

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BSc/ BVoc DEGREE EXAMINATION MAY 2026
(First Semester)**

Branch – COMPUTER NETWORKING & MOBILE APPLICATION

STATISTICAL TECHNIQUES

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Which one of the following represents qualitative data? (i) Height of students (ii) Income level (iii) Blood group (iv) Marks obtained	K1	CO1
	2	The relative measure of dispersion corresponding to standard deviation is (i) Range (ii) Quartile deviation (iii) Coefficient of variation (iv) Mean deviation	K2	CO1
2	3	If $r = 0.6$, the coefficient of determination is (i) 0.6 (ii) 0.36 (iii) 0.12 (iv) 0.60	K1	CO2
	4	In a scatter diagram, if points cluster closely around a downward sloping straight line, it indicates: (i) Perfect positive correlation (ii) Zero correlation (iii) Strong negative correlation (iv) Weak positive correlation	K2	CO2
3	5	In a 4-year moving average, the number of values lost at the ends of the series is: (i) 1 (ii) 2 (iii) 3 (iv) 4	K1	CO3
	6	The equation of a trend line by least squares is generally written as: (i) $Y = a + bX$ (ii) $Y = abX$ (iii) $Y = aX^2 + b$ (iv) $X = a + bY$	K2	CO3
4	7	The formula for conditional probability is: (i) $P(A/B) = P(A \cap B)/P(A)$ (ii) $P(A/B) = P(A \cap B)/P(B)$ (iii) $P(A/B) = P(A)P(B)$ (iv) $P(A/B) = P(A) + P(B)$	K1	CO4
	8	Bayes' theorem is mainly used to: (i) Find prior probability (ii) Find posterior probability (iii) Test independence (iv) Find mean	K2	CO4
5	9	In Excel, which function is used to calculate the arithmetic mean of a data range? (i) MEAN() (ii) AVERAGE() (iii) AVG() (iv) CENTRAL()	K1	CO5
	10	The function NORMINV() in Excel is used to: (i) Find mean (ii) Find standard deviation (iii) Find Z value for given probability (iv) Find correlation	K2	CO5

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Calculate Mean, Median and Mode for the data: 7, 10, 15, 20, 25, 30, 35, 40, 58, 70.	K4	CO1
		(OR)		
	11.b.	The marks obtained by 40 students are: 0–10:2, 10–20:5, 20–30:8, 30–40:10, 40–50:9, 50–60:6. Draw a Histogram.		

Cont...

2	12.a.	The monthly sales (in 000s) and advertising expenditure (in 000s) of a company over 8 months are: X (Advertising): 12, 15, 14, 18, 20, 22, 24, 25 Y (Sales) : 40, 42, 45, 50, 52, 55, 60, 62 Calculate Karl Pearson's coefficient of correlation and interpret.	K4	CO2
		(OR)		
	12.b.	Given the following: Mean of X = 120, SD_X = 15, Mean of Y = 240, SD_Y = 25, r = 0.82 Find the regression equations of Y on X and X on Y, and predict Y for X = 135.		
3	13.a.	The quarterly production data of a company (units) for 2 years are: Q1: 200, Q2: 220, Q3: 210, Q4: 230, Q1: 210, Q2: 240, Q3: 220, Q4: 250. Apply the ratio-to-trend method to determine seasonal indices.	K5	CO3
		(OR)		
	13.b.	The annual sales (in 000s) of a company over 10 years are: 2013: 120, 2014: 130, 2015: 135, 2016: 150, 2017: 160, 2018: 165, 2019: 170, 2020: 180, 2021: 190, 2022: 200. fit a linear trend using the least squares method and find the trend equation.		
4	14.a.	In a class of 50 students, 30 like Mathematics and 25 like Statistics. If 10 students like both, find P(student likes Statistics)	K3	CO4
		(OR)		
	14.b.	A factory produces 100 items per day. The probability of a defective item is 0.02. Find the probability of exactly 2 defective items using the Binomial distribution.		
5	15.a.	Two variables X: 5, 10, 15, 20, 25 and Y: 10, 15, 20, 25, 30. Using Excel, compute CORREL() and comment on the strength and direction of correlation.	K4	CO5
		(OR)		
	15.b.	Use BINOMDIST() in Excel to calculate the probability of at most 2 successes in 6 trials, where probability of success p = 0.3.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Find the quartile deviation for the data: 5, 8, 12, 15, 18, 20, 22, 25, 30, 42, 50, 55.	K4	CO1
2	17	A company recorded annual profit (Y) and total investment (X) over 6 years: Investment X (₹ lakhs): 50, 55, 60, 65, 70, 75 Profit Y (₹ lakhs): 10, 12, 15, 18, 20, 25 Find the regression equation of Y on X and estimate profit for X = 68.	K4	CO2
3	18	Monthly sales of a store for 12 months are: 120, 130, 125, 140, 150, 160, 155, 165, 170, 180, 175, 185. Using Simple Average method, calculate seasonal indices, identify peak and lean months, and comment on seasonal variation.	K5	CO3
4	19	A bag contains 3 red, 2 green, and 5 blue balls. Two balls are drawn one after another without replacement. Find the probability that (a) both are red, (b) one red and one blue.	K3	CO4
5	20	Heights of 15 students are: 160, 162, 165, 168, 170, 172, 175, 178, 180, 182, 185, 188, 190, 192, 195. Use the Excel function NORMDIST() to find the probability that a student's height is less than 175, and NORMINV() to find the height corresponding to the 80th percentile.	K4	CO5