<u>GENIUS HIGH SCHOOL :: BHUVANAGIRI</u> <u>SUMMATIVE ASSESSMENT - II</u>

Class : IX Subject : MATHEMATICS Time: 3Hrs Max marks: 80

General Instruction:

- 1. This question paper contains two parts A and B.
- 2. Both Part A and Part B have internal choices.

Part – A:

- 1. It consists two sections- I and II.
- 2. Section I has 16 questions of 1 mark each. Internal choice is provided in 5 questions.
- 3. Section II has 4 questions on case study. Each case study has 5 case-based sub-parts. Anexaminee is to attempt any 4 out of 5 sub-parts.

Part – B:

- 1. Question No 21 to 26 are Very short answer Type questions of 2 mark each,
- 2. Question No 27 to 33 are Short Answer Type questions of 3 marks each
- 3. Question No 34 to 36 are Long Answer Type questions of 5 marks each.
- 4. Internal choice is provided in 2 questions of 2 marks, 2 questions of 3 marks and 1 question of 5 marks.

PART - A SECTION-I

- 1) Find five rational numbers between 1 and 2.
- 2) Find the decimal expansions of 10/3
- 3) Find p(X)=2x-3=-2-x, when X=-1
- 4) Find the value of ${}^3\checkmark 64$
- 5) Rationalise $1/(1-\sqrt{3})$
- 6) Find the area of cylinder whose radius =height=21cm
- 7) Points on X axis are called.....
- 8) P(-3,-5) lies in quadrant
- 9) Find the point where the 3x+4y=12 cuts the y- axis
- 10) Find the probability of getting an odd number from set first 10 natural numbers?
- 11) Given mean is 20 of the data X,3x,7x,-x,find X
- 12) If the circumference of a circle is 22cm find area
- 13) Find the zero of polynomial 3x+2
- 14) the coordinates of P(-2,3) and Q(4,-3) find (abscissa of P)-(ordinate of Q)
- 15) Is 2/9 terminating decimal
- 16) Find mode of data 3,7,7,8,6,8,9,4,33,7,7

SECTION-II

Case study-based questions are compulsory. Attempt any four sub parts of each question. Each subpart carries 1 mark

1. Triangles are used to make bridges because a triangle is an undeformable shape, as considered in the civil engineering field. it can hold the most force when applied to it, compared to guadrilaterals and arches. Isosceles triangles were used to construct a bridge in which the base (unequal side) of an isosceles triangle is 4 m and its perimeter is 20 m.



- (a) What is the length of equal sides ?
- (i) 2 m (ii) 3 m (iii) 8 m (iv) 10 m

(b) What is the Heron's formula for a triangle ? (i) $\sqrt{s(s+a)(s-b)(s-c)}$ (ii) $\sqrt{s(s+a)(s+b)(s+c)}$ (iii) $\sqrt{s(s-a)(s-b)(s-c)}$ (iv) $\sqrt{s(s-a)(s-b)(s-c)}$

(c) What is the semi perimeter of the highlighted triangle?

(i) 30 m (ii) 40 m (iii) 10 m (iv) 50 m

(d) What is the area of highlighted triangle? (i) 4v15 m² (ii) 4 m² (iii) v15 m² (iv) 20 m²

(e) If the sides of a triangle are in the ratio 3 : 5 : 7 and its perimeter is 300 m. Find its area. (i) 100v2 (ii) 500v3 (iii) 1500v2 (iv) 200v3

2. Students of class IX are on visit of Sansad Bhawan. Teacher assign them the activity to observe and take some pictures to analyses the seating arrangement between various MP and speaker based on coordinate geometry. The staff tour guide explained various facts related to Math's of Sansad Bhawan to the students, students were surprised when teacher ask them you need to apply coordinate geometry on the seating arrangement of MP's and speaker.

Calculate the following refer to the below image and graph. Answer the following questions:

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(ii) What are th	ne coordinates of po	sition 'D'?	
(a) (3, 2)	(b) (-3, -2)	(c) (-3, 2)	(d) (3, -2)
(iii) What are t	he coordinates of po	osition 'H'?	
(a) (8, 5)	(b) (8, 4.5)	(c) (8, 4)	(d) (8, 5.5)
(iv) In which qu	uadrant, the point 'C	2' lie?	
(a) I	(b) II	(c) III	(d) IV
<pre>/ `</pre>		<u>.</u>	

 $\left(v\right)$ Find the perpendicular distance of the point E from the y-axis.

(a) 13 units (b) 10 units (c) 11 units (d) 3 units

3. The COVID-19 pandemic, also known as the coronavirus pandemic, is an ongoing pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus2 (SARS-CoV-2). It was first identified in December 2019 in Wuhan, China. During survey, the ages of 80 patients infected by COVID and admitted in the one of the City hospital were recorded and the collected data is represented in the less than cumulative frequency distribution table.



Age(in yrs)	No. of patients
5 – 15	6
15 - 25	11
25 - 35	21
35 - 45	23
45 - 55	14
55 - 65	5

Based on the information, answer the following questions :

- (a) The class interval with highest frequency is :
- (i) 45-55 (ii) 35-45 (iii) 25-35 (iv) 15-25
- (b) Which age group was affected the least?

(i) 35-45	(ii) 25-35
(iii) 55-65	(iv) 45-55

(c) What is the class mark of the class interval which was affected the most?(i) 30(ii) 40(iii) 50(iv) 60

(d) How	many patients of	the age 45 years and abo	ve were admitted?
(i) 61	(ii) 19	(iii) 14	(iv) 23

(e) How many patients of the age 35 years and less were admitted?(i) 17 (ii) 38 (iii) 61 (iv) 41

4. On his birthday, Manoj planned that this time he celebrates his birthday in a small orphanage centre. He bought apples to give to children and adults working there. Manoj donated 2 applesto each children and 3 apples to each adult working there along with Birthday cake. He distributed 60 total apples.



(a) How to represent the above situation in linear equations in two variables by taking the number of children as 'x' and the number of adults as 'y'?

(i) $2x + y = 60$	(iii) $2x + 3y = 60$
(ii) $3x + 2y = 60$	(iv) $3x + y = 60$

(a) If the number of children is 15, then find the number of adults?

(i) 10	(iii) 15
(ii) 25	(iv) 20

(b) If the number of adults is 12, then find the number of children?

(1) 12	(111) 15
(**) 14	() 10

(11) 14 (1V) 18

(c) Find the value of b, if x = 5, y = 0 is a solution of the equation 3x + 5y = b.

(i) 12	(iii) 15
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(ii) 14 (iv) 18

Part – B:

Question No 21 to 26 are Very short answer Type questions of 2 mark each

21) A joker's cap is in the form of a right circular cone of base radius 7 cm and height 24 cm. Find the area of the sheet required to make 10 such caps.

OR

The radius of a spherical balloon increases from 7 cm to 14 cm as air is being pumped into it. Find the ratio of surface areas of the balloon in the two cases.

- 22) The height and the slant height of a cone are 21 cm and 28 cm respectively. Find the volume of the cone.
- 23) Find two solutions for the equation 4x + 3y = 24. How many solutions of this equation are possible?
- 24) In the below figure, if AB || CD, \angle APQ = 50° and \angle PRD = 127°, find x and y.



- 25) Draw a perpendicular bisected to line segment AB = 10cm
- 26) The curved surface area of a right circular cylinder of height 14 cm is 88 sq.cm. Find the diameter of the base of the cylinder.

(Question no 27 to 33 are Short Answer Type questions of 3 marks each)

27) 1500 families with 2 children were selected randomly, and the following data were recorded:

Number of girls in a family	0	1	2
Number of families	475	814	211

Compute the probability of a family, chosen at random, having

(i) 2 girls (ii) 1 girl (iii) No girl

28) To Line *l* is the bisector of an angle A and B is any point on *l*. BP and BQ are perpendiculars from B to the arms of A (see the below figure). Show that:

(i) APB AQB (ii) BP = BQ or B is equidistant from the arms of A.



- 29) AB is a line segment and P is its mid-point. D and E are points on the same side of AB such that
 - BAD = ABE and EPA = DPB (see the below figure). Show that (i)

DAP = EBP(ii)AD = BE



- 30) Construct a triangle PQR in which QR = 6cm, $\angle Q = 60^{\circ}$ and PR PQ = 2cm.
- 31) The employees in a company gets 1,50,000rs bonus is to be shared each one,the obtained data is represented in the following table:

Employee	Ramu	Raghu	Chanda	Nuthan
			n	
Share	45%	10%	25%	20%

Draw a pie chart to represent the given data.

32) Draw the graph of linear equation y=3x Or

Draw the graph of linear equation x+3y=4

33) Compute the value of $9x^2 + 4y^2$ if xy = 6 and 3x + 2y = 12.

(Question no 34 to 36 are Long Answer Type questions of 5 marks each.)

34. Verify: (i) $x^3 + y^3 = (x + y) (x^2 - xy + y^2)$ (ii) $x^3 - y^3 = (x - y) (x^2 + xy + y^2)$

35. P, Q, R and S are respectively the mid-points of the sides AB, BC, CD and DA of aquadrilateral ABCD such that AC BD. Prove that PQRS is a rectangle.

In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ (see the below figure). Show that:

(i) $\triangle APD \cong \triangle CQB$ (ii) AP = CQ(iii) $\triangle AQB \cong \triangle CPD$ (iv) AQ = CP



36) Construct a rhombus NEST, whose diagonals are 6 cm and 10 cm