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0305E506

Candidate's Seat No :_____

IMBA (IIS) Sem. 6 Examination

Research Methodology Principles and App. - II

Time : 2-30 Hours] **May-2025** **[Max. Marks : 70**

Instructions:

1. The figures on right-hand side indicate marks.
2. Use of calculators is **allowed.**

Q#1. Explain the classification of scaling techniques in research methodology. Discuss the different types of scaling techniques and their applications in data collection and measurement. [14 Marks]

OR

Q#1. Explain the meaning of correlation. Discuss the different types of correlation and the methods used to study it. [14 Marks]

Q#2. Set up an analysis of variance table for the following per acre production data for three varieties of wheat, each grown on 4 plots and state if the variety differences are significant. [14 Marks]

	Per acre production data		
Plot of land	**Variety of wheat A**	**Variety of wheat B**	**Variety of wheat C**
1	6	5	5
2	7	5	4
3	3	3	3
4	8	7	4

OR

Q#2. A company wants to analyze the relationship between its advertising expenses and sales. The following data shows the advertising expenses (in $) and sales (in $) for five months:

Month	Advertising Expenses ($)	Sales ($)
1	120	250
2	150	300
3	180	330
4	200	350
5	220	400

a. calculate the regression coefficient of sales (Y) on advertising expenses (X) and test its significance. (α=0.05)

b. Obtain regression equation of sales (Y) on advertising expenses (X) and predict Sales(Y) when advertising expenses (X) is 170$. [14 Marks]

Q#3. A sample of 400 male students is found to have a mean height 67.47 inches. Can it be reasonably regarded as a sample from a large population with mean height 67.39 inches and standard deviation 1.30 inches? Test at 5% level of significance. [14 marks]

(P.T.O)

OR

Q#3. The specimen of copper wires drawn form a large lot have the following breaking strength (in kg. weight):

578, 572, 570, 568, 572, 578, 570, 572, 596, 544

Test whether the mean breaking strength of the lot may be taken to be 578 kg. weight. Test at 5 per cent level of significance. [14 Marks]

Q#4. Explain the significance of report writing in research. Discuss the various types of research reports. [14 Marks]

OR

Q#4. Describe the layout of a research report. Explain the key components included in each section. [14 Marks]

Q#5 Answer the following MCQs (attempt any 7 out of 12) [14 Marks]

1. Which of the following is a comparative scaling technique?
   A. Likert scale
   B. Semantic differential scale
   C. Paired comparison scale
   D. Stapel scale
2. In hypothesis testing, the null hypothesis is denoted by:
   A. H_1
   B. H_2
   C. H_0
   D. Hx
3. The t-test is most appropriate when:
   A. Sample size is large and variance is known
   B. Sample size is small and population variance is unknown
   C. Population standard deviation is known
   D. None of the above
4. Which test is generally used when the sample size is greater than 30 and the population variance is known?
   A. t-test
   B. F-test
   C. Z-test
   D. Chi-square test
5. ANOVA is used to:
   A. Test relationships between two variables
   B. Compare means of more than two groups
   C. Measure correlation
   D. Perform regression analysis
6. A correlation coefficient of -1 indicates:
   A. No relationship

B. Weak positive relationship
C. Strong negative relationship
D. Perfect positive relationship

7. Which method is used to estimate the relationship between a dependent variable and one or more independent variables?
   A. Correlation analysis
   B. Factor analysis
   C. Regression analysis
   D. ANOVA
8. Which of the following techniques is used to reduce a large set of variables into fewer dimensions?
   A. Regression
   B. Correlation
   C. Factor analysis
   D. t-test
9. In report writing, the section that summarizes the main findings and recommendations is called:
   A. Introduction
   B. Literature Review
   C. Executive Summary
   D. Methodology
10. Which type of scale assigns numbers to objects with no quantitative meaning?
    A. Ordinal scale
    B. Ratio scale
    C. Nominal scale
    D. Interval scale
11. Which test is used to check the significance of difference between two sample means?
    A. Z-test for means
    B. Chi-square test
    C. ANOVA
    D. Factor analysis
12. The assumption of equal variances across groups in ANOVA is called:
    A. Homoscedasticity
    B. Multicollinearity
    C. Normality
    D. Linearity

******END OF PAPER******