Duration: 90 Min

Class- X Mathematics Periodic Test III (2020-21)

MM-40

General Instructions:

- This question paper contains two parts A and B.
- Both Part A and Part B have internal choices.
- Part A:
- It consists of two sections- I and II
- Section I has 7 questions. Internal choice is provided in 3 questions.
- Section II has two case study-based questions (8 & 9). Each case study has 5 case-based sub-parts. An examinee is to attempt any 4 out of 5 sub-parts.
 - Part B:
- Question No 10 to 12 are Very Short Answer Type questions of 2 mark each.
- Question No 13 to 15 are Short Answer Type questions of 3 marks each.
- Question No 16 and 17 are Long Answer Type questions of 5 marks each.
- Internal choice is provided in 1 question of 2 marks, 1 question of 3 marks and 1 question of 5 marks.

Part-A

Section-I 1. Express 156 as the product of primes.

OR

Given that HCF (96,404) is 4, find the LCM (96,404).

2. Write a quadratic polynomial, sum of whose zeroes is 2 and product is -8.

3. Find the area of a sector of a circle with radius 6cm if angle of the sector is 60°. (Take $\pi = 22/7$)

OR

A horse tied to a pole with 28m long rope. Find the perimeter of the field where the horse can graze. (Take $\pi = 22/7$)

4. A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground where it makes an angle 30° . The distance between the foot of the tree to the point where the top touches the ground is 8m. Find the height of the tree from where it is broken.

5. For what values of p does the pair of equations 4x + py + 8 = 0 and 2x + 2y + 2 = 0 has unique solution?

6. A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is red?

OR

A die is thrown once. What is the probability of getting a prime number?

7. For what values of k, the equation $9x^2+6kx+4=0$ has equal roots?

Section-II(Case-study)

8. Riya has a field with a flowerbed and grass land. The grass land is in the shape of rectangle while flowerbed is in the shape of square. The length of the grassland is found to be 3 m more than twice the length of the flowerbed. Total area of the whole land is 1260 m^2 .



(i) If the length of the flowerbed is x m then what is the total length of the field ?

(a) $(2x+3)$ m	(b)	(3x+3)
(c) 6 <i>x</i> m	(d)	(2x+5) m

(ii) What will be the perimeter of the whole field?

(a) $(8x+6)$ m	(b)	(6x + 8) m
(c) $(4x+3)$ m	(d)	(4x+3) m
(iii) What is the value of x if the area of total field	is 1260 m ²	
(a) 21 m	(b)	10 m
(c) 20 m	(d)	15 m
(iv) What is the area of grassland $?$		

(iv) What is the area of grassland ?		
(a) 180 m^2	(b)	360 m^2
(c) 400 m^2	(d)	860 m

(v)What is the ratio of area of flowerbed to area of grassland ?

(a)23/40	(b)20/43
(c)26/43	(d) 23/46

9. A road roller (sometimes called a roller-compactor, or just roller) is a compactor-type engineering vehicle used to compact soil, gravel, concrete, or asphalt in the construction of roads and foundations. Similar rollers are used also at landfills or in agriculture. Road rollers are frequently referred to as steamrollers, regardless of their method of propulsion.

RCB Machine Pvt Ltd started making road roller 10 year ago. Company increased its production uniformly by fixed



number every year. The company produces 800 roller in the6th year and 1130 roller in the 9th year.
On the basis of the above information, answer any four of the following questions :
(i) What was the company's production in first year ?(a) 150 (b) 200

((c) 250	(d) 290	
(ii)	What was the company's production	n in the 8th year?	
	(a) 760	(b)	820
	(c) 880	(d)	1020
(iii)	What roller the company's total pro-	duction of the first 6 ye	ars?(a) 3150
		1775	
	(c) 2250	(d)	1725
(iv)	What was the increase in the compar	ny's production every y	ear ?(a) 160
		130	
	(c) 90	(d)	110
(v)	In which year the company's product	tion was 1350 rollers?	
	(a) 5 th	(b) 6	th
	(c) 11 th	(d) 9 ⁴	th

Part-B

(b)

(b)

10. Find the point on x-axis which is equidistant from the points (2,-2) and (-4,2).

P (-2, 5) and Q (3, 2) are two points. Find the co-ordinates of the point R on PQ such that PR=2QR

11. If tanA=3/4, find the value of 1/sinA+1/cosA.

12. 12 solid spheres of the same radii are made by melting a solid metallic cylinder of base diameter 2cm and height 16cm. Find the diameter of the each sphere.

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13. If one root of the quadratic equation $3x^2+px+4=0$ is 2/3, then find the value of p and the other root of the equation.

OR

The roots α and β of the quadratic equation $x^2-5x+3(k-1)=0$ are such that $\alpha-\beta=1$. Find the value of k.

14. Determine the A.P. whose fourth term is 18 and the difference of the ninth term from the fifteenth term is 30.

15. If $\tan (A + B) = \sqrt{3}$ and $\tan (A - B) = 1/\sqrt{3}$, $0^{\circ} < A + B \le 90^{\circ}$; A > B, find A and B.

16. If the mean of the following distribution is 6, find the value of p.

x	2	. 4	6	10	p + 5
ſ	3	2	- 3	1	2

17. Rasheed got a playing top (lattu) as his birthday present, which surprisingly had no colour on it. He wanted to colour it with his crayons. The top is shaped like a cone surmounted by a hemisphere. The entire top is 5 cm in height, and the diameter of the top is 3.5 cm. Find the area he has to colour. (Take $\pi = 22/7$)

OR

A tent is in the shape of a cylinder surmounted by a conical top. If the height and diameter of the cylindrical part are 2.1 m and 4 m respectively, and the slant height of the top is 2.8 m, find the area of the canvas used for making the tent. Also, find the cost of the canvas of the tent at the rate of 500 per m². (Note that the base of the tent will not be covered with canvas)