

# MATHEMATICS – JULY 2020 - MODEL PAPER.2

## MATHEMATICS QUESTION PAPER – JULY 2020

(English Medium)

Class : X (Max. Marks : 100 ) Time : 03.15 Hrs.

### Instructions :

1. Answer all the questions in a separate answer booklet.
2. The question paper consists of 4 sections and 33 questions.
3. There is an internal choice in Section – IV.
4. Write answers neatly and legibly.

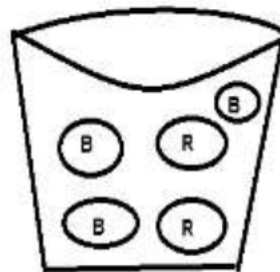
### Section - I

#### Note .

1. Answer all the Questions in one WORD or PHRASE
2. Each Question carries 1 Mark.  $12 \times 1m = 12m$

1. What is the exponential form of  $\log_4 8 = x$
2. If  $A = \{1, 2, 3\}$  and  $\emptyset = \{ \}$  find  $A \cap \emptyset$ .
3. Which of the following has only one zero. ( )
  - a.  $p(x) = 2x^2 - 3x + 4$
  - b.  $p(x) = x^2 - 2x + 1$
  - c.  $p(x) = 2x + 3$
  - d.  $p(x) = 5$
4. If the height and radius of a cone are 1.5 cm and 8 cm find its slant height.
5. The square root of  $9x^2 + 30xy + 25y^2$  is ..... ( )
  - (a)  $3x + 5y$
  - (b)  $3x - 5y$
  - (c)  $-3x + 5y$
  - (d)  $9x + 25y$
6. In an AP the 3<sup>rd</sup> term is 5 and 7<sup>th</sup> term is 9 then what is the common difference.

7. Write an example of a point on the X - axis and a point on Y – axis.
8. In  $\triangle ABC$  and In  $\triangle DEF$ , if  $\angle B = \angle E$ ;  $\angle C = \angle F$  then which of the following is a true statement? ( )
- a)  $\frac{AB}{DE} = \frac{CA}{EF}$                       b)  $\frac{BC}{EF} = \frac{AB}{FD}$
- c)  $\frac{AB}{DE} = \frac{BC}{EF}$                       d)  $\frac{CA}{FD} = \frac{AB}{EF}$
9. Which of the following is not correct?
- Statement (A) : Maximum possible tangents that can be drawn to a circle from a point ' P ' is 2.
- Statement (B) : The number of secants drawn to a circle from a point at exterior is 2.
- b) A is false, B is true                      b) A is true, B is false
- d) Both A and B are true                      d) Both A and B are false
10. If  $\sin \theta = \cos \theta$  find the value of  $\tan \theta + \cot \theta$  ( $0^\circ < \theta < 90^\circ$ )
11. Write the Probability of getting Blue Ball in the basket?



12. If Mode of the Data 5, 3, 4, -2, 3, p, 2, 2, 1, is 3 find the value of ' p '

### Section - II

**Note .**

**1. Answer all the Questions.**

**2. Each Question carries 2 Marks.  $8 \times 2m = 16m$**

13. Express as decimal  $\frac{1167}{50}$
14. Find the value of ' m ' for which the pair of equations  $2x - my + 3 = 0$  and  $4x + 6y - 5 = 0$  represent parallel lines.

15. If the ratio of radii of two spheres is 2 : 3 then what is the ratio of their surface areas.
16. John says “ 1, 1, 1, ... are in AP and also in GP “ Do you agree with John?. Give reason.
17. Find the midpoint of the line segment joining the points ( 2, 7) and ( 12, -7 )
18. The length of the tangent to circle from a point 13 cm away from the centre of the circle of radius 5cm is 12cm. Justify.
19. The following observations are arranged in ascending order :
- 20, 23, 42, 53, x, x + 2, 70, 75, 82, 96. If the median is 63, find the value of x.
20. A person observed the top of a tree at an angle of elevation of 60° when the observation point was 5m away from the foot of the tree. Draw a diagram for this data.

### Section - III

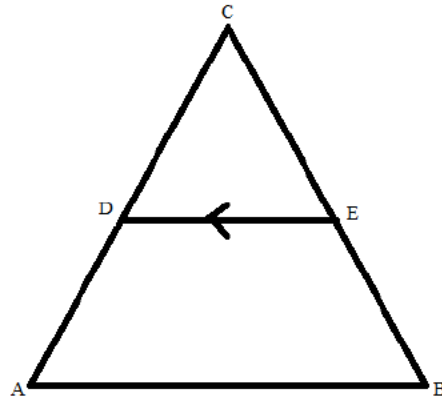
**Note .**

**1. Answer all the Questions.**

**2. Each Question carries 4 Marks.  $8 \times 4m = 32m$**

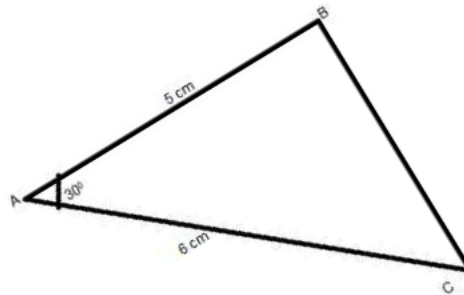
21. Insert 4 rational numbers in between  $\frac{3}{4}$  and 1 without using  $\frac{a+b}{2}$  formula
22. Given the linear equation  $3x + 4y = 11$ , write linear equations in two variables such that their geometrical representations form parallel lines and intersecting lines.
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24. In a flower bed, there are 23 rose plants in the first row, 21 in the second row, 19 in the third row and so on. There are 5 rose plants in the last row. How many rows are there in the flower bed?
25. If the distance between two points ( x, 7 ) and ( 1, 15 ) is 10. Find the value of x.

26. In given figure, if  $AD = 8x + 9$ ;  $CD = x + 3$ ;  $BE = 3x + 4$ ;  $CE = x$  then for what value(s) of  $x$  will make  $DE \parallel AB$ .



27. Can  $\frac{7}{2}$  be the probability of an event? Justify.

28. In the given figure,  $AC = 6$  cm;  $AB = 5$  cm and  $\angle BAC = 30^\circ$ , Find the area of the Triangle.



#### Section - IV

**Note .**

1. Answer all the Questions.
2. Each Question carries 8 Marks.
3. There is internal choice for each questions

$$5 \times 8m = 40m$$

29. Use Euclid's Division Lemma to show that the cube of any positive integer is of the form

$7m$  or  $7m + 1$  or  $7m + 6$

( or )

If  $A = \{ x : x \text{ an even number } \}$

$B = \{ x : x \text{ is an odd number } \}$

$C = \{ x : x \text{ is a prime number } \}$

$D = \{ x : x \text{ is a multi of } 5 \}$

Then Find i)  $A \cup B$     ii)  $A \cap B$     iii)  $C - D$     iv)  $A \cap C$

30. Sum of the areas of two squares is  $468\text{m}^2$ . If the difference of their perimeters is  $24\text{m}$ . Find the sides of the two squares.

( or )

DWACRA is supplied cuboidal shaped wax block with measurements  $88\text{cm} \times 42\text{cm} \times 35\text{cm}$ . From this how many numbers of cylindrical candles of  $2.8\text{cm}$  diameter and  $8\text{cm}$  of height can be prepared.

31. A man on the top of vertical tower observes a car moving at a uniform speed coming directly towards it. If it takes  $12\text{seconds}$  to change the angle of depression from  $30^\circ$  to  $60^\circ$ , then how long will the car take to reach the tower from that point.

( or )

State and Prove Basic Proportionality Theorem.

32. A man on the top of vertical tower observes a car moving at a uniform speed coming directly towards it. If it takes  $12\text{seconds}$  to change the angle of depression from  $30^\circ$  to  $60^\circ$ , then how long will the car take to reach the tower from that point.

( or )

Consider the following distribution of daily wages of 50 workers of a factory:

Daily Wages	200 - 250	250 - 300	300 - 350	350 - 400	400 - 450
Number of Workers	6	8	14	10	12

Find the Mean daily wages of the workers in the factory by using Step-Deviation method.

33. Solve the equations:

$$2x + y = 4 \quad \text{and} \quad 3x - 2y = \frac{5}{2} \text{ graphically.}$$

( or )

The following table gives production yield per Hectare of wheat of 100 farmers of village:

Production Yield Qtl/Hec	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80
Number of Farmers	2	24	16	8	38	12

Draw both Ogives for the above Data. Hence obtain the Median production yield.