1-1-21

Subject : STATISTICS (with Non- Mathematics combination)

SEMESTER - I

Paper - I : Elementary Mathematics

B.A

UNIT -I

Concept of sequences and series, fundamentals of sets and functions, types of functions, solution of simultaneous linear equations, quadratic equations.

UNIT - II

Progressions - A.P, G.P, H.P, permutations, combinations, Binomial theorem.

UNIT -III

Definition and types of matrices, addition, subtraction, scalar multiplication of matrices

UNIT - IV

Determinant of Matrix. Transpose of a matrix, inverse and rank of 3X3 matrices only. Solution - simultaneous linear equations by matrix methods.

UNIT - V

Differentiations, derivatives of algebraic and exponential functions. Maxima and Minima of a function. Integration basics, Integration by parts and by substitution.

Practicals - Semester - I

1. Solution to simultaneous Linear equations.
2. Progressions - AP,GP.I--IP.
3. Addition, Subtraction, Multiplication of Matrices.
4. Determinant of a Matrix.
5. Simple differentiation, Integrations.

Reference Books:

1. Statistical methods - S.P. Gupta
2. Fundamentals of Mathematical statistics - SC Gupta and V.K.Kapoor
3. Differential Calculus-Santhi Narayana
4. Outlines of Matrices – Schaum

*****

Signature of the
Chairman (B.O.S.)
(20.....Exams)

1-1-12)

MODEL QUESTION PAPER

FIRST YEAR B.Sc DEGREE EXAMINATION – 2015-16

I SEMISTER

STATISTICS (NM)

(Semester Pattern w.e.f. 2015-16)

Time: 3 hours Marks: 75

SECTION – A

(Short Answer Questions)

I Write short notes on any FIVE of the following. Each question carries 5 marks.

(Marks: 5X5 = 25)

1. Explain about sequences.
2. A={1,2,3,4}, B={1,6,9,11,12}, C={7,8,9,11,12,16} find (i) AU (B∩C) (ii) A∩ (BUC).
3. Explain the following functions.
   (a) One-One function (b) onto function.
4. Define matrix and explain different types of matrices.
5. Solve the following quadratic equations.
   (a) $3X^2 + 2X - 5 = 0$ (b) $X^2 + 6X + 34 = 0$
6. The 8^{th} term of an A.P. is 17 and the 19^{th} term is 39. Find the 25^{th} term.
7. Find dy/dx for the following functions.
   (i) $y = 3x^2 + 2x + 6$ (ii) $y = (x+2 / x+1)$
8. Evaluate
   (i) $\int (1-x)(4-3x)(3x+2)\,dx$ (ii) $\int (x + 1/x)^3\,dx$

SECTION– B

II Answer <u>ONE</u> Question from each unit (5 X 10 = 50)

UNIT- I

9. The series $\sum 1/n^p = 1/1^p + 1/2^p + 1/3^p + \text{------} + 1/n^p + \text{------}$ is convergent if $p>1$ and divergent if $p\leq 1$. Prove it.

(Or)

10. Solve the equation $\sqrt{x/(1-x)} + \sqrt{(1-x)/x} = 2\ ^1/_6$

UNIT- II

11. Explain binomial theorem and find the middle term in the expansion using Binomial theorem
    (i) $(3x/_7 - 2Y)^{10}$ (ii) $(4x^2 + 5x^3)^5$

(Or)

12. Define progression and explain A.P, G.P. & H.P.

Signature of the Chairman (B.O.S.)
(20.....Exams)

UNIT- III

13. Solve the following system of linear equations by using the matrix method. $3x + 4y + 5z = 18$, $2x-y+8z=13$ and $5x-2y+7z=20$.

1-1-121

UNIT- IV

15. (a) Define maxima & Minima conditions
    (b) Determine whether the curves of the following function rise or fall or remain stationary at the points indicated against them
    (i) $y=1+2x-x^2$, at $x=1$ and at $x=2$
    (ii) $y=10x^3-15x^2+10$, at $x=2$ and at $x=3$

(Or)

16. Solve the equations $2x^2 - 10x + 5 = 0$ and $(b-c)\,x^2 + (c-a)x + (a-b) = 0$

UNIT- V

17. Find dy/dx for the following functions.
    (i) $y = 4x^3 + 3x^2 + 6x$), (ii) $y = (x^2 - 2x + 1) / 2x+1$ (iii) $y = (3x-4) / (4x+5)$

(Or)

18. Evaluate (i) $\int (2x+1)(4-3x)(3x+2)\,dx$ (ii) $\int (2x + 1/x)^2$

P. [illegible]
(Chairman, BOS)

Signature of the
Chairman (B.O.S.)
(20.....Exams)