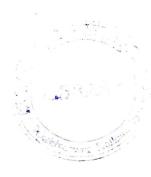
CBCS/B.Com./Programme/2nd Sem./FACGCOR04T/2020





WEST BENGAL STATE UNIVERSITY

B.Com. Programme 2nd Semester Examination, 2020



BUSINESS MATHEMATICS AND STATISTICS

Time Allotted: 2 Hours Full Marks: 50

The figures in the margin indicate full marks.

Candidates should answer in their own words and adhere to the word limit as practicable.

All symbols are of usual significance.

GROUP-A

1. Answer any *five* questions from the following:

- $2 \times 5 = 10$
- (a) If $U = \{1, 3, 5, 7, 9, 12, 15\}$ be a universal set and $A = \{1, 5, 9, 15\}$ $B = \{3, 7, 9, 12, 15\}$ are two subsets of U then find $(A \cap B) \cup (A - B)$.
- (b) If $A = \begin{pmatrix} x & y \\ u & v \end{pmatrix}$, then show that adj(adj A) = A.
- (c) Evaluate: $\lim_{x \to 3} \frac{\sqrt{x} \sqrt{3}}{x^2 9}$.
- (d) Find $\frac{dy}{dx}$, where $y = e^{x^2+2}$.
- (e) Find the median of 94, 33, 85, 67, 32, 81, 48, 69.
- (f) In a distribution, median is 30, A.M. is 27; find mode.
- (g) If $b_{xx} = -0.9$ and $b_{xy} = -0.4$, find r_{xy} .
- (h) Find the Geometric Mean (G. M.) of 3, 6, 24, 48.

GROUP-B

Answer any four questions from the following

- $5 \times 4 = 20$
- In a class of 25 students, 12 students have taken Economics, 8 students have taken Economics but not Mathematics. Find the number of students who have taken Economics and Mathematics and those who have taken Mathematics but not Economics (by set theory solve it).
- 3. Solve the system of equations by Crammer's rule:

$$2x-3y+z=4$$
; $x-y+z=6$; $3x+5y-z=19$

- 4. Calculate the compound interest on Rs. 1,500 at 5% in 4 years, the interest being compounded annually.
- 5. Show that the maximum value of $x^3 + \frac{1}{x^3}$ is less than its minimum value.

6. The weight in pounds of 48 students of a class are given below:

110	160	150	105	175	172	125	120	136	169	140	135
100	178	170	118	168	154	110	127	149	124	80	140
120	90	165	126	108	136	95	155	112	156	95	102
125	130	85	137	128	120	88	164	128	175	149	168

Arrange the above data in the frequency distribution consisting of 10 classes intervals by tally marks.

7. Calculate the mean deviation from the mean for the following data:

Marks	0-10	10-20	20-30	30-40	40-50
No. of Students	6	5	8	15	16

GROUP-C

Answer any two questions from the following

 $10 \times 2 = 20$

8. An incomplete distribution is given below:

10

Variable	10-20	20-30	30-40	40-50	50-60	60-70	70-80	Total
Frequency	12	30	?	65	?	25	18	229

If median is 46 then find (i) the missing frequencies and (ii) Arithmetic mean of completed table.

9. (a) If x = ct, $y = \frac{c}{l}$; find $\frac{dy}{dx}$, where c, t are constant and variable respectively.

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(b) Find the standard deviation (S.D.) of the following frequency distribution:

6

Height (inch.)	60-62	62-64	64-66	66-68	68-70
No. of students	35	27	20	13	5

10.(a) Fit a straight line trend by the method of least squares and estimate the trend values:

6

Yea	r 1961	1962	1963	1964	1965	1966	1967	1978
Valu	ie 80	90	92	83	94	99	92	104

(b) Construct five-yearly moving averages of the number of students studying in a college:

4

Yr.	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
No.	332	317	357	392	402	405	410	427	405	431

N.B.: Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.

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