

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BCom DEGREE EXAMINATION DECEMBER 2018  
(First Semester)

Branch – COMMERCE (COST AND MANAGEMENT ACCOUNTING)

BUSINESS MATHEMATICS AND STATISTICS

Time : Three Hours

Maximum : 75 Marks

SECTION-A (20 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 2 = 20)

- 1 If  $A = \{1,2,3\}$   $B = \{1,3,5\}$   $C = \{2,3,4,6\}$  find  $A-(B \cap C)$ .
- 2 Find the inverse of  $\begin{pmatrix} a & b \\ c & d \end{pmatrix}$ .
- 3 Find the value of  $\int (x + \frac{1}{x})^3 dx$ .
- 4 Evaluate  $\int_1^2 x^2 dx$ .
- 5 Write the formula for co-efficient of variation.
- 6 Write the formula for Qual file deviation.
- 7 Write the uses of Index numbers (any 2).
- 8 Write the regression equations.
- 9 Write the probability density function of Binomial distribution.
- 10 Define mutually exclusive events.

SECTION - B (25 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 5 = 25)

11 a If  $A = \begin{pmatrix} 2 & 2 & 5 \\ 5 & 3 & -1 \end{pmatrix}$   $B = \begin{pmatrix} 4 & 7 \\ 2 & 5 \\ 3 & -2 \end{pmatrix}$

Verify that  $(AB)^T = B^T, A^T$   
OR

b Prove that  $\log_{10}^{125} = 3 - 3\log_{10}^2$ .

- 12 a Discuss the continuity of  $f(x)$  at  $x=1$ .

$$f(x) = \frac{x^2 - 4x + 3}{x - 1} \text{ for } x \neq 1$$

$$= 2 \text{ for } x=1$$

OR

b Find  $\frac{dy}{dx}$  when  $x^3 + y^3 = 3axy$ .

- 13 a Calculate the median of

Daily wages (Rs.)	5	10	15	20	25	30
No. of Persons	7	12	37	25	22	11

OR

- b Find the S.D of 45,36,40,37,39,42,45,35,40,39.

- 14 a Determine to what extent in the knowledge of two subjects related from the following data using rank correlation.

Statistics	1	2	3	4	5	6	7	8	9	10
Mathematics	1	4	2	5	3	9	7	10	6	8

14 Cont...

b Find the line of regression of y on x.

X	1	2	3	4	5	8	10
Y	9	8	10	12	14	16	15

15 a What is the probability of getting two of the balls drawn are white from an urn contains 6 white, 4 red and 9 black balls, if 3 are drawn.

OR

b The mean and variance of a binomial distribution are 3&2 respectively. Find the probability that  $x \leq 2$ .**SECTION - C (30 Marks)**Answer any **THREE** Questions**ALL** Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 Compute the interest on Rs.1000 for 10 years at 4% per annum the interest being paid annually.

17 Evaluate i)  $\int \left( \frac{x^2 + 2x - 1}{\sqrt{x}} \right) dx$ .ii) If  $x=at^2$ ;  $y=2at$  find  $\frac{dy}{dx}$ .

18 Draw a pie chart for the following data

Type of Commodity	Expenditure(Rs.) of Family A
Food	300
Rent	200
Clothes	125
Education	110
Miscellaneous	75
Savings	90

19 Calculate price and quantity index number using Fisher's formula for the following data.

Commodity	Base Year		Current Year	
	Q	Price	Q	P
I	6	5	8	6
II	8	3	10	2
III	12	2	10	4
IV	2	8	2	7
V	5	9	6	9

20 From the following data, obtain the seasonal indices by any method that you consider suitable.

Year/Quarter	I	II	III	IV
1990	97	88	76	94
1991	101	93	79	98
1992	106	96	83	103