VIVEKANANDA MISSION SCHOOL (HALDIA)

Second Term Examination (2021-2022)

Class: X ; Subject: Mathematics; M.M : 50 ; Duration: $1\frac{1}{2}$ Hrs; Date: 27.09.21

Maximum Marks : 50

ALL QUESTIONS ARE COMPULSORY.

Select the correct option for each of the following questions.

Section A [20 Marks]

[20 x 1 =20]

Q.1) Ms. Sarita deposits ₹ 500 every month in a recurring deposit account for 2 years at 9% S.I. p.a. Find the interest she will earn in 2 years.

(a) ₹ 1521 (b) ₹ 2511 (c) ₹ 1125 (d) ₹ 1100

Q.2) If $5x - 3 \leq 5 + 3x \leq 4x + 2$ is expressed as $a \leq x \leq b$, then the values of a and b are:

(a) a = 4, b = 3 (b) a = 2 , b = 3 (c) a = 3, b = 3 (d) a = 3, b = 4

Q.3) Which of the following equations cannot be written in the form $ax^2 + bx + c = 0$?

(a) $(x + 2)^3 = x^3 - 4$ (b) x(2x + 3) = x^2 + 1 (c) x(x + 1) + 8 = (x + 2)(x – 2)

(d) $(x - 2)^2 + 1 = 2x - 3$

Q.4) The value of x such that 35, x, 7, 5 are in proportion, is

(a) 49 (b) 25 (c) 37.5 (d) 15

Q.5) If A = $\begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}$ and AB = $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$, what is B ?

(a) $\begin{bmatrix} -1 & 1 \\ 1 & -1 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ (c) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ (d) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

Q.6) A dealer is in Jhansi buys some articles worth ₹ 8,000. If the rate of GST is 18%, find how much will the dealer pay for the articles bought.

(a) ₹ 4049 (b) ₹ 9044 (c) ₹ 9440 (d) ₹ 9404

Q.7) For what value of k, (2x – k) is a factor of $2x^3$-- $9x^2$ + x + 12 ?

(a) 2 (b) –2 (c) –1 (d) 3

Q,8) If X and Y are any two, 2X2, matrices such that XY = X and Y is not a zero matrix, then what can you say about the matrix Y ?

(a) Diagonal matrix (b) Identity matrix (c) Row matrix (d) Column matrix.

Q.9) What is the 9th term from the end (towards the first term) of the A.P. 5, 9, 13,.....,185.

(a) 315 (b) 153 (c) 351 (d) 531

Q.10) Which of the following is a true statement. Two similar figures :

(a) may not be congruent (b) are also congruent (c) have no relationship with congruent Figures (d) exactly cover each other when superimposed one over the other.

Q.11) In an A.P., if a = 1, a_n = 20, and S_n = 399, then n is

(a) 19 (b) 21 (c) 38 (d) 42

Q.12) If x ϵ R, the solution set of $6 \leq$ -- $3(2x - 4) < 12$ is

(a) {x : x ϵ R, $0 < x \leq 1$ } (b) { x : x ϵ R, $0 \leq x < 1$} (c) { 0, 1 } (d) none of these

Q.13) The quadratic equation $2x^2$ -- $\sqrt{5}$ x + 1 = 0 has

(a) two distinct real roots (b) two equal real roots (c) no real roots (d) more than two real roots

Q.14) If (x + 5) is a factor of $5 + x - 5x^2$ -- x^3 , the other factor is :

(a) x + 1 (b) 1 – x (c) $x^2 - 1$ (d) 1 + x^2

Q.15) If a, b, c are in continued proportion, then

(a) b = a + c (b) b = + $\sqrt{ac}$ (c) c = ab (d) c = $\frac{a^2}{b}$

Q,16) Mr Sharma deposited ₹ 500 every month in a cumulative deposit account for two years. If the bank pays Interest at the rate of 7% per annum, then the amount he gets on maturity is

(a) ₹ 875 (b) ₹ 6875 (c) ₹ 10875 (d) ₹ 12875

Q.17) Mr. Bedi visits the market and buys the following articles : Medicines costing ₹ 950, GST @ 5%, A pair of Shoes costing ₹ 3000, GST @ 18% , A Laptop bag costing ₹ 1000 with a discount of 30% GST @ 18%. The Total amount of GST paid by Mr Bedi:

(a) ₹ 713.50 (b) ₹ 315,70 (c) ₹ 573.10 (d) ₹175.13

Q.18) Find the tenth term of the sequence $\sqrt{2}$, $\sqrt{8}$, $\sqrt{18}$, ...

(a) $20\sqrt{2}$ (b) $\sqrt{200}$ (c) $\sqrt{300}$ (d) $10\sqrt{3}$

Q.19) In Δ ABC and Δ EDC, AB is parallel to ED. BD = $\frac{1}{3}$ BC and AB = 12.3. Find DE

(a) 2.8 cm (c) 3.6 cm (c) 8.2 cm (d) 5.6 cm

Q.20) If the equation x^2 + 2(k + 2)x + 9k = 0 has a repeated root, the value of k are

(a) 1,4 (b) – 1, 4 (c) 1, -- 4 (d) – 1, -- 4.

Section B [14 Marks] [7X2= 14]

Q.21) A shopkeeper bought an article with market price ₹ 1200 from the wholesaler at a discount of 10%. The shopkeeper sells this article to the customer on the market price printed on it. If the rate of GST Is 6% then find: (i) GST paid by the wholesaler:

(a) ₹ 80.64 (b) ₹ 60,84 (c) ₹ 64.80 (d) ₹ 46.80

(ii) Amount paid by the customer to buy the item :

(a) ₹ 1272 (b) ₹ 7212 (c) ₹ 2172 (d) ₹ 6424

Q.22) If a : b = 5 : 3 , then (5a + 8b) : (6a – 7b) is equal to :

(a) 15 : 9 (b) 49: 9 (c) 37: 18 (d) 40 : 24

Q.23) If (k – 3), (2k + 1) and (4k + 3) are three consecutive terms of an A.P. , find the value of k.

(a) k = 6 (b) k = 9 (c) k = 2 (d) k = -- 2

Q.24) Find 'a' if the two polynomials $ax^3 + 3x^2 - 9$ and $2x^3 + 4x + a$, leaves the same remainder when divided by x + 3.

(a) a = --3 (b) a = 3 (c) a = 2 (d) a = 1

Q.25) The roots of the quadratic equation $(x-1)^2 - 3x + 4 = 0$ are 3.618, 1.382 . The roots correct to 2 significant figure:

(a) 3.7 and 1.4 (b) 3.5 and 1.2 (c) 3.6 and 1.4 (d) 3.6 and 1.5

Q.26) If x ϵ N and $-1 < 3 - 2x \leq 7$, what is the possible value of x ?

(a) – 2 (b) 1 (c) 2 (d) 3

Q.27) Rekha opened a recurring deposit account for 20 months. The rate of interest is 9% per annum and Rekha receives ₹ 441 as interest at the time of maturity. Find the amount Rekha deposited each month.

(a) ₹ 560 (b) ₹ 280 (c) ₹ 360 (d) ₹ 480

Section C [16 Marks] [4X4 = 16]

Q.28) Manjeet, Dilawar and Ravi live in the same city. Manjeet sells an article to Dilawar for ₹ 60,000 and Dilawar sells the same article to Ravi at a profit of ₹ 8,000. If all the transactions are under GST system at the rate of 12%, find:

(i) Input – tax payable by Dilawar

(a) ₹ 8160 (b) ₹ 7200 (c) ₹ 3600 (d) ₹ 4080

(ii) The state- government tax(SGST) paid by Dilawar.

(a) ₹ 960 (b) ₹ 840 (c) ₹ 480 (d) ₹ 560

(iii) The total tax received by CGST.

(a) ₹ 9060 (b) ₹ 8610 (c) ₹ 5640 (d) ₹ 4080

(iv) How much does Ravi pay for the article.

(a) ₹ 76160 (b) ₹ 67160 (c) 71660 (d) ₹ 61760

Q.29) The 4^{th} term of a A.P. is 22 and 15^{th} term is 66. Find :

(i) The first term is

(a) 15 (b) 22 (c) 10 (d) 27

(ii) The common difference is

(a) 6 (b) 8 (c) 2 (d) 4

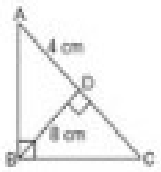
(iii) Find the 12^{th} term

(a) 45 (b) 54 (c) 36 (d) 24

(v) Hence find the sum of the series to 8 terms.

(a) 219 (b) 129 (c) 192 (d) 291

Q.30) In the figure, $\angle ABC$ = ∠BDC = 90°, BD = 8 cm and AD = 4 cm



(i) Δ ABD is similar to

(a) Δ BCD (b) Δ CBD (c) Δ DBC (d) BDC

(ii) The length of CD is

(a) 10 cm (b) 12 cm (c) 16 cm (d) 18 cm

(iii) Δ CBD is similar to :

(a) Δ ACB (b) Δ ABC (c) Δ BCA (d) Δ CAB

(iv) BA^2 is equal to :

(a) CA X DA (b) CB X DA (c) AB X DA (d) BD X DA

Q.31) ₹480 is divided equally among x children. If the number of children was 20 more, then each would have got ₹12 less. Find:

(i) When number of children x, each children received

(a) ₹ $\frac{240}{x}$ (b) ₹ $\frac{480}{x}$ (c) ₹ $\frac{120}{x}$ (d) ₹ $\frac{320}{x}$

(ii) When number of children was 20 more, then each children received

(a) ₹ $\frac{420}{x+20}$ (b) ₹ $\frac{360}{x+40}$ (c) ₹ $\frac{480}{x+20}$ (d) ₹ $\frac{560}{x+30}$

(iii) If each would have got ₹ 12 less, then the quadratic equation formed is

(a) x^2 + 20x -- 600 = 0 (b) x^2 + 40x – 800 = 0 (c) x^2 + 20x -- 800 = 0 (d) x^2 + 30x – 400 = 0

(iv) Find the value of x

(a) 20 (b) 30 (c) 40 (d) 60

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