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| **Sem: NOV-2024****Maximum Marks: 50 Examination: End Exam Date: Duration: 2.5hrs** |
| **Programme code:****Programme:** MBA for working executive (program code-18) | **Class:** FY | **Semester: II****Batch-1(ATKT) OR 2 (Final Exam)** |
| **College:**  **K. J. Somaiya Institute of Management** | **Name of the department/Section/Center:**  |
| **Course Code:**  | **Name of the Course: Business Research Methods** |
| **Instructions:** **1. Question 1 is compulsory** **2. Attempt any 1 from Q2 and Q3****3. Attempt all three from Q4 to Q6****4. Assumptions if made needs to be specified.** |

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| **Question No.** |  |  **Max.****Marks** |
| Q1.  | Attrition at Tech Innovators Inc.Tech Innovators Inc., a mid-sized tech company, has been experiencing a higher-than-expected employee attrition rate over the past two years. The HR department is concerned, especially since most of the employees leaving are highly skilled developers, data scientists, and engineers. This has caused disruptions in project timelines and an increase in hiring and training costs.The company leadership suspects various factors could be contributing to the attrition, such as employee satisfaction, work-life balance, opportunities for career growth, compensation, or even leadership styles.However, they don’t have concrete data to back these assumptions.The CEO has tasked the HR team to conduct a Research to understand theroot causes of employee attrition. The goal is to identify key factors leading to the exits and come up with strategies to improve retention.1. What is the core research objective?2. Which Research Design would you apply/recommend?3. Frame One or Two Hypothesis for the business problem. | 10M  |
| Q2.  |  Explain any 3 measurement scales using appropriate examples.  | 10 M  |
| Q3.  | What is Sampling methodology ? Explain any 4 types of Sampling techniques with scenarios . | 10M  |
| Q4 | A mid-sized quick commerce company that supplies vegetables wants to extend their services to supply fruits to various households in a town in the state of Maharashtra. The company wants to understand what kind of households they should prioritize. Based on their experience, they know that households in that town fall into one of the following groups:* Female-dominated
* Male-dominated
* Only Females
* Only Males

A local research company collected data on the trends of spends on fruits by the households in the town. Below are the results of the statistical analysis:

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| **Descriptive Statistics** |  |
| *Groups* | *Count* | *Average Spends* |
| Male Dominated | 210 | 270.5238095 |
| Female Dominated | 102 | 236.372549 |
| Only Males | 65 | 193.3846154 |
| Only Females | 105 | 175.8095238 |

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| **ANOVA** |  |  |  |  |  |
| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* |
| Between Groups | 742023.263 | 3 | 247341.0877 | 29.5823176 | 0.0000 |
| Within Groups | 3996611.79 | 478 | 8361.112551 |  |  |
|  |  |  |  |  |  |
| Total | 4738635.06 | 481 |   |   |   |

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| **Group Comparisons** |
|  |  | **Mean Difference** | **t** | **Sig (p-value)** |
| Female Dominated | Male Dominated | -34.151 | -3.095 | 0.011 |
|  | Only Females | 60.563 | 4.764 | < .001 |
|  | Only Males | 42.988 | 2.962 | 0.017 |
| Male Dominated | Only Females | 94.714 | 8.666 | < .001 |
|  | Only Males | 77.139 | 5.944 | < .001 |
| Only Females | Only Males | -17.575 | -1.218 | 0.616 |
|   |

Based on the above results, please answer the following:1. Is there a significant difference between the groups? (2 marks)2. Share your interpretation on the comparison between Female-Dominated and Male-Dominated household groups (4 marks)3. Share your interpretation on the comparison between Only-Female and Only-Male household groups (4 marks) | 10M |  |
| Q5 |  A major music recording company wanted to understand whether advertising influences movie soundtrack album sales. Based on their past activities they consolidated data of 200 movie albums based on following variables:* Adverts - Amount (in lakhs of rupees) spent promoting the album before release.
* Sales - Sales (in lakhs of copies) of each album in the week after release.

The company applied regression analysis to determine the influence of advertising spends on sales.

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| Regression Statistics |  |
| Multiple R | 0.578 |
| R Square | 0.335 |
| Adjusted R Square | 0.331 |
| Observations | 200 |

ANOVA

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| --- | --- | --- | --- | --- | --- |
|  |  df | Sum of Squares | Mean Squares | F | Significance (p) |
| Regression | 1 | 436687.833 | 436687.833 | 99.587 | < 0.001 |
| Residual | 198 | 862264.167 | 4354.870 |  |  |
| Total | 199 | 1298952 |  |  |  |

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| --- | --- | --- | --- | --- |
|  | Coefficients | Standard Error | t | p-value |
| (intercept) | 134.140 | 7.537 | 17.799 | < 0.001 |
| Adverts | 0.096 | 0.010 | 9.979 | < 0.001 |

1. Write the dependent and independent variables (2 marks)
2. What is the coefficient of determination? (2 marks)
3. Is the Model fit at significance level of 0.05? (1 mark)
4. What is the Prediction Equation? (3 marks)
5. Is the influence of advertising significant? (2 marks)
 | 10M |
| Q6 | A researcher on the business school admissions committee hypothesized that student applicants whose parents had attained a higher level of education would, on average, score differently on the entrance test taken during the admissions.The researcher acquired a set of entrance scores of the students and then determined whether the applicant’s parents had Masters-level Degree or a Bachelors-level Degree. A total of 28 scores were gathered – 16 scores of the students with their parents having Masters-level Degree and 12 scores of the students with their parents having Bachelors Degree.To do this comparison, the researcher conducted an independent samples T-test and following were the results:F-Test Two Sample for Variances

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|  | Parents with Masters Degree | Parents with Bachelors Degree |
| Mean | 552 | 470.83 |
| Variance |  |  |
| Observations | 16 | 12 |
| df | 26 |  |
| F | 1.30 |  |
| P(F<=f) One-tail | 0.336 |  |
| F Critical One-tail | 2.72 |  |

t-Test: Two Sample Assuming Equal Variances

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| --- | --- | --- |
|  | Parents with Masters Degree | Parents with Bachelors Degree |
| Mean (Score of the test) | 552 | 470.83 |
| Degrees of Freedom (df) | 26 |  |
| t-Stat | 2.9361 |  |
| Significance (2-tailed)/p-value | 0.00343 |  |

1. Please state the null and alternate hypothesis for the above results (2 marks)
2. Please comment on the results of the F-Test. (3 marks)
3. Based on the results of the t-test, share your interpretation (5 marks)
 | 10M |