

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BCom DEGREE EXAMINATION MAY 2023  
(First Semester)

Branch – COMMERCE (COST & MANAGEMENT ACCOUNTING)

BUSINESS MATHEMATICS AND STATISTICS

Time: Three Hours

Maximum: 50 Marks

**SECTION-A (5 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- Find the 9th term of the series 5,10,20,...  
(i) 45 (ii) 1280 (iii) 80 (iv) 2560
- Statistics can be considered as  
(i) an art (ii) a science (iii) both an art and science (iv) neither an art nor a science
- Second quartile is nothing but  
(i) mode (ii) mean (iii) median (iv) variance
- Coefficient of correlation lies between  
(i) 0 and 1 (ii) -1 and 0 (iii) -1.5 and 1.5 (iv) -1 and 1
- What is the probability of getting three heads in three tosses of a coin?  
(i)  $\frac{1}{8}$  (ii)  $\frac{1}{2}$  (iii)  $\frac{1}{4}$  (iv)  $\frac{3}{8}$

**SECTION – B (5 × 3 = 15 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks

6. (a) Solve  $6x^2 - 17x + 12 = 0$ .

(OR)

- (b) Calculate (i)  ${}^{11}P_2$  (ii)  ${}^{11}C_2$  (iii)  ${}^{11}P_0$  and (iv)  ${}^{11}C_0$ .

7. (a) Classify between graphs and diagrams.

(OR)

- (b) The frequency distribution of marks in Mathematics obtained by 100 students in a class is given below:

Marks :	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
No of students :	7	11	24	32	9	14	2	1

Sketch a histogram and frequency polygon for the above data.

8. (a) State the merits and demerits of mean and median.

(OR)

- (b) Calculate (i) range (ii) coefficient of range (iii) quartile deviation and (iv) coefficient of quartile deviation.

Price (Rs.) 10 12 13 16 11 12 13 10 15 19

Cont...

9. (a) Calculate the coefficient of correlation,  $N = 9$ ,  $\sum X = 225$ ,  $\sum Y = 314$ ,  $\sum XY = 7767$ ,  $\sum X^2 = 5685$  and  $\sum Y^2 = 11080$ .

(OR)

- (b) State the properties of regression lines and coefficients.

10. (a) If  $P(A) = 0.50$ ,  $P(B) = 0.50$  and  $P(A \cup B) = 0.70$ , calculate  $P(A \cap B)$ .

(OR)

- (b) Explain Mutually exclusive events with example.

**SECTION - C (5 × 6 = 30 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks

11. (a) Calculate the simple and compound interest for Rs. 2500 for 4 years at 8 percentage per annum.

(OR)

- (b) If  $A = \{0, 1, 3, 4, 6, 7, 9, 10\}$ ,  $B = \{2, 3, 4, 5, 6\}$  and  $C = \{4, 5, 6, 7, 8, 9\}$ , show that (i)  $A - (B \cup C) = (A - B) \cap (A - C)$  and (ii)  $A - (B \cap C) = (A - B) \cup (A - C)$ .

12. (a) Summarise the uses of statistics in business.

(OR)

- (b) Represent the following data by a pie diagram

Item :	Food	Clothing	Rent	Education	Fuel	Miscellaneous	Savings
Value(Amount in Rs.):	60	40	30	20	10	20	20

13. (a) Calculate mean, median and mode for the following data

Mid values :	0-10	10-20	20-30	30-40	40-50
Frequency:	14	24	38	20	4

(OR)

- (b) From the following data find standard deviation

X :	10	20	30	40	50	60
f :	8	12	20	10	7	3

14. (a) Marks obtained by 8 students in Accountancy (X) and Statistics (Y) are given below. Calculate the rank correlation.

X :	15	20	28	12	40	60	20	80
Y :	40	30	50	30	20	10	30	60

(OR)

- (b) Differentiate regression and correlation coefficients.

15. (a) A manufacturing firm produces pipes in two plants, I and II with daily production of 1500 and 2000 pipes respectively. The fraction of defective pipes produced by the two plants are 0.006 and 0.008 respectively. If a pipe selected at random from the day's production is found to be defective, What is the probability that it has come from plant I, plant II?

(OR)

- (b) In a sample of 500 workers of a factory, the mean wage and SD of wages are found to be Rs. 500 and Rs. 48 respectively. Find the probability of workers having wages (i) more than Rs. 600 (ii) less than Rs. 450 (iii) between Rs. 548 and Rs. 600.

Z . Z . Z END