St. Paul's Mission School

5 Scott Lane, Kolkata 700009

First Terminal Examination 2021-2022

Class X

Subject: **Mathematics**

Full Marks: 80

Writing Starts at	09:00AM
Writing Stops at	11:15AM
Uploading of PDF by	11:30AM

Multiple Choice Questions. Choose the correct answer for the following questions from the options given

Section A

(32 marks)

Question 1: If Runka opened a recurring deposit account in a bank and deposited Rs. 900 per month for 2 ½ years, then total money deposited in the account is –

a) Rs. 16200 (b) Rs. 2700 (c) Rs.18000 (d) none of the these

Question 2: If x €N then solution set of the inequation $3x - 2 \leq 8$ is

a) { 0,1,2,3} b) {0,1,2} c) {1,2,3} d) none of these.

Question 3: If $x \in W$, then solution set of $4x + 11 \geq 2x + 8$ is

a) {-1,0,1,2,…} b) {0,1,2,3,…} c) {-2,-1,0,1,2,…} d) {1,2,3,4…}

Question 4: If $x \in w$, then the solution set of $3x - 2 \geq 4x - 5$ is

a) {1,2,3} b) { ⋯-2,-1,0,1,2,3} c) {0,1,2,3} d) {x:x€R,x≤3}

Question 5: If $x \in I$, then the solution set of $1 < 3x + 5 \leq 11$ is

a) {-2,-1,0,1} b) {-1,0,1,2} c) {-1,0,1} d) none of these.

Question 6: The value(s) of k for which the quadratic equation $2x^2 - kx + k = 0$ has equal roots are

a) 0 only b) 4 c) 0,8 d) 8 only

Question 7: If the equation 2x^2-6x+p=0 has real and different roots, then the values of p are given by

a) $P > 9/2$ b) $p \leq 9/2$ c) $p < 9/2$ d) $p \geq 9/2$

Question 8: The quadratic equation $2x^2 - \sqrt{5}\,x + 1 = 0$ has

a) Two distinct real roots b) no real roots c) more than two real roots d) tow equal roots.

Question 9: If $\begin{bmatrix} x+3 & 4 \\ y-4 & x+y \end{bmatrix} = \begin{bmatrix} 5 & 4 \\ 3 & 9 \end{bmatrix}$, then the value of x and y are

a) 7,2 b) 2,7 c) -2,7 d) 3,2

Question 10: Two matrices A of order mxn and B of order pxq. If multiplication is possible then the order of the resulting matrix will be

a) mxp b) nxp c) nxq d) mxq

Question 11: In triangles ABC and DEF $\angle B = \angle E$, $\angle F = \angle C$ and $AB = 3DE$, then two triangles are

a) Congruent but not similar b) neither similar nor congruent c) congruent as well as similar d) similar but not congruent.

Question 12: D and E are the points on the sides AB and AC respectively such that DE||BC, AD=2cm ,BD=3cm, BC=7.5. Then the length of DE is

a) 2.5cm b) 5cm c) 6cm d) 3cm

Question 13: If the areas of two similar triangles are in the ratio 9:4, then their corresponding sides are in the ratio

a) 9:4 b) 3:2 c) 2:3 d) 16:81

Question 14: If triangles ABC and PQR are similar, BC=8cm and QR=6cm, then the ratio of the areas of triangles ABC and PQR is

a) 8:6 b) 3:4 c) 16:9 d) 9:16

Question 15: The 15th term from the end of the AP 7,10,13,…,130 is

a) 37 b) 43 c) 40 d) 58

Question 16: If the common difference of an AP is 6, then the difference between 18th and 13th term is

a) 5 b) 20 c)25 d) 30

Question 17: If 1st term of an AP is -5 and common difference is 2 then the sum of its 1st 6 terms is

a) 0 b) 5 c) 6 d) 15

Question 18: The roots of the quadratic equation $x^2 - 3x - 9 = 0$ are $4.854, -1.854$. The roots correct to two significant figures are

a) 4.85,-1.85 b) 4.8,-1.8 c) 4.9,-1.9 d) none of these.

Question 19: A quadratic equation can have

a) More than two roots b) one root c) exactly two roots d) all of these

Question 20: Which of the following statement is not true?

a) All identity matrices are square matrix. b) All diagonal matrix is square matrix. c) The number of rows and columns of a rectangular matrix are different. d) If the product of two matrices AB possible then BA is also possible.

Question 21: The percentage share of CGST of total GST for an intra-state sale of an article is

a) 100% b) 25% c) 50% d) 75%

Question 22: The sum of first n natural number is given by

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

Question 23: A trader bought x number of articles at Rs. 600 and sold each of them at Rs. 2 more than what he paid for it. The S.P of each article is

a) $\frac{600}{x}$ b) $\frac{602}{x}$ c) $\frac{600}{x} + 2$ d) $\frac{600}{x+2}$

Question 24: Which of the following statement is not true?

a) Two congruent triangles are similar b) Two similar triangles are congruent. c) The shape of Two similar triangles is same. d) The area of two similar triangles are not always same.

Question 25: If $a : b :: c : d$ then $ac :: b : d$. This property of proportion is called

a) Invertendo b) alternendo c) dividendo d) addendo.

Question 26: If the discriminant of a quadratic equation is greater than zero and is a perfect square, then the roots are

a) Irrational b) rational c) imaginary d) equal.

Question 27: IGST means

a) Inter State Goods and Services Tax b) Intra State Goods and Services Tax c) Integrated Goods and Services Tax. d) Input Goods and Services Tax.

Question 28: If $2x + 3$ is a factor of a polynomial, $f(x)$ then the remainder is given by

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

Question 29: If $X.\begin{bmatrix} 2 & 1 \\ -3 & 4 \end{bmatrix} = [1 \quad 2]$ then order of matrix X is

a) 1x2 b) 2x1 c) 2x2 d) none of these

Question 30: Two matrices will be compatible for multiplication if

a) Their order must be the same. b) The number of rows of two matrices must be the same c) The number of columns of two matrices must be the same. d) none of these.

Question 31: Unit matrix of order 2 is

a) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ b) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ c) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ d) none of these.

Question 32: 2x+7 is a polynomial of degree

a) Two b) one c) 0 d) none of these

Section B [24 marks]

Question 33: The price of a coat is Rs. 885 inclusive of tax (under GST) at the rate of 18% on its listed price. The list price of the coat is

a) Rs. 135 b) Rs. 750 c) 1020 d) none of these.

Question 34: Mr. Das deposit Rs. 1000 per month for 2 years in a recurring deposit account. If the rate of interest is 6%p.a. then interest earned by him on this account is –

a) Rs.1500 b) Rs. 1200 c) Rs.2000 d) none of these.

Question 35: Mrs. Sharma deposited Rs. 150 per month in bank for 8 months under recurring deposit scheme. If the rate of interest p.a . is 8% then the amount she gets on maturity is

a) Rs.1200 b) Rs.1236 c) Rs.1536 d) none of these.

Question 36: Rishon deposited Rs. 2500 per month in a recurring deposit account for two years. If he receives Rs. 67500 at the time of maturity then total interest earned by him is

a) Rs.5250 b) Rs.7500 c) Rs. 6000 d) none of these

Question 37: If $k - 1, k + 1$ and $2k + 3$ are in AP, then the value of k is

a) 0 b) 2 c) 4 d) -2

Question 38: The numbers of two-digit numbers which are divisible by 3 is

a) 33 b) 31 c) 30 d) 29

Question 39: If $A=\begin{bmatrix} 0 & 0 \\ 1 & 0 \end{bmatrix}$, then A^2=

a) A b) O c) I d) 2A

Question 40: If $A=\begin{bmatrix} 2 & -2 \\ -2 & 2 \end{bmatrix}$ and $A^2 = pA$,then value of p is

a) 4 b) 2 c) -4 d) -2

Question 41: If ½ is a root of the equation $4x^2 - 4kx + k + 5 = 0$,then the value of k is

a) -3 b) -6 c) 6 d) 3

Question 42: The roots of the equation $x^2 - 3x - 10 = 0$ are

a) -2,5 b) 2,-5 c) -2,-5 d) 2,5

Question 43: In an $A.P$, $Sn = n(4n + 1)$ then common difference is

a) 5 b) 8 c)13 d) 21

Question 44: If $x \epsilon R$, then the solution set of $-3 \leq 3 - 2x < 9$ is

a) $\{x: x \epsilon R, -3 \leq x < 3\}$ b) $\{x: x \epsilon R, -3 < x \leq 3\}$ c) $\{x: x \epsilon R, -3 \leq x \leq 3\}$ d) $\{x: x \epsilon R, -3 < x < 3\}$

Section C

[24 Marks]

Question 45: A shopkeeper bought a T.V from a distributor at a discount of 20% of the listed price of Rs. 4000. The shopkeeper sales the T.V to a consumer at the listed price. If the sales are intra- state and the rate of GST is 12 %, then choose the correct answer from the options given below-

i) The selling price of the T.V including tax by the distributor is –

a) Rs.3200 (b) Rs.4480 (c) Rs.3584 (d)Rs. 3392

ii) The tax under GST paid by the shopkeeper to the central government is –

(a)Rs.48 (b)Rs. 240 (c) Rs.192 (d)Rs. 60

iii) The tax received by the State Government is –

a) Rs. 192 (b) Rs.96 (c)Rs. 240 (d)Rs. 22

iv) The price including tax (under GST) of the T.V paid by the consumer is –

a) Rs. 3584 (b) Rs. Rs. 4480 (c)Rs.3832 (d) Rs.383

Question 46:

i) If a,12,16 and b are in continued proportion then the values of a and b are

a) 9,21 b) 9,64/3 c) 9,8 d) 8,9

ii) The fourth proportion to 3,4,5 is

a) 6 b) 20/3 c) 15/4 d) 12/5

iii) The third proportion to 25/4 and 5 is

a) 15/2 b) 3 c) 4 d) none of the above

iv) The mean proportional between ½ and 128 is

a)8 b) 16 c) 32 d) 64

Question 47:

i) When $2x^3 - 7x^2 + 3$ is divided by $x - 2$ then remainder is

a) 10 b) 0 c) -9 d) -11

ii) If on dividing $4x^2 - 3kx + 5$ by $x + 2$ the remainder is -3 then the value of k is

a) -4 b) 4 c) 3 d) -3

iii) If x+1 is a factor of 3x^3+k+7x+4 then the value of k is

a) 0 b)-1 c) 10 d) 6

iv) The value of " a " when two polynomials $ax^3 + 3x^2 - 9$ and $2x^3 + 4x + a$, leaves the same remainder when divided by $x + 3$ is

a) 5 b) 4 c) 3 d) 1

Question 48: $n\ th$ term of an A.P is given by $3 + 4n$.

i) The common difference of the A.P is

a) 11 b) 8 c)7 d) 4

ii) 1st term of the A.P is

a) 3 b) 4 c)7 d) 11

iii) First three terms are

a) 3,7,11 b) 4,8,12 c) 7,11,15 d) none of these.

iv) The sum of 1st 10 terms is

a) 250 b) 500 c)1000 d) 200

Question 49: The speed of a car is $x\ km/hr$. By increasing the speed of the car by $10\ km/hr$ the time taken to cover a distance of 72km is reduced by 36 minutes.

i) The time taken to cover the distance at original speed is

a) $\frac{36}{x}$ b) $\frac{72}{x}$ c) $\frac{x}{36}$ d) $\frac{x}{72}$

ii) The time taken to cover the distance at increased speed is

a) $\frac{36}{x-10}$ b) $\frac{72}{x}$ c) $\frac{72}{x+10}$ d) $\frac{x+10}{72}$

iii) The quadratic equation formed is

a) $x^2 - 10x + 1200 = 0$ b) $x^2 + 10x - 1200 = 0$ c) $x^2 + 10x + 1200 = 0$ d) $x^2 + 10x + 1200 = 0$

iv) The original speed of the car is

a) 40km/hr b) 30km/hr c) 60km/hr d) 20km/hr

Question 50: ABC is a right-angled triangle with $\angle ABC = 90^\circ$. D is any point on AB and DE is perpendicular to AC. If $AC = 13cm, BC = 5cm$ and $AE = 4cm$ then

i) The length of DE is

a) 13/3 b) 5/3 c) 13/5 d) 5/13

ii) The length of AD is

a) 13/3 b) 5/3 c) 13/5 d) 5/13

iii) Area of triangle ADE: area of triangle ABC is

a) 1:3 b) 2:3 c) 3:1 d) 3:2

iv) Area of triangle ADE: area of quadrilateral BCED is

a) 8:1 b) 1:9 c) 1:8 d) 9:1

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