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**0105N089**

Candidate's Seat No : \_\_\_\_\_

**MBA in BI Sem.-2 Examination**

**BI-204**

**DA-SPSS**

**May-2025**

**[Max. Marks : 70**

**Time : 2-30 Hours]**

- Instructions :** (1) This paper contains **FIVE** questions.  
(2) All questions are compulsory.  
(3) Question No. **2, 3, 4** have internal options.  
(4) Figures in the right side in parenthesis indicate marks.

**Q:1 Multiple Choice Questions: (2 Marks each) (14)**

1. In SPSS, what does the "Coefficients" table in multiple regression output show?
  - a) The standardized and unstandardized coefficients for each predictor variable.
  - b) The overall significance of the model.
  - c) The predicted values of the dependent variable.
  - d) The correlation matrix for all variables.
2. What is the purpose of linear regression analysis in SPSS?
  - a) To predict the value of a dependent variable based on one independent variable.
  - b) To compare means between two groups.
  - c) To assess the relationship between two categorical variables.
  - d) To compare variances between groups.
3. Which statistic in the "Multivariate Tests" table of MANOVA output helps determine the significance of the multivariate effect?
  - a) Wilks' Lambda
  - b) R-Square
  - c) T-Statistic
  - d) Adjusted R Square
4. When interpreting the p-value in SPSS output, a p-value less than 0.05 typically indicates:
  - a) There is no significant relationship or difference
  - b) There is a significant relationship or difference
  - c) The null hypothesis is accepted
  - d) The results are invalid
5. To generate a Spearman's rho test, which set of instructions should you give SPSS?

- a) Analyze; Crosstabs; Descriptive Statistics; Spearman; OK
  - b) Graphs; Frequencies; [select variables]; Spearman; OK
  - c) Analyze; Compare Means; Anova table; First layer; Spearman; OK
  - d) Analyze; Correlate; Bivariate; [select variables]; Spearman; OK
6. AMOS stands for
- a) Analysis of Moment Structures
  - b) Analysis of Mean Structures
  - c) Analysis of Missing Structures
  - d) Analysis of Menu Structures
7. A researcher wants to compare the average income of employees in two different departments of a company. The data is collected from independent samples. Which test is most appropriate to use in SPSS?
- a) Paired Samples t-test
  - b) Independent Samples t-test
  - c) One-Way ANOVA
  - d) Chi-Square Test

**Q:2** Imagine a fitness researcher is investigating how personal attributes influence exercise habits. The study recruits' participants of different ages, genders, and personality traits, including extroversion levels. Participants log the number of minutes they exercise per week. Frame the hypotheses and interpret the results provided. (14)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.799 <sup>a</sup>	.638	.608	13.021

a. Predictors: (Constant), age in years, gender, extroversion

ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10746.290	3	3582.097	21.126	.000 <sup>a</sup>
	Residual	6104.085	36	169.558		
	Total	16850.375	39			

a. Predictors: (Constant), age in years, gender, extroversion

b. Dependent Variable: minutes per week

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	11.306	7.315		1.546	.131	-3.530	26.142
	extroversion	.484	.130	.439	3.564	.001	.200	.728
	age in years	.156	.206	.085	.754	.456	-.263	.574
	gender	20.071	4.851	.489	4.315	.000	10.638	29.505

a. Dependent Variable: minutes per week

OR

Q:2 A researcher wants to investigate whether there is a relationship between gender and level of education. The levels of education considered are: Primary school, Secondary school, Bachelor's (BA), Master's, and Ph.D. Frame the hypotheses and interpret the results provided. (14)

**Gender \* Education Crosstabulation**

			Education					Total
			Primary school	Secondary school	BA	Master	PhD	
Gender	Male	Count	11	11	13	8	7	50
		% within Gender	22.0%	22.0%	26.0%	16.0%	14.0%	100.0%
	% within Education		52.4%	42.3%	38.2%	44.4%	41.2%	43.1%
	% of Total		9.5%	9.5%	11.2%	6.9%	6.0%	43.1%
Female	Count	Count	10	15	21	10	10	66
		% within Gender	15.2%	22.7%	31.8%	15.2%	15.2%	100.0%
	% within Education		47.6%	57.7%	61.8%	55.6%	58.8%	56.9%
	% of Total		8.6%	12.9%	18.1%	8.6%	8.6%	56.9%
Total	Count	Count	21	26	34	18	17	116
		% within Gender	18.1%	22.4%	29.3%	15.5%	14.7%	100.0%
	% within Education		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total		18.1%	22.4%	29.3%	15.5%	14.7%	100.0%

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.111 <sup>a</sup>	4	.892
Likelihood Ratio	1.107	4	.893
Linear-by-Linear Association	.351	1	.553
N of Valid Cases	116		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.33.

Q:3 A physiotherapy student conducted an experiment to compare the number of step exercises performed by subjects in a fixed time under two conditions: exercising in a group versus exercising alone. (14)

**NPar Tests**

**Descriptive Statistics**

	N	Mean	Std. Deviation	Minimum	Maximum
GROUP	12	86.67	17.87	58	110
INDIVID	12	79.92	16.40	58	104

**Test Statistics<sup>b</sup>**

	INDIVID - GROUP
Z	-2.631 <sup>a</sup>
Asymp. Sig. (2-tailed)	.009

a. Based on positive ranks.  
b. Wilcoxon Signed Ranks Test

**Ranks**

		N	Mean Rank	Sum of Ranks
INDIVID - GROUP	Negative Ranks	10 <sup>a</sup>	7.25	72.50
	Positive Ranks	2 <sup>b</sup>	2.75	5.50
	Ties	0 <sup>c</sup>		
	Total	12		

a. INDIVID < GROUP  
b. INDIVID > GROUP  
c. GROUP = INDIVID

OR

(P.T.O)

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**Q:3** A researcher is interested in examining whether relationship status affects levels of happiness. Participants report their happiness on a scale from 1 (very unhappy) to 5 (very happy), and they are categorized into five groups based on relationship status: Single, Married, Divorced, Widowed, and Separated. **(14)**

**Descriptive Statistics**

	N	Mean	Std. Deviation	Minimum	Maximum
1 to 5	28	3.2500	1.43049	1.00	5.00
MaritalStatus	28	2.9643	1.37389	1.00	5.00

**Ranks**

MaritalStatus	N	Mean Rank
1 to 5 Single	5	13.10
Married	6	15.25
Divorced	7	14.71
Widowed	5	12.90
Separate	5	16.30
Total	28	

**Test Statistics<sup>a,b</sup>**

	1 to 5
Chi-Square	.661
df	4
Asymp. Sig.	.956

a. Kruskal Wallis Test

b. Grouping Variable:  
MaritalStatus

**Q:4** A hospital administrator wants to determine whether patient satisfaction scores at their facility differ from the national benchmark score of 86 (on a scale from 1 to 100). To investigate, the administrator collects satisfaction survey results from a sample of 37 recently discharged patients. **(14)**

**One-Sample Statistics**

	N	Mean	Std. Deviation	Std. Error Mean
Test results (1 to 100)	37	73.0811	16.89737	2.77791

**One-Sample Test**

	Test Value = 86					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Test results (1 to 100)	-4.651	36	.000	-12.91892	-18.5528	-7.2851

OR

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Q:4 Below mentioned are the output table of Factor Analysis. Write the interpretation using following table: (14)

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy:		417
Bartlett's Test of Sphericity	Approx. Chi-Square	47.694
	df	28
	Sig.	.012

**Communalities**

	Initial	Extraction
Availability of product	1.000	.735
Cost of product	1.000	.844
Experience with product	1.000	.800
Popularity of product	1.000	.804
Prestige of product	1.000	.865
Quality of product	1.000	.918
Quantity of product	1.000	.768
Respectability of product	1.000	.814

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.709	46.367	46.367	3.709	46.367	46.367	2.501	31.260	31.260
2	1.478	18.471	64.838	1.478	18.471	64.838	2.045	25.566	56.826
3	1.361	17.013	81.850	1.361	17.013	81.850	2.002	25.024	81.850
4	.600	7.499	89.349						
5	.417	5.214	94.563						
6	.281	3.508	98.071						
7	.129	1.608	99.679						
8	2.589E-02	.321	100.000						

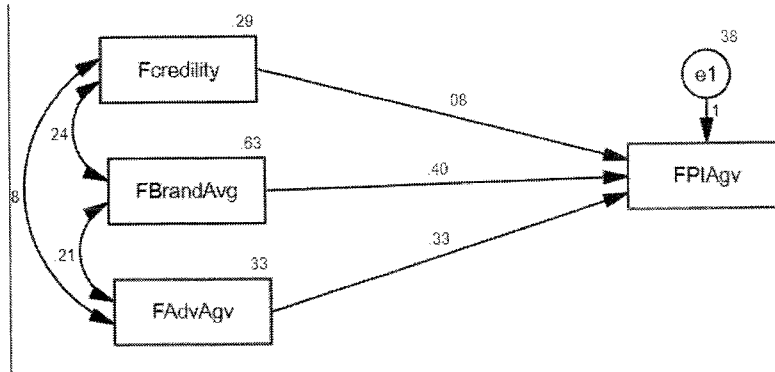
Extraction Method: Principal Component Analysis.

**Rotated Component Matrix**

	Component		
	1	2	3
Availability of Product			0.760
Cost of Product			0.908
Experience with Product		0.684	
Popularity of Product		0.893	
Prestige of Product	-0.901		
Quality of the Product	0.637		
Quantity of the Product		-0.652	
Respectability of Product	0.845		

Q:5 Write the hypothesis of the structural model and also write the interpretation of the structural model. Where, Source Credibility (Fcredibility), Attitude towards Brand (14)

(FBrandAvg), Attitude towards Advertisement (FAdvAgv) and Purchase intention (FPIAgv) are taken as variables.



**Regression Weights: (Group number 1 - Default model)**

			Estimate	S.E.	C.R.	P	Label
FPIAgv	<---	Fcredility	.079	.089	.890	.373	par_1
FPIAgv	<---	FBrandAvg	.403	.055	7.303	***	par_2
FPIAgv	<---	FAdvAgv	.334	.077	4.365	***	par_3

**Standardized Regression Weights: (Group number 1 - Default model)**

			Estimate
FPIAgv	<---	Fcredility	.055
FPIAgv	<---	FBrandAvg	.412
FPIAgv	<---	FAdvAgv	.249

**Squared Multiple Correlations: (Group number 1 - Default model)**

	Estimate
FPIAgv	.367