

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
MCom DEGREE EXAMINATION MAY 2025
(First Semester)

Branch – **COMMERCE**

QUANTITATIVE 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	If the regression coefficients $b_{xy}=1.0$ and $b_{yx}=0.9$, then the correlation coefficient is a) 0.80 b) 0.95 c) 1.0 d) 0.90	K1	CO1
	2	The mean of Poisson distribution is a) n, p b) npq c) np d) μ, σ	K2	CO1
2	3	The statement about the population is taken always under no difference condition is called a) Null hypothesis b) Alternative hypothesis c) Composite hypothesis d) Simple hypothesis	K1	CO2
	4	For which sample size, the t-test is used? a) $= 30$ b) ≥ 30 c) < 30 d) < 100	K2	CO3
3	5	Select the test used for testing two variances: a) F test b) t-test c) ANOVA d) Chi-square test	K1	CO3
	6	ANOVA test is used for finding the difference between a) Proportions b) Standard deviations c) Two means d) Difference of means	K2	CO3
4	7	Identify the non-parametric test a) Sign test b) Median test c) Run test d) All of these	K1	CO4
	8	The number of components in time series analysis are a) 3 b) 4 c) 5 d) 2	K2	CO4
5	9	What do you mean by unbalanced transportation problem? a) Total supply = Total demand b) Total supply \neq Total demand c) Total origin = Total destination d) Total origin \neq Total destination	K1	CO5
	10	The method used for solving an assignment problem is a) VAM method b) NWC rule method c) Hungarian method d) MODI method	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.	Outline the differences between correlation and regression.	K2	CO1								
	(OR)											
	11.b.	Outline the important properties of Normal distribution.	K3	CO1								
2	12.a.	Explain the general procedure for the testing of hypothesis.	K2	CO2								
	(OR)											
	12.b.	Random samples drawn from two countries gave the following data relating to the heights of male adults:	K3	CO2								
		<table><tr><td></td><td>Country A</td><td>Country B</td></tr><tr><td>S.D (in inches)</td><td>2.58</td><td>2.50</td></tr><tr><td>Number in samples</td><td>1000</td><td>1200</td></tr></table>				Country A	Country B	S.D (in inches)	2.58	2.50	Number in samples	1000
		Country A			Country B							
S.D (in inches)		2.58			2.50							
Number in samples	1000	1200										
Is the difference between the standard deviations significant?												
3	13.a.	Explain the test procedure of testing two variances using F-test.	K2	CO3								
	(OR)											

Cont...

3	13.b.	From the following data, identify whether there is any association between intelligence and economic conditions:				K3	CO3	
		Economic condition	Intelligence					
			Excellent	Good	Medium			Dull
			Good	48	200			150
	Not good	52	180	190	100			
4	14.a.	What are non-parametric tests? Explain its advantages.				K2	CO4	
	(OR)							
	14.b.	Explain about the various methods of measuring trend.						
5	15.a.	Solve the following LPP graphically: Maximize $Z = 5X_1 + 7X_2$ Subject to $2X_1 + 3X_2 \leq 13$, $3X_1 + 2X_2 \leq 12$ and $X_1, X_2 \geq 0$				K3	CO5	
	(OR)							
	15.b.	Find the IBFS to the following transportation problem by Least Cost method:						
			D	E	F	G		Available
		A	15	11	19	14		250
B		16	18	14	10	300		
	C	21	24	13	10	400		
	Requirement	200	225	275	250		K1	

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	Construct the coefficient of correlation from the following data by the Karl Pearson's method: Price of Tea(Rs) : 75 88 95 70 60 80 81 50 Price of Coffee(Rs): 120 134 150 115 110 140 142 100	K3	CO1																									
2	17	Ten persons were appointed in the officer cadre in an office. Their performance was noted by giving a test and the marks were recorded out of 100. Employee: A B C D E F G H I J Before Training: 80 76 92 60 70 56 74 56 70 56 After Training : 84 70 96 80 70 52 84 72 72 50 By applying the t-test, can it be concluded that the employees have been benefited by the training? (Test at 5% level)	K3	CO3																									
3	18	Explain the testing procedure of one-way ANOVA with a suitable example.	K2	CO3																									
4	19	Calculate the seasonal index from the following data by applying simple average method: Year 1 st quarter 2 nd quarter 3 rd quarter 4 th quarter 2011 72 68 80 70 2012 76 70 82 74 2013 74 66 84 80 2014 76 74 84 78 2015 78 74 86 82	K3	CO4																									
5	20	Four Professors are each capable of teaching any of the four different course. Class preparation time in hours for different topics varies from professor to professor and is given in the table below. Each professor is assigned only one course. Identify an assignment schedule so as to minimize the total course preparation time for all the courses: <table border="1"> <thead> <tr> <th>Professor</th><th>LPP</th><th>Inference</th><th>Game Theory</th><th>SQC</th></tr> </thead> <tbody> <tr> <td>A</td><td>2</td><td>10</td><td>9</td><td>7</td></tr> <tr> <td>B</td><td>15</td><td>4</td><td>14</td><td>8</td></tr> <tr> <td>C</td><td>13</td><td>14</td><td>16</td><td>11</td></tr> <tr> <td>D</td><td>4</td><td>15</td><td>13</td><td>9</td></tr> </tbody> </table>	Professor	LPP	Inference	Game Theory	SQC	A	2	10	9	7	B	15	4	14	8	C	13	14	16	11	D	4	15	13	9	K3	CO5
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