

# La Martiniere for Boys, Kolkata

## Rehearsal 1 examination (Online)

Class - 10

### MATHEMATICS

2021-2022

Maximum marks: 40

Time allowed: One and a half hours (inclusive of reading time)

**ALL QUESTIONS ARE COMPULSORY.**

The marks intended for questions are given in brackets [ ]

Select the correct option for each of the following questions.

#### Section A [16 marks]

[16×1]

1. A person opened a recurrent deposit account in a bank and deposited ₹ 800 per month for  $1\frac{1}{2}$  years. Then the total amount deposited by him in the account is  
(a) ₹ 11,400      ~~(b) ₹ 14,400~~      (c) ₹ 13,680      (d) none of these.
2. A shopkeeper buys goods worth ₹ 4000 and sells these at a profit of 20% to a consumer in the same state. If GST is charged at 5%, the CGST paid by the consumer is  
(a) ₹ 200      (b) ₹ 240      ~~(c) ₹ 120~~      (d) ₹ 100.
3. If  $\begin{bmatrix} x+3 & 4 \\ y-4 & 9 \end{bmatrix} = \begin{bmatrix} 5 & 4 \\ 3 & 9 \end{bmatrix}$ , then  $(x, y) =$   
~~(a) (2,7)~~      (b) (7,2)      (c) (3,6)      (d) (-2,7)
4. If  $\begin{bmatrix} \cos\frac{\pi}{4} & -\sin\frac{\pi}{4} \\ \sin\frac{\pi}{4} & \cos\frac{\pi}{4} \end{bmatrix} X = \begin{bmatrix} 2 \\ -1 \end{bmatrix}$ , then the order of the matrix  $X$  is  
(a)  $2 \times 2$       ~~(b)  $2 \times 1$~~       (c)  $1 \times 2$       (d)  $1 \times 1$
- ~~5. If the straight line  $ax + y + 7 = 0$  passes through the point  $(1, -1)$ , then  $a =$   
(a)  $-6$       (b)  $6$       (c)  $8$       ~~(d)  $-8$~~~~
6. If in an A.P., the first and the last terms are  $-5$  and  $21$  respectively and the sum of the terms is  $200$ , then the number of terms is  
(a)  $50$       (b)  $40$       (c)  $32$       ~~(d)  $25$~~
7. When  $x^4 - 3x^2 + 2x + 1$  is divided by  $(x - 1)$ , the remainder is  
(a)  $0$       ~~(b)  $1$~~       (c)  $-1$       (d)  $2$ .



8. Which of the following sets is represented by the above?
- (a)  $\{x \mid -3.5 < x \leq 2, x \in \mathbb{R}\}$       ~~(b)  $\{x \mid -3.5 \leq x < 2, x \in \mathbb{R}\}$~~   
 (c)  $\{x \mid -3.5 \leq x \leq 2, x \in \mathbb{R}\}$       (d)  $\{-3, -2, -1, 0, 1\}$ .
9. The solution set for  $10 \geq x + 2 > -1, x \in \mathbb{N}$  is
- (a)  $\{x \mid -3 < x < 8, x \in \mathbb{R}\}$       (b)  $\{x \mid -3 < x \leq 8, x \in \mathbb{R}\}$   
 (c)  $\{0, 1, 2, 3, 4, 5, 6, 7, 8\}$       ~~(d)  $\{1, 2, 3, 4, 5, 6, 7, 8\}$~~ .
- ~~10. The inclination of a line is  $45^\circ$  and it passes through  $(2, 0)$ . Its equation will be  
 (a)  $x - y - 2 = 0$     (b)  $x - y + 2 = 0$     (c)  $x + y - 2 = 0$     (d)  $y = x + 2$ .~~
- ~~11. The centroid of a triangle, whose vertices are at  $(1, 3)$ ,  $(4, 5)$  and  $(7, 1)$ , is at  
 (a)  $(3, 4)$     (b)  $(4, 3)$     (c)  $(2, 3)$     (d)  $(3, 3)$ .~~
- ~~12. The coordinates of the image of the point  $(2, -5)$  under reflection in the y-axis is  
 (a)  $(2, 5)$     (b)  $(-2, -5)$     (c)  $(-2, 5)$     (d)  $(2, -5)$ .~~
- ~~13. The point  $(0, 2)$  is invariant under  
 (a) reflection in the origin    (b) reflection in the x-axis  
 (c) reflection in the y-axis    (d) all of these~~
- ~~14. The probability of getting 'at most one tail' when a coin is tossed twice is  
 (a)  $\frac{1}{2}$     (b)  $\frac{1}{4}$     (c)  $\frac{3}{4}$     (d) 0~~
15. The roots of the quadratic equation  $x^2 - 3x - 9 = 0$  are 4.854 and  $-1.854$ .  
 The roots correct to two significant figures are  
 (a) 4.85,  $-1.85$     (b) 4.8,  $-1.8$     ~~(c) 4.9,  $-1.9$~~     (d) 5.0,  $-2.0$
16. If 2.5, 10,  $x$ , 16 are in proportion, then the value of  $x$  is  
 (a) 12    ~~(b) 4~~    (c) 8    (d) 14.

**Section B [12 marks]**

[6×2]

17. Rahul deposits ₹ 250 per month for a year in a recurring deposit account. If the rate of interest is 8% p.a., then the interest earned by him on the account is  
 (a) ₹ 65    (b) ₹ 120    ~~(c) ₹ 130~~    (d) ₹ 260
18. Let  $A = \begin{bmatrix} 1 & 9 \\ 0 & \frac{1}{4} \end{bmatrix}$  and  $B = \begin{bmatrix} 2 & x \\ 0 & 1 \end{bmatrix}$ . If  $4A = B^2$ , then the value of  $x$  is  
 (a) 6    ~~(b) 12~~    (c) 33    (d) 39.

19.

MRP (in ₹)	200	160
No. of items	27	35
Rate of GST (in %)	12	18

The total amount payable including GST for the above bill is

- (a) ₹ 12,656      (b) ₹ 12,556      (c) ₹ 12,756      (d) None of these

20. If  $\frac{x}{a} = \frac{y}{b} = \frac{z}{c}$ , then  $\frac{ax-by}{(a+b)(x-y)}$  is equal to

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

21. The line segment joining the points  $(-3, -4)$  to  $(1, -2)$  is divided by the y-axis in the ratio

- (a) 1 : 3      (b) 2 : 3      (c) 3 : 1      (d) 3 : 2.

22. If  $x^2 - 1$  is a factor of  $px^3 + 4x^2 - 3x + q$ , then the values of  $p$  and  $q$  are

- (a)  $p = 3, q = -4$       (b)  $p = -3, q = 4$       (c)  $p = -3, q = -4$       (d)  $p = 3, q = 4$

**Section C [12 marks]**

[3×4]

23. The product of the digits of a two-digit positive number is 6.

- (i) If the digit in the ten's place is  $x$ , then the digit in the unit's place  $y =$   
(a)  $6x$       (b)  $\frac{x}{6}$       (c)  $\frac{6}{x}$       (d)  $6 - x$

- (ii) The number, with the digits interchanged, can be written as  
(a)  $10x + y$       (b)  $xy$       (c)  $10y + x$       (d)  $yx$

(iii) If 9 is added to the given number, the digits are interchanged. Then the quadratic equation formed is

- (a)  $x^2 - x + 6 = 0$       (b)  $x^2 + x + 6 = 0$   
(c)  $x^2 + x - 6 = 0$       (d)  $9x^2 + 9x + 53 = 0$

(iv) The number is

- (a) 23      (b) 16      (c) 32      (d) 61.

24. Consider the following numbers in AP :  $-11, -7, -3, \dots, 49$ .

- (i) The common difference of the AP is  
(a) -4      (b) -11      (c) 4      (d) 6.
- (ii) The number of terms in the AP is  
(a) 15      (b) 16      (c) 17      (d) 18.
- (iii) The sum of the terms in the AP is  
(a) 608      (b) 304      (c) 656      (d) 314.

- (iv) The tenth term of the AP is  
(a)  $-1$  (b)  $29$  (c)  $21$  (d)  $25$ .

25. The printed price of a watch is ₹ 5000. A wholesaler in West Bengal buys the watch from a manufacturer in Gujrat at a discount of 12% on the printed price. The wholesaler sales the watch to a retailer in Bihar at 32% above the marked price. The rate of GST on the watch is 5%.

- (i) The price inclusive of tax (under GST) at which the wholesaler bought the watch was  
(a) ₹ 2310 (b) ₹ 4620 (c) ₹ 4510 (d) ₹ 4400.
- (ii) The price inclusive of tax (under GST) at which the retailer bought the watch was  
(a) ₹ 3465 (b) ₹ 6098.40 (c) ₹ 6930 (d) ₹ 6765.
- (iii) The tax (under GST) paid by the wholesaler to the Government was  
(a) ₹ 55 (b) ₹ 330 (c) ₹ 115 (d) ₹ 110.
- (iv) The tax (under GST) received by the central Government was  
(a) ₹ 330 (b) ₹ 115 (c) ₹ 220 (d) ₹ 110.

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Scanned answer scripts in the form of a single PDF to be sent to:

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