MID-WESTERN UNIVERSITY

FACULTY OF MANAGEMENT

FINAL EXAMINATION: 2073

BACHELOR OF BUSINESS ADMINISTRATION (BBA)

SEMESTER – II

Subject: Business Statistics - I Course Code: MGMT 322

Full Marks: 100 Time: 3:00 Hours

*You are required to answer in your own words as far as applicable. The figures in the margin indicate full marks.*

**SECTION B: SHORT ANSWER QUESTIONS (8** $×$ **5 = 40 MARKS)**

*Answer any EIGHT questions:*

1. Define the term statistics and discuss its limitations. [2+3]
2. What are the sources of data? Distinguish between primary and secondary data. [2+3]
3. What is Pie Diagram? Construct pie diagram for the following data representing monthly expenditure of two families; [2+3]

|  |  |  |
| --- | --- | --- |
| Items | Family A | Family B |
| Food | 1500 | 2500 |
| Clothing | 2000 | 2000 |
| Medicine | 1000 | 1500 |
| Education | 3000 | 5000 |
| House Rent | 2500 | 2000 |
| Miscellaneous | 2000 | 3000 |

1. The following are the monthly salaries in rupees of 20 employees of a firm:

130, 62, 145, 118, 125, 76, 151, 142, 110, 98, 65, 116, 100, 103, 71, 85, 80, 122, 132, 95

The firm gives bonuses of Rs. 10, 15, 20, 25 and 30 for individuals in the respective salary group exceeding Rs.60 but not exceeding Rs.80, exceeding 80 but not exceeding 100 and so on up to exceeding Rs.140 but not exceeding Rs.160. Find the average bonus paid per employee. [5]

1. For a group of 200 candidates, the mean and standard deviation were found to be 40 and 15. Later on, it was discovered that the score 53 was misread as 35. Find the correct mean and standard deviation corresponding to the corrected figures. [5]
2. What do you mean by mutually exclusive event? A bag contains 4 white, 8 black, 6 red and 2 green balls. Find the probability of getting either a white or a black or a green ball in a single draw. [2+3]
3. A local insurance company has 200 employees. Their average annual salary is computed to be Rs. 45000 with a standard deviation of Rs. 5000. A random sample of 100 employees is selected. Find the standard error of the mean. [5]
4. Find the expected value and its variance of the sum of number of points on faces of a dice when two dice are thrown. [5]
5. An unbiased coin is tossed six times. Find the probability of obtaining:
6. Exactly 4 head [2]
7. At least two heads [3]
8. If the first central moment about the mean are 0, 2.8, - 2 and 24.5 respectively. Calculate the coefficient of Kurtosis and Skewness and interpret the result. [5]

**SECTION C: LONG ANSWER QUESTIONS (3** $× $**10 = 30 MARKS)**

*Answer any THREE questions:*

1. State Bayes’ theorem for three mutually exclusive and exhaustive events. A manufacturing firm produces steel pipes in three plants with daily production volume of 500, 1000 and 2000 units respectively. According to past experience, it is known that the fraction of defective outputs produced by the three plants is respectively 0.005, 0.008 and 0.010. If a pipe is selected from a day's total production and found to be defective. From which plant the defective pipe is expected to have been produced? [10]
2. A company claims that the mean life time of its electric light bulbs is 28 months. A random sample of 10 bulbs has the following life in months: 24, 26, 32, 28, 20, 20, 23, 34, 30 and 43. Test the claim of the company at 5% level of significance. [10]
3. A buyer obtained samples of electric fan from two companies A and B. He got these samples tested in his laboratory for length of life in number of hours. The following are the results of these tests.

|  |  |
| --- | --- |
| Length of life (hours) | Number of electric fans |
| Company A | Company B |
| 600-800 | 20 | 6 |
| 800-1000 | 32 | 20 |
| 1000-1200 | 52 | 84 |
| 1200-1400 | 20 | 24 |
| 1400-1600 | 16 | 6 |

Which supplier's fans are more uniform for length of life? [10]

1. A sample of 60 cars of two Makes P and Q, is taken and their average running life in years is recorded as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Life (Years) | 0-2 | 2-4 | 4-6 | 6-8 | 8-10 |
| Make P | 8 | 12 | 22 | 14 | 4 |
| Make Q | 10 | 14 | 19 | 12 | 5 |

1. Find the mean life of each Make. [5]

b) Which Make shows greater consistency in performance and why? [5]

1. For a distribution, mean and variance are found to be 10 and 16 respectively. Also for this distribution $γ\_{1}=1$ and $β\_{2}=4.$ Based on this information, compute the four moments about origin. [10]

**SECTION D: CASE STUDY (15 MARKS)**

1. *Read a case given below and answer the following questions:*

K.L. Dugar Factory, Banke district pays workers on piece rate basis and also a bonus to each worker on the basis of individual output in each quarter. The rate of bonus payable is as follows:

|  |  |
| --- | --- |
| Output in units | Bonus of rupees |
| 70-74 | 40 |
| 75-79 | 45 |
| 80-84 | 50 |
| 85-89 | 60 |
| 90-94 | 70 |
| 95-99 | 80 |
| 100-104 | 100 |

The individual output of a batch of 50 workers is given below:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 94 | 83 | 78 | 76 | 88 | 86 | 93 | 80 | 91 | 82 |
| 89 | 97 | 92 | 84 | 92 | 80 | 85 | 83 | 98 | 103 |
| 87 | 88 | 88 | 81 | 95 | 86 | 99 | 81 | 87 | 90 |
| 84 | 97 | 80 | 75 | 93 | 101 | 82 | 82 | 89 | 72 |
| 85 | 83 | 75 | 72 | 83 | 98 | 77 | 87 | 71 | 80 |

**Required:**

1. Average bonus per worker for the quarter [5]
2. Average output per worker [5]
3. Median output [5]

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