DHANALAKSHMI SRINIVASAN COLLEGE OF ARTS & SCIENCE FOR WOMEN (AUTONOMOUS)

(For Candidates admitted from 2020-2021 onwards)

UG DEGREE EXAMINATIONS -APRIL 2021

BUSINESS ADMINISTRATION

MATHEMATICS AND STATISTICS FOR MANAGERS

Time: 3 Hrs   Max.Marks: 75

PART - A

CHOOSE THE CORRECT ANSWER   (10X1=10)

1. The derivative of e^x is

   (a) e^x (b) e^{-x} (c) $-\frac{1}{e^x}$ (d) e

2. If $x^2 + y^2 = a^2$, then $\frac{dy}{dx} =$

   (a) $-\frac{x}{\sqrt{a^2-x^2}}$ (b) $\frac{x}{\sqrt{a^2-x^2}}$ (c) $\frac{y}{\sqrt{a^2-y^2}}$ (d) $-\frac{y}{\sqrt{a^2-y^2}}$

3. If $A = \begin{bmatrix} 7 & 3 \\ 4 & 2 \end{bmatrix}$ then $9I_2 - A =$

   (a) A^{-1} (b) $\frac{A^{-1}}{2}$ (c) $3A^{-1}$ (d) $2A^{-1}$

4. If A is a symmetric matrix , then $A^T =$

   (a)   0   (b) A   (c) |A| (d) diagonal matrix

5. One dimensional diagrams are

   (a)   Cubes   (b) rectangles   (c) bar diagrams   (d) pie diagrams

6. In Chronological classification data are classified on the basis of

   (a)   Attributes   (b) class interval   (c) Time   (d) Locations

7. Which of the following is the most unstable average

   (a) Mode   (b) Median   (c) Geometric Mean   (d) Arithmetic Mean

8. The sum of squares of deviations from arithmetic mean is

   (a) Zero   (b) Maximum   (c) minimum   (d) Negative

9. If the ratio of change between two variables is uniform , then the correlation is

   (a) Linear   (b) simple   (c) non linear   (d) multiple

10. If the plotted points form a straight line running from the lower – left hand corner, then the correlation is

    (a) +1   (b) -1   (c) 0   (d) 0.5

PART – B

11 a). Derive the standard form of Differential coefficient of $\log_e x$ **(OR)**

    b). Solve (i) $\frac{d}{dx}\left(\sqrt{x}\,(x^2+2)\right)$ (ii) $\frac{d}{dx}(e^x \sin x \log x)$

12 a). If $A = \begin{bmatrix} 1 & 0 & -2 \\ 2 & 2 & 4 \\ 0 & 0 & 4 \end{bmatrix}$ show that A satisfies the equation $A^2 - 3A + 2I = 0$ **(OR)**

    b). Calculate the inverse matrix of $\begin{bmatrix} 1 & 1 & 1 \\ 2 & 2 & 3 \\ 1 & 4 & 9 \end{bmatrix}$

13 a). Represent the following data by means of a percentage bar diagram **(OR)**

Item	Cost of Production (Rs)		
	1992	1993	1994
Raw material	5000	6600	9000
Labour	2000	3000	3000
Overhead	2000	18000	1800
Others	1000	600	1200
Total	10000	12000	15000

    b). Write the difference between Classification and tabulation

14 a). Calculate the arithmetic mean of the following data

Marks	40	50	54	60	68	80	Total
No of students	10	18	20	39	15	8	110

(OR)

    b). The Arithmetic Mean of the following distribution is 1.46

No of Accidents	0	1	2	3	4	5	Total
Days	46	f_1	f_2	25	10	5	200

15. a). Calculate the correlation coefficient between aptitude score and productivity index for the following data :

Aptitude score	57	58	59	59	60	61	62	64
Productivity Index	67	68	65	68	72	72	69	71

(OR)

    b).Write a short note on

        (i) Simple , Partial , Multiple correlation

        (ii) Linear or Non linear or No correlation

PART – C

ANSWER ANY THREE QUESTIONS   (3*10=30)

16. Show that the least value of $a^2 \sec^2 x + b^2 \csc^2 x$ is $(a+b)^2$

17. Find the values of a and b for which the equations $x + y + z = 3$

    $x + 2y + 2z = 6$, $x + ay + 3z = b$ have (i) no solution (ii) a unique solution

18. Draw a suitable diagram to represent the following submitted as a part of the
    budget proposal of the Govt of India for the year 1995-1996

Item of Expenditure	Percentage
Interest	26
Defence	13
Subsidies	6
Other non plan expenditure	10
States share of taxes and duties	15
Non plan assistance to state and UT Govts	6
State and UT plan Assistance	10
Central plan	14
Total	100

19. Calculate the Quartile Deviation from the following data

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No of students	6	5	8	15	7	6	3

20. Calculate the two regression equations from the following data

X	10	12	13	12	16	15
Y	40	38	43	45	37	43