Vidya Vikas Mandal's

Std : XI | Ramacrisna Madeva Salgaocar Higher Secondary School | Dur : $1\frac{1}{2}$hr

Date :04 /04/2022 | Margao – Goa | Marks : 40

Final Examination 2022

Subject : MATHEMATICS AND STATISTICS

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1. All questions are compulsory.
2. The question paper consists of 16 questions divided into four sections A, B,C,D.
3. Section A contains 4 questions of 1 marks each, 0ut of which 2 are multiple choice questions and 2 are VSA type. Section B contains 4 questions of 2 marks each, section C contains 4 questions of 3 marks each and section D contains 4 questions of 4 marks each.
4. There is no overall choice in the paper. However internal choice is provided in 1 question of 4 marks . In questions with choices only one of the choices to be attempted.
5. Use of calculators is not permitted.

SECTION – A

Question numbers 1 to 4 carry 1 mark each. In question 1 and 2, four options are provided out of which one is correct. Select and write the correct option.

1) The derivative of tanx w.r.t x *is* ---------- .
   (a) sec^2x
   (b) secx tanx
   (c) tanx
   (d) tan^2x

2) A ---------- is the set of all points in a plane that are equidistant from a fixed line and a fixed point in the plane .
   (a) hyperbola
   (b) ellipse
   (c) parabola
   (d) circle

3) Find the Mean Deviation about Mean , for the following data 6 , 7 , 10 , 13.

4) How many 4 letter words can be formed , using the first 6 letters of the English alphabet, if no letter can be repeated .

SECTION – B

Question numbers 5 to 8 , carry 2 marks each.

5) Evaluate $\lim_{x \to 0} \frac{sin4x\ sin8x}{x^2}$.

6) Reduce the equation $x - 2y + 6 = 0$ into (i) slope – intercept form and (ii) Intercept form.

7) Find the distance between the points A (1, 2, 4) and B (-1 , 3 , 6) .

8) (i) An experiment consists of rolling a die and then tossing a coin once if the number on the die is even. If the number on the die is odd, the coin is tossed twice .Write the sample space for this experiment.

(ii) Define Mutually Exclusive Events .

SECTION – C

Question numbers 9 to 12 , carry 3 marks each.

9) Find the equation to the straight line which passes through the point(3,4) and has intercept on the axes equal in magnitude but opposite in sign.

10) Evaluate $\lim_{x \to 2} \frac{\sqrt{x+2}-2}{x^2-4}$.

11) Find the co – ordinates of the point which divides the line segment joining the points (0 ,4 , 1) and (-1 , -1 , -3) in the ratio 3 : 7 , internally and externally.

12) The probability that a student takes Maths is 67% and the probability that he takes French is 52% . The probability that a student takes both Maths and French is 30%. What is the probability that a student takes Maths or French ?

SECTION – D

Question numbers 13 to 16 carry 4 marks each.

13) Calculate Mean Deviation about median for the following data

Class	0 -10	10 -20	20 - 30	30 -40	40 -50	50 -60
Frequency	6	7	15	16	4	2

14) There are 6 persons of whom 3 are Asian, 2 Europeans and 1 American. They have to stand in a line for a photograph so that the 3 Asians are together and the 2 Europeans are together. In how many ways can this be done ?

15) Find the eccentricity , the co-ordinates of the foci , length of latus rectum and the length of transverse axis of the hyperbola $\frac{x^2}{64} - \frac{y^2}{36} = 1$.

16) **Attempt any one of the following**

Differentiate the following w.r.t x

(i) $y = (x^2 - 4x + 6)(2x + 4)$

(ii) $y = \frac{\cos x}{1+x}$

OR

Differentiate the following w.r.t x

(i) $y = \sec x (x^4 + 36x)$

(ii) $y = \frac{2x^2+1}{x^2+3x+2}$

**** THE END ****