

LIONS SCHOOL MIRZAPUR  
PRE-BOARD EXAMINATIONS 2021-22  
TERM - 1

CLASS- X

TIME: 90 min

SUBJECT- MATHS

M.M. : 40

**General Instructions:**

1. The question paper contains three parts A, B and C
2. Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted
3. Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted
4. Section C consists of 10 questions based on two Case Studies. Attempt any 8 questions.
5. There is no negative marking.

**SECTION A**

**Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.**

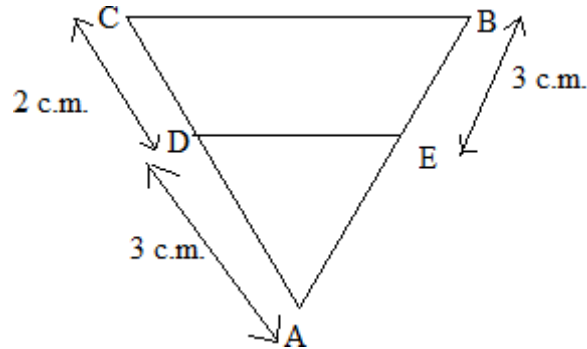
1. The decimal expansion of the rational number  $14587/1250$  will terminate after how many decimal places?  
(a) 3 places      (b) 4 places      (c) 5 places      (d) none of these
2. If  $2x+3y = 17$  and  $4x-y = 13$ , then  $xy = \dots\dots\dots$   
(a) 10      (b) 12      (c) 15      (d) 9
3. the polynomial whose sum of zeroes is -6 and product of zeroes is 5.  
(a)  $X^2 + 6x - 5$       (b)  $X^2 - 6x + 5$       (c)  $X^2 + 5x - 6$       (d)  $X^2 - 5x + 6$
4. the value of  
 $\sin 30^\circ \cos 90^\circ + \cos 60^\circ \sin 90^\circ$   
(a)  $1/2$       (b) 1      (c) 0      (d) -1
5. ABCD is a square. If the coordinates of the vertices are A(3,0) ,B(0,0), C(0,3), then the coordinates of D are \_\_\_\_\_  
(a) (-3,-3)      (b) (3,-3)      (c) (-3,3)      (d) (3,3)

6. The radii of two circles are 29 cm and 39 cm respectively. the radius of the circle which has circumference equal to the sum of the circumferences of the two circles.
- (a) 58 cm                      (b) 48 cm                      (c) 68 cm                      (d) 10 cm
7. Three electronic devices beep at every 24, 36 and 48 seconds respectively. If they beep together at 10:30am., then what is the time at which they beep together?
- (a) 10:31:24 am    (b) 10:32:20 am    (c) 10:32:24 am    (d) 10:33:24 am
8. the probability that a leap year contain 53 Mondays.
- (a)  $\frac{2}{7}$                       (b)  $\frac{1}{7}$                       (c) 0                      (d) 1
9. If  $(\sin A - \cos A = 0)$ , Then find the value of  $(\sin^4 A + \cos^4 A)$
- (a)  $\frac{1}{2}$                       (b) 1                      (c) 0                      (d)  $\frac{3}{2}$
10. Find the ratio in which the line segment joining A(1, -5) and B(-4, 5) is divided by the x-axis.
- (a) 1:2                      (b) 1:1                      (c) 3:4                      (d) 2:1
11. A chord of circle of radius 15 cm subtends an angle of  $60^\circ$  at the centre. Find the area of the corresponding minor segment of the circle. (use  $\pi = 3.14$  and  $\sqrt{3} = 1.73$ )
- (a)  $21.4375 \text{ cm}^2$     (b)  $22.4375 \text{ cm}^2$     (c)  $19.4375 \text{ cm}^2$     (d)  $20.4375 \text{ cm}^2$
12. Solve  $2x + 3y = 11$  and  $2x - 4y = -24$  and hence find the value of m for which  $y = mx + 3$ .
- (a) -2                      (b) 1                      (c) 0                      (d) -1
13. Find the area of sector of a circle with radius 6 cm if angle of the sector is  $30^\circ$
- (a)  $2\pi$                       (b)  $4\pi$                       (c)  $3\pi$                       (d)  $6\pi$
14. AB is a diameter of a circle whose centre is (3, -5) and B is (6, 2). Find the coordinates of the point A.
- (a) (0,12)                      (b) (0,-12)                      (c) (-12,0)                      (d) (12,0)

15. If  $8 \cot \theta = 15$ , then  $17 \sin \theta - 15 \tan \theta = \dots\dots\dots$

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

In the given figure,  $DE \parallel CB$ . Find the length of AE.



- (a) 4.5 cm              (b) 9 cm              (c) 5.5 cm              (d) 3.5 cm

17. Five years hence, the age of Jacob will be three times that of his son. Five years ago, Jacob's age was seven times that of his son. What are their present ages?

- (a) 40 y, 10 y      (b) 60 y, 20 y      (c) 50 y, 10 y      (d) 30 y, 20 y

18. The part of the circular region enclosed by a chord and the corresponding arc of a circle is called

- (a) a segment      (b) a diameter      (c) a radius      (d) a sector

19. Two isosceles triangles have equal angles and their areas are in the ratio 16:25. Then the ratio of their corresponding height is \_\_\_\_

- (a) 1:4              (b) 4 :  $\pi$               (c)  $\pi$  : 4              (d) 1:2

20. If one zero of the quadratic polynomial  $kx^2+3x+k$  is 2 then the value of k is

- (a) -5/6              (b) -6/5              (c) 5/6              (d) 6/5

### SECTION B

**Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.**

21. If in two triangles ABC and DEF,  $AB/DF=BC/FE=CA/ED$ , then

- (a)  $\Delta ABC \sim \Delta DEF$
- (b)  $\Delta ABC \sim \Delta EDF$
- (c)  $\Delta ABC \sim \Delta EFD$
- (d)  $\Delta ABC \sim \Delta DFE$

22. HCF of 8, 9, 25 is

- (a) 8
- (b) 9
- (c) 25
- (d) 1

23. The value of  $\cos 0^\circ \cdot \cos 1^\circ \cdot \cos 2^\circ \cdot \cos 3^\circ \dots \cos 89^\circ \cos 90^\circ$  is

- (a) 1
- (b) -1
- (c) 0
- (d)  $1/\sqrt{2}$

24. A horse is tied to a peg at one corner of a square shaped grass field of side 15 m by means of a 7 m long rope. The area of that part of the field in which the horse can graze, is

- (a)  $77 \text{ cm}^2$
- (b)  $772 \text{ cm}^2$
- (c)  $154 \text{ cm}^2$
- (d)  $774 \text{ cm}^2$

25. If  $(a/3, 4)$  is the mid-point of the segment joining the points  $P(-6, 5)$  and  $R(-2, 3)$ , then the value of 'a' is

- (a) 12
- (b) -6
- (c) -12
- (d) -4

26. If one of the zeroes of the quadratic polynomial  $(k - 1)x^2 + kx + 1$  is -3, then the value of k is

- (a)  $4/3$
- (b)  $-4/3$
- (c)  $2/3$
- (d)  $-2/3$

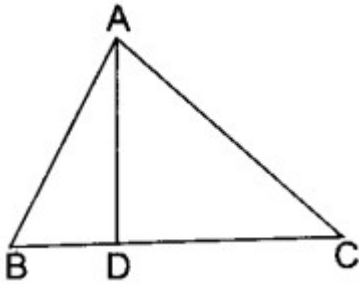
27. Graphically, the pair of equations  $7x - y = 5$ ;  $21x - 3y = 10$  represents two lines which are

- (a) intersecting at one point
- (b) parallel
- (c) intersecting at two points
- (d) coincident

28. The zeroes of the quadratic polynomial  $x^2 + 99x + 127$  are

- (a) both positive
- (b) both negative
- (c) one positive and one negative
- (d) both equal

29. In  $\angle BAC = 90^\circ$  and  $AD \perp BC$ . A Then



- (a)  $BD \cdot CD = BC^2$
- (b)  $AB \cdot AC = BC^2$
- (c)  $BD \cdot CD = AD^2$
- (d)  $AB \cdot AC = AD^2$

30.  $\sin 2B = 2 \sin B$  is true when B is equal to

- (a)  $90^\circ$
- (b)  $60^\circ$
- (c)  $30^\circ$
- (d)  $0^\circ$

31. ABC is an equilateral triangle of side a. Its area will be...

- (a)  $\frac{\sqrt{3}}{4} a^2$
- (b)  $\frac{\sqrt{3}}{4} a$
- (c)  $\frac{\sqrt{3}}{2} a^2$
- (d)  $\frac{\sqrt{3}}{2} a$

32. The distance between the point P(1, 4) and Q(4, 0) is

- (a) 4
- (b) 5
- (c) 6
- (d)  $3\sqrt{3}$

33. If  $\sec A + \tan A = x$ , then  $\sec A =$

- (a)  $\frac{x^2 - 1}{x}$
- (b)  $\frac{x^2 - 1}{2x}$
- (c)  $\frac{x^2 + 1}{x}$
- (d)  $\frac{x^2 + 1}{2x}$

4. If the lines given by  $2x + ky = 1$  and  $3x - 5y = 7$  are parallel, then the value of k is

- (a)  $10/3$
- (b)  $-10/3$
- (c) -13
- (d) -7

35. The area of a quadrant of a circle whose circumference is 22 cm, is

- (a)  $\frac{11}{8} \text{ cm}^2$  (b)  $\frac{77}{2} \text{ cm}^2$  (c)  $\frac{77}{4} \text{ cm}^2$  (d)  $\frac{77}{8} \text{ cm}^2$

36. Which of the following can be the probability of an event?

- (a) - 0.4  
(b) 1.004  
(c)  $\frac{18}{23}$   
(d) 107

37. The product of a rational and irrational number is

- (a) rational (b) irrational (c) both of above (d) none of above

38. In a rhombus if  $d_1 = 16 \text{ cm}$ ,  $d_2 = 12 \text{ cm}$ , its area will be...

- (a)  $16 \times 12 \text{ cm}^2$   
(b)  $96 \text{ cm}^2$   
(c)  $8 \times 6 \text{ cm}^2$   
(d)  $144 \text{ cm}^2$

39. The length of the minute hand of a clock is 14 cm. The area swept by the minute hand in 5 minutes is

- (a)  $153.9 \text{ cm}^2$  (b)  $102.6 \text{ cm}^2$  (c)  $51.3 \text{ cm}^2$  (d)  $205.2 \text{ cm}^2$

40. One card is drawn from a well shuffled deck of 52 cards. The probability of getting a king of red colour is

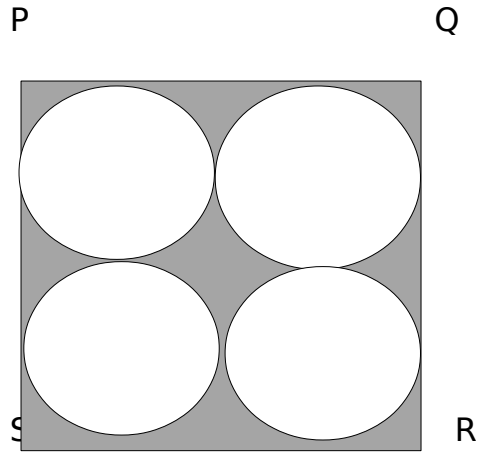
- (a)  $\frac{1}{26}$  (b)  $\frac{1}{13}$  (c)  $\frac{1}{4}$  (d)  $\frac{1}{2}$

### SECTION- C

DIRECTIONS:- Case study-based questions are compulsory. **Section C consists of 10 questions of 1 mark each** Attempt any 4 sub parts from each question.

#### Case Study

In the given figure, four circles are inscribed in a square PQRS of side 28cm. Answer the following questions.



41. Find the area of PQRS.

- (a)  $624 \text{ cm}^2$
- (b)  $784 \text{ cm}^2$
- (c)  $914 \text{ cm}^2$
- (d)  $1024 \text{ cm}^2$

42. What is the radius of each circle?

- (a) 14 cm
- (b)  $7/2$  cm
- (c) 7 cm
- (d) None

43. Find the area of each circle.

- (a)  $154 \text{ cm}^2$
- (b)  $77 \text{ cm}^2$
- (c)  $231 \text{ cm}^2$
- (d) None

44. Find the area of the shaded region.

- (a)  $98 \text{ cm}^2$
- (b)  $216 \text{ cm}^2$
- (c)  $172 \text{ cm}^2$
- (d)  $168 \text{ cm}^2$

45. What is the ratio between the perimeter of the square and the circumference of each circle?

- (a) 28:11
- (b) 7:4
- (c) 11:7

(d) none

### Case-Study

Student of class X, Playing Ludo, two dice are thrown at the same time by Nitish.  
Answer the following questions.

46. Total number of possible outcomes are

(a) 12

(b) 6

(c) 36

(d) None

47. What is the probability that the sum of the two numbers appearing on the top of the dice is 8?

(a)  $\frac{1}{6}$

(b)  $\frac{5}{36}$

(c)  $\frac{1}{9}$

(d) None

48. What is the probability of getting a doublet?

(a)  $\frac{3}{4}$

(b)  $\frac{2}{3}$

(c)  $\frac{1}{6}$

(d)  $\frac{5}{12}$

49. If probability of an event is  $\frac{2}{3}$  then what is the probability of its complementary event?

(a) 1

(b)  $-\frac{2}{3}$

(c)  $\frac{1}{2}$

(d)  $\frac{1}{3}$

50. The probability of an event which is impossible to occur is

(a) 1

(b) 0

(c)  $\frac{6}{5}$

(d)  $\frac{1}{4}$