**Birla Institute of Technology & Science, Pilani**

**Work-Integrated Learning Programmes Division**

**Second Semester 2020-2021**

**End-Semester Test (EC-3 Regular)**

Course No. : DSECL ZG555

Course Title : DATA VISUALIZATION & INTERPRETATION

Nature of Exam : Open Book

Weightage : 40%

Duration :

Date of Exam :

Note:

1. Please follow all the *Instructions to Candidates* given on the cover page of the answer book.
2. All parts of a question should be answered consecutively. Each answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

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| --- | --- | --- |
| 1 | The figure shows the sales numbers for three categories, by quarter, over a four-year  period. What trends you see?   * Is the below table efficient to identify the trend?Justify your answer.(1M) * Design a representative visual to satisfy the requirement.Explain the visual and identify the design principles used. (1+1M) | 3M |
| 2 | Identify the data variables and corresponding visual variables (minimum 4 ) used in the visual below. The visual represents the episode ratings for a television series. | 2M |
| 3 | The board members of a prestigious autonomous university in the country, is considering increasing the minimum monthly wage of non-teaching employees from Rs.10K to Rs.15K as a way to attract more talent and generate employee loyalty. The board is considering tying the increase to the number of years someone has been an employee (atleast 5 years).  Requirements   1. You need to show which employees will be affected. (Assume 16% of employees meet the criteria. Also assume any missing info required) (**1M**) 2. Show the departmental impact of wage increase in terms of cost as well as headcount. (Assume the departments as CSIS, MBA, Electrical, Electronics, Mechanical, Civil, Physical Education, Accounts, Operations, Human Resources. Most affected departments are CSIS and Physical education in that order)(**1M**) 3. Show the distribution of wages**, before and after the increase**. (The monthly salary of non-teaching employees currently ranges from 10k to 50K.Assume the count of employees as required to show the distribution. Do keep in mind that not everyone will benefit from the increase as the qualifying criteria stipulates a minimum of 5 years of experience within the university).(**2M**) 4. Superimpose a curve on the above distributions.(**1M**)   Design a **single DASHBOARD** to satisfy the above requirements. Most effective dashboard fetches maximum credit.  Clearly **explain your choices of chart types** for the requirements [**2M**)  Additional question   * Briefly explain the distribution you got for the projected data in (d). What impact do you expect if the number of years in the qualifying criteria is reduced to 0. (Make reasonable assumptions. Demonstrate using a separate visual ,not part of dashboard) (**3 M**) | 10M |
| 4 | Attached file has the number of cars sold by different dealers over time for North region.  You have been asked to create a **single slide** focusing on this data to be presented before the management team who takes care of the dealership. Team would be interested in the trend as well as the comparison of the dealers.    Focus on the   * Use of words [**1M**] * Visual hierarchy and [**1M**] * Overall design [**1M**]   Charts in the slide should be **to the scale** and the slide should be presentation ready. [**1M**]  Explain your design choices [**1M**]. Best slide design fetches maximum credit.    [You can use pen and paper drawings /any tool of your choice. However no additional marks will be credited for tool usage] | 5M |
| 5 | Your organisation has 3 main products. Customers rate your products on a 5-star scale and also leave comments.   |  |  | | --- | --- | | **Rating** | **Name** | | 1-3 | Detractors | | 4 | Passives | | 5 | Promoters |     Net Promoter Score=Promoters%-Detractors% (Expressed as number)  Below given is the Customer Feedback Analysis slide for the product for which you are the analyst.   1. Form and present the Big Idea[articulate your point of view, convey what’s at stake, be a complete sentence) [1M] 2. Interpret and explain each graph in the visual. [4M] | 5M |
| 6 | Explain how you can use whitespace and alignment in a better way to improve the below visual. Present the final visual.[1M]  Mention the Gestalt principle/s(which and where) you used in the final visual to improve perception.[1M]    Solution hint | 2M |
| 7 | Recreate the following visual to the finest details using **matplotlib**. (Can use any Python IDE of your choice and paste the code/upload the snapshot of the code. Code which generates the closest visual match to the one below will fetch maximum credit)  C:\Users\Admin\Desktop\download.png | 4M |
| 8 | Snapshot of the file **iris.csv** present in <https://github.com/mwaskom/seaborn-data> is given below     * Write the **seaborn** code to draw the grid showing univariate and bivariate distributions from the above data. * Univariate distribution should be a histogram and a KDE plot superimposed. * For upper diagonal bivariate distribution use kdeplot and for lower diagonal bivariate distribution use histogram. * Present the output visual.   (Can use any Python IDE of your choice and paste the code /upload the snapshot of the code. Code which meets the requirements completely will fetch maximum credit)  Solution hint | 4M |
| 9 | Declutter the below visual.  Clearly mention the steps. (2M)  Present only the final visual.(1M)  Redesign the visual to focus on   1. total sales over time 2. Sales by purchase type(month-to-month variations are less important) (2M)     Solution | 5M |