

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BCom DEGREE EXAMINATION MAY 2017
(First Semester)

Branch - COMMERCE (COST AND MANAGEMENT ACCOUNTING)

BUSINESS MATHEMATICS & STATISTICS

Time : Three Hours

Maximum : 75 Marks

SECTION-A (20 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10x2 = 20)

- 1 Find the interest for Rs. 1,00,000 deposited for 2 years at simple interest rate of 6%.
- 2 Find the 7th term of the A. P 8, 5, 2, -1, -4,.....
- 3 Evaluate $\lim_{x \rightarrow 3} \frac{x^2 - 6x + 9}{x - 3}$
- 4 Find $\frac{dy}{dx}$, if $y = 2x^3 - 5x^2 - 3x$
- 5 Name the one dimensional diagrams.
- 6 Write the formula for computing median of continuous series.
- 7 Write the formula for Rank correlation coefficient.
- 8 Write the formula for regression coefficients.
- 9 Define mutually exclusive events.
- 10 Name the components of time series.

SECTION - B (25 Marks)

Answer ALL Questions

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

- 11 a How many different numbers can be formed by using any three out of five digits 1, 2, 3, 4, 5, no digit being repeated in any number?
OR
b The sum of three integers in AP is 15 and their product is 80. Find the integers.
- 12 a If $y = x^x$, find $\frac{dy}{dx}$.
OR
b If $y = x^{\log x}$, find $\frac{dy}{dx}$.
- 13 a Draw the ogive curves and locate the median graphically :

C.I :	0-20	20-40	40-60	60-80	80-100
f :	40	60	100	60	40

OR
b Compute the mean and median :

C . I :	110-110	110-120	120-130	130-140	140-150	150-160	160-170	170-180
f :	4	6	20	32	33	17	8	2

Cont...

14 a For a bivariate data, the following results were obtained :

$$n = 100, XX = 5,000, XY = 10,000, XX^2 = 2,60,000;$$

$XY^2 = 10,40,000$ and $XXY = 5,16,000$. Estimate Y when X = 60. Also estimate X when Y = 80.

OR

b Ten competitors in a beauty contest were ranked by three judges in the following order :

Judge I :	1	5	4	8	9	6	10	7	3	2
Judge II :	4	8	7	6	5	9	10	3	2	1
Judge III :	6	7	8	1	5	10	9	2	3	4

Identify the pair of judges who have common ranking approach.

15 a The incidence of occupational disease in an industry is such that the workmen have 20% chance of suffering from it. Using the binomial distribution, find the probability that out of 6 workmen, 4 or more will be affected by the disease.

OR

b Calculate the 3 yearly moving averages :

Years :	1999	2000	2001	2002	2003	2004	2005
Sales :	41.2	43.8	44.6	45.4	47	48.3	49

SECTION - C (30 Marks)

Answer any THREE Questions

ALL Questions Carry EQUAL Marks (3 x 10 = 30)

16 Solve using Cramer's rule :

$$3x + 2y + 4z = 12$$

$$3x + 8y + 6z = 20$$

$$2x + 4y + 5z = 13$$

17a Evaluate $\int \frac{2x}{11 + x^2} dx$.

Evaluate $\int \frac{2x + 2}{x + 1} dx$.

18 Using the following data on 10 days, find the share which is more stable :

Price of share A :	55	54	52	53	56	58	52	50	51	49
Price of share B :	108	107	105	105	106	107	104	103	104	101

19 Compute Fisher's index and prove that it satisfies time reversal test and factor reversal test :

Commodity	Base year		Current year	
	Price	Quantity	Price	Quantity
A	5	2	8	1
B	6	3	8	3
C	8	1	11	1
D	3	2	3	4

Compute the trend values using the method of least squares :

Years :	1998	1999	2000	2001	2002	2003	2004
Sales :	150	161	180	115	230	195	211