Half yearly exam2019
Subject- Mathematics
Class-10th

Time-3.00 MM-100

Instructions :-

1. All questions are compulsory.
2. Question No. 1 to 5 are objective type questions.
3. Internal option are given in Question Numbers 6 to 26.
4. Draw neat and clean labelled diagrams whenever required.
5. Graph Paper is required.

Q.1) Choose the correct option and write it in your answer book. 1X5

(i) The H.C.F of 26 and 91 is :

(a) 13 (b) 26 (c) 7 (d) 1

(ii) It $\propto$ and β are the zeroes of the quadratic polynomial $ax^2 + bx + c$ then the value of $\propto + \beta$ is :

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

(iii) It $\propto$ and β are the roots of the quadratic equation $x^2 + 5x + 10 = 0$ then the value of $\propto . \beta$ is :

(a) -5 (b) 10 (c) 5 (d) -10

(iv) If $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ then the system of equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$

(a) has two solution (b) has unique solution

(c) has no solution (d) has infinitely many solution

(v) A tangent PQ at a point P of a circle of radius 5 cm meets a line through

(a) 12cm (b) 13cm (c) 8.5cm (d) $\sqrt{119cm}$

Q.2) Fill in the blanks :- 1X5

1. A cubic polynomial can have at most .....zeroes.
2. If the Lines are Parallel, then the Pair of equations has no solution In this case, the Pair of equations is called.....
3. The sum of first n Positive Integers is given by S_n =.....
4. The Probability of an impossible event is .....
5. Sides of two similar triangles are in the ratio 4:9 Areas of these triangles are in the ratio.....

1X5

Q.3) Write true /false.

1. For any two Positive Integers a and b, HCF (a,b) x LCM (a,b) = axb.
2. The zerores of Polynomial $x^2 - 3$ are $\sqrt{3}$ and $-\sqrt{3}$
3. Two real roots are distinct, if $b^2 - 4ac = 0$
4. 3× Median = Mode +2× Mean.
5. A Circle Can have Infinite many tangents.

1X5

Q.4) Write the answers in one Word/Sentence :-

1. Write the formula for finding discriminant 'D' of Quadratic equation $ax^2 + bx + c = 0$
2. What will be the next term of 8000, 8500, 9000.
3. Define the Angle of Elevation.
4. What will be the 10th term of A.P. 2,7,12.....
5. Which Point is called common Point of a circle and its tangent ?

1X5

Q.5) Match the Column

(Column 'A')	(Column 'B')
(i) $\sin^2 A + \cos^2 A$	(a) $\sqrt{2}$
(ii) $\sec 45^0$	(b) $\sec^2 A$
(iii) $\tan^2 A + 1$	(c) cos A
(iv) $\sin (90^0 - A)$	(d) $\frac{1}{\tan A}$
(v) cot A	(e) sec A
	(f) 1

Q.6) Use Euclid's division algorithm to find the HCF of 135 and 225 2

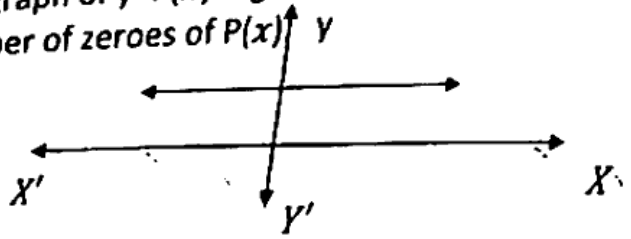
or

Find the HCF of 12, 15, and 21 using the Prime factorisation Method.

Q.7) Find quadratic Polynomial, the sum and the Product of whose zeroes are 1 and 1 respectively. 2

or

The graph of y=P(x) is given in Fig. below for Polynomial P(x) .Find the number of zeroes of P(x)



Q.8) Find the distance between Points (2,3) and (4,1) 2

or

Find the co-ordinates of the Point which divides the line segment joining the Points (4,-3) and (8,5) in the ratio 3:1 internally.

Q.9) If P(E)=0.05 what is the probability of 'Not E'? 2

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 ball drawn is red?

Q.10) A die is thrown once Find the Probability of getting a Prime Number. 2

or

Find the Probability of getting a head when a coin is tossed once.

Q.11) Prove that $(\text{cosec}\theta\text{-cot}\theta)^2=\frac{1-\cos\theta}{1+\cos\theta}$ 3

or

If tan A= cot B then Porve that $A+B=90^0$

Q.12) Find the value :- 3

$\sin 60^0 \cos 30^0 + \sin 30^0 \cos 60^0$

or

Show that :-

$\tan 48^0 \tan 23^0 \tan 42^0 \tan 67^0=1$

Q.13) Find the area of a triangle whose vertices are $(1,-1),(-4,6)$ and $(-3,-5)$. 3

or

Find the value of K, If the Points A (2,3), B (4,K) and C $(6,-3)$ are collinear.

Q.14) Prove that the length of tangents drawn from an external Point to a circle are equal. 3

or

The length of a tangent from a Point A at distance 5 cm from the centre of the Circle is 4 cm. Find the radius of the Circle.

Q.15) Prove that $\sqrt{3}$ is an Irrational Number. 4

or

Show that any Positive odd Integers is of the Form 6q+1 or 6q+3or 6q+5, where q is some integer.

Q.16) Find the zeroes of the quadratic Polynomial x^2-2x-8 and verify relationship between the zeroes and the coefficients. 4

or

Divide $3x^2-x^3-3x+5$ by $x-1-x^2$ 4

Q.17) Find the sum of the first 15 multiples of 8.

or

Find the sum of first 22 terms of an A.P. in which d=7 and 22nd term is 149.

Q.18) Find the sum of the odd Numbers between 0 and 50. 4

or

Find the sum of the first 40 Positive Integers divisible by 6.

Q.19) From a Point on the ground, the angles of Elevation of the bottom and the top of a transmission tower Fixed at the top of a 20m high building are 45^0 and 60^0 respectively. Find the height of the tower. 4

or

From a Point on a bridge across a river, the angles of depression of the banks on opposite sides of the river are 30^0 and 45^0 respectively. If the bridge is at a height of 3m from the banks, Find the width of the river.

Q.20) Let Δ ABC ~Δ DEF and their areas be, respectively, $64cm^2$ and $121cm^2$. If EF=15.4 cm. Find BC. 4

or

ABC is an isosceles triangle with AC=BC, If $AB^2=2AC^2$, Prove that ABC is a right triangle.

Q.21) Find two consecutive odd Positive Integers, sum of whose squares is 290. 4

or

The Attitude of a right triangle is 7cm less than its base. If the hypotenuse is 13cm, Find the other two sides.

Q.22) Prove that trigonometrical Identity $\sin^2\theta + \cos^2\theta=1$ (By Geometrical Method). 5

or

Prove that $\frac{1+secA}{secA} = \frac{sin^2A}{1-cosA}$

Q.23) Construct a triangle similar to a given triangle ABC with its side equal to $\frac{3}{4}$ of the corresponding sides of the triangle ABC. 5

or

Draw a Pair of tangents to a Circle of radius 5cm Which are inclined to each other at an angle of 60^0.

Q.24) Sum of the areas of two squares is $468m^2$ If the difference of their Perimeters is 24m Find the sides of the two squares. 5

or

Find the roots of the quadratic equation $2x^2+x-4=0$ if exist, by the formula method.

Q.25) Find the median of the distribution given below. 5

Class Interval	0–10	10–20	20–30	30–40	40–50	50–60
Frequency	5	8	20	15	7	5

or

A survey Conduct on 20 household in a locality by a group of students resulted in the Following frequency table for the Number of family Member in a household.

Family Size	1-3	3-5	5-7	7-9	9-11
Number of Families	7	8	2	2	1

Find the mode of given data. = 3129

Q.26) The Following table gives Production yield Per hectare of wheat of 100 farms of a village. 5

Production yield (in kg/ha)	50–55	55–60	60–65	65–70	70–75
Number of Farms	2	8	12	24	38

Change the distribution to a more than type distribution, and draw its ogive.

or

The Table below shows the daily expenditure on food of 25 households in a locality.

Daily Expenditure (in Rs)	100–150	150–200	200–250	250–300	300–350
Number of households	4	5	12	2	2

Find the mean for daily expenditure on food by a suitable method.