

2026**COMMERCE****Paper : GE-404****(Business Research Methods)****Full Marks : 40***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.***Module - I**Answer **any two** questions.

1. (a) Why is the formulation of a research problem considered as the most important step in the research process?
- (b) Discuss different approaches to organizing a literature review, such as chronological, thematic, and methodological approaches. 5+5
2. (a) In the final round of state level singing competition conducted by a television network, there were five participants namely Ankita, Shreya, Debajyoti, Subhadeep and Rishi. The winners of the competition were selected on the basis of the online voting along with the scores given by the Judges. The following table is showing their details of performance in the competition.

Name of the singers	Code Number assigned to the singers for online voting	Total number of online votes received	Rank of the singers	Scores given by the Judges in a scale of 1 to 100
(1)	(2)	(3)	(4)	(5)
Ankita	005	1,05,032	Second place	96
Shreya	011	1,21,005	First place	99
Subhadeep	121	88,044	Fourth place	92
Debajyoti	008	1,01,000	Third place	93
Rishi	105	80,225	Fifth place	88

Classify the data in column 2, 3, 4 and 5 into different scales and justify your classification.

Please Turn Over**(5005)**

(b) Convert the following Likert Scale statements into Staple Scale.

(i) Angel Investors are generally supportive for startups.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
(ii) There is a lack of entrepreneurial mindset among the youth.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

(c) Briefly explain the concept of 'Systematic Error' and 'Random Error' in scaling with suitable examples. 4+2+4

3. (a) Discuss the ethical problems associated with data fabrication, falsification and plagiarism in business research.

(b) What do you mean by 'single cross-sectional designs' and 'multiple cross-sectional designs'?

(c) "Before making causal inference, or assuming causality, three conditions must be satisfied." — Briefly discuss the three conditions that should be satisfied to demonstrate causality. 5+2+3

4. Identify the type of data to be used with supporting reasons, based on the source of data collection in the following cases :

(a) High and Low Stock Prices of all Nifty 50 index constituent companies on the day of the presentation of the Union Budget.

(b) Sleep timings and sleep duration of young adolescents and understanding their sleeping cycle behaviour.

(c) Pay packages offered to final-year students of a postgraduate program during campus placement.

(d) Most common messaging mobile applications downloaded and used by school students to learn academic online courses.

(e) Foreign exchange rate of USD since the start of the West Asia conflict involving the USA and Iran. 2+2+2+2+2

Module - II

Answer **any two** questions.

5. (a) A researcher wants to examine whether the quarterly GDP growth rate of a country is stationary. The following ADF regression output is obtained :

$$\Delta Y_t = \alpha + \beta Y_{t-1} + \sum_{i=1}^p \gamma_i \Delta Y_{t-i} + \varepsilon_t$$

Estimated results :

Parameter	Coefficient	t-Statistic
Constant	0.45	1.10
Y_{t-1}	-0.32	-3.45
ΔY_{t-1}	0.28	2.05

Critical values for ADF test :

Significance Level	Critical Value
5%	-2.89
10%	-2.58

Required :

- (i) State the null and alternative hypotheses.
 - (ii) Determine whether the GDP growth series is stationary.
 - (iii) Interpret the result.
- (b) Consider three variables : Stock Market Index Returns (X), Gold Prices (Y), Crude Oil Prices (Z). Assume all variables are stationary after differencing and a VAR model has been estimated. Pairwise Granger Causality interpretation and output is under :

Null Hypothesis	F-Statistic	p-value at 5% significance level
X does not Granger-cause Y	5.42	0.004
Y does not Granger-cause X	0.98	0.376
X does not Granger-cause Z	7.85	0.001
Z does not Granger-cause X	4.21	0.018
Y does not Granger-cause Z	1.25	0.289
Z does not Granger-cause Y	6.72	0.002

Required :

- (i) Does X Granger-cause Y?
- (ii) Is there bidirectional causality between X and Z?
- (iii) Does Z influence Y?

4+6

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6. A financial analyst wishes to examine the factors affecting the quarterly stock return (%) of StarTech Ltd. The following variables are considered :

- Dependent Variable (Y) : Monthly Stock Return (%)
- Independent Variable X_1 : Earnings per Share (EPS) (₹)
- Independent Variable X_2 : Dividend Yield (%)
- Independent Variable X_3 : Debt-Equity Ratio (DER)

Using the quarterly data for the last 40 quarters, he has conducted a linear regression analysis using SPSS with the following results :

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.913 ^a	.834	.820	1.50547	2.151
a. Predictors : (Constant), DER, EPS, DividendYield					
b. Dependent Variable : Return					

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	409.808	3	136.603	60.284	.000 ^b
	Residual	81.592	36	2.266		
	Total	491.400	39			

Coefficient Table							
Model		Unstandardized Coefficients		t	Sig.	Collinearity Statistics	
		B	Std. Error			Tolerance	VIF
1	(Constant)	6.315	1.160	5.442	.000		
	EPS	0.432	.040	10.928	.000	.979	1.021
	DividendYield	0.828	.166	4.977	.000	.970	1.031
	DER	-1.825	.454	-4.017	.000	.989	1.012

(a) You are required to interpret the Model Summary, ANOVA Table and Coefficient Table.

(b) Identify, if the model suffers from any autocorrelation problem and multicollinearity.

[For a sample size of 40 and 3 independent variables, the Durbin-Watson critical values at the 5% significance level are $d_L = 1.338$ and $d_U = 1.659$.]

8+2

7. (a) A researcher obtains the following information criteria for lag length selection before VAR Ganger Causality Test :

Lag	AIC	HQIC	SBIC
1	- 5.12	- 4.95	- 4.70
2	- 5.35	- 5.05	- 4.60
3	- 5.48	- 5.10	- 4.50
4	- 5.41	- 4.90	- 4.20

Required :

- (i) Which lag is selected by AIC, SBIC and HQIC?
 - (ii) Which lag is appropriate for VAR Ganger Causality Test with reason?
- (b) A bank wants to predict whether an existing customer will accept an offer to upgrade to a premium credit card based on three independent variables, namely the customer's Financial Literacy Score (measured on a 1-10 scale), the customer's association with the bank (in years), and the customer's monthly expenditure through the existing card (₹ '000). He collected responses from 26 customers. A binary logistic regression analysis has been conducted using SPSS with the following model output :

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	22.846	3	.000
	Block	22.846	3	.000
	Model	22.846	3	.000

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	14.782	0.585	0.771

Classification Table ^a					
	Observed		Predicted		
			Upgrade		Percentage Correct
			Reject	Accept	
Step 1	Upgrade	Reject	12	1	92.3
		Accept	2	11	84.6
	Overall Percentage				88.5
a. The cut value is .500					

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(5005)

Variables in the Equation					
Variable	B	S.E.	Wald	Sig.	Exp(B)
Financial Literacy	1.965	0.762	6.653	0.010	7.136
Years with Bank	0.114	0.098	1.352	0.245	1.121
Monthly Expenditure	0.009	0.012	0.563	0.453	1.009
Constant	-13.428	6.251	4.611	0.032	0.000
a. Variable(s) entered on step 1: Financial Literacy score, Years with Bank, Monthly Expenditure					

Interpret the above output.

4+6

8. (a) The monthly income of 13 respondents are given below :

₹ 51,500, ₹ 41,500, ₹ 30,500, ₹ 30,000, ₹ 29,500, ₹ 29,000, ₹ 26,500, ₹ 26,000, ₹ 25,000, ₹ 24,500, ₹ 23,000, ₹ 10,000, ₹ 4,000

- As a researcher do you identify any outliers in the data set? Justify.
- How will the box plot look like for the above data set? (Draw a rough sketch. No need to use a graph paper).

- (b) What is Coefficient of Variation? How does it help in research? Give an example.

(5+2)+(1+1+1)