π cm	

34.Given below is the picture of the Olympic rings made by taking five congruent circles of radius 1cm each, intersecting in such a way that the chord formed by joining the point of intersection of two circles is also of length 1cm. Total area of all the dotted regions assuming the thickness of the rings to be negligible is



(a)  $4(\pi/12 - \sqrt{3}/4)$  cm<sup>2</sup>. (b)  $(\pi/6 - \sqrt{3}/4)$  cm<sup>2</sup>

(c)  $4(\pi/6 - \sqrt{3}/4)$  cm<sup>2</sup> (d)  $8(\pi/6 - \sqrt{3}/4)$  cm<sup>2</sup>

35. In the figure given below, ABCD is a square of side 14 cm with E, F, G and H as the mid points of sides AB, BC, CD and DA respectively. The area of the shaded portion is



36. equation of perpendicular bisector of line segment joining points A(4,5) and

B(-2,3) is

(a) 2x - y + 7 = 0. (b) 3x + 2y - 7 = 0 (c) 3x - y - 7 = 0. (d) 3x + y - 7 = 0

37.vertices of parallelogram in order A(1,2), B(4, y), C(x, 6) and D(3,5). Then

(x, y) is

(a) (6, 3) (b) (3, 6). (c) (5, 6) (d) (1, 4)

38. The distance of point A(-5, 6) from the origin is

(a) 11 units. (b) 61 units (c)  $\sqrt{11}$  units. D) none

39. Number of revolutions made by wheel of radius 0.7m in rolling a distance

of 176m is

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(a) 22 (b) 24 c) 75 d) 40

40. Perimeter of semi circle whose radius 7 cm is

(a) 44cm (b) 22cm c) 29cm d) 36 cm

SECTION C. Attempt any 4 from each case study

Q41-Q 45 are based on Case Study -1



**Design I:** This design is made with a circle of radius 32cm leaving equilateral triangle ABC in the middle as shown in the given figure.

**Design II:** This design is made with 9 circular design each of radius 7cm.

Refer Design I:			
41. The side of	equilateral triangle	is	
a) 12√3 cm	b) 32√3 cm	c) 48cm	d) 64cm
42. The altitude	e of the equilateral t	riangle is	
a) 8 cm	b) 12 cm	c) 48cm	d) 52cm
Refer Design II	[:		
43. The area of	square is		
a) 1264 cm <sup>2</sup>	b) 1764 cm <sup>2</sup>	c) 1830 cm <sup>2</sup>	d) 1944 cm <sup>2</sup>

44. Area of each circular design is

a)  $124 \text{ cm}^2$  b)  $132 \text{ cm}^2$  c)  $144 \text{ cm}^2$  d)  $154 \text{ cm}^2$ 

45. Area of the remaining portion of the square ABCD is

a)  $378 \text{ cm}^2$  b)  $260 \text{ cm}^2$  c)  $340 \text{ cm}^2$  d)  $278 \text{ cm}^2$ **Q46-Q50 are based on Case Study -2** 

Case Study -2

A hockey field is the playing surface for the game of hockey. Historically, the game was played on natural turf (grass) but nowadays it is predominantly played on an artificial turf.

It is rectangular in shape - 100 yards by 60 yards. Goals consist of two upright posts placed

equidistant from the centre of the backline, joined at the top by a horizontal crossbar. The inner

edges of the posts must be 3.66 metres (4 yards) apart, and the lower edge of the crossbar must be

2.14 metres (7 feet) above the ground.

Each team plays with 11 players on the field during the game including the goalie.

Positions you might play include-

Forward: As shown by players A, B, C and D.

**<u>Midfielders</u>**: As shown by players E, F and G.

**<u>Fullbacks</u>**: As shown by players H, I and J.

Goalie: As shown by player K

Using the picture of a hockey field below, answer the questions that follow:



46.The coordinates of the centroid of ΔEHJ are

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

47.If a player P needs to be at equal distances from A and G, such that A, P and G are in straight line, then position of P will be given by

(a) (-3/2, 2) (b) (2, -3/2) (c) (2, 3/2) (d) (-2, -3)

48. The point on x axis equidistant from I and E is

(a) (1/2, 0) (b) (0,-1/2) (c) (-1/2,0) (d) (0,1/2)

49. What are the coordinates of the position of a player Q such that his distance from K is twice his distance from E and K, Q and E are collinear?

(a) (1, 0) (b) (0,1) (c) (-2,1) (d) (-1,0)

50. The point on y axis equidistant from B and C is

(a) (-1, 0) (b) (0, -1) (c) (1, 0) (d) (0, 1)