MID-WESTERN UNIVERSITY

FACULTY OF MANAGEMENT

FINAL EXAMINATION: 2074

BACHELOR OF BUSINESS ADMINISTRATION (BBA)

SEMESTER – II

Subject: Business Statistics - I Course Code: MGT 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 primary and secondary data and distinguish between them. (5)
2. Discuss the importance of Statistics with special reference to business. (5)
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 average salary of all 100 employees of a factory was Rs. 12000. The average salary of male workers was Rs. 15000. What will be the salary of 40 female employees? (5)
2. From the following distribution, find semi inter-quartile range. (5)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Wages | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 |
| Frequency | 5 | 12 | 22 | 25 | 17 | 9 |

1. What do you mean by Skewness? Calculate Karl Pearson's coefficient of Skewness from the following distribution, also interpret your result. (2+3)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X | 5 | 10 | 15 | 20 | 30 |
| f | 1 | 2 | 7 | 3 | 2 |

1. Define the term probability. Two unbiased dice are thrown at random. Find the probability that:

(i) the first dice show 4, (ii) the total of the numbers on the dice is 7, (iii) the sum of two faces is 9 or 11. (2+3)

1. A sample of 40 light bulbs from a manufacturing lot had average life of 1416 hours with standard deviation of 30 hours. Construct 90% and 95% confidence interval for the true population mean. (5)
2. A random variable X has the following probability function.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X | -2 | -1 | 0 | 1 | 2 |
| P(X) | 0.2 | K | 0.4 | 2K | K |

Find K, E(X), E(4X + 5), E(X2) and Var(4X + 5) (5)

1. What is hypothesis testing? Describe the types of errors in testing of hypothesis. (2+3)

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

*Answer any THREE questions:*

1. The mean and variance of the marks in statistics obtained by all the students of a certain college was computed as 60 and 100 respectively. Later on it was discovered that the score 76 was wrongly taken as 67. Find the mean and standard deviation of scores when the wrong value is omitted? (10)
2. Define skewness of the distribution. Find the five number summary from the following data set:

2, 6, 8, 1, 7, 10, 19, 12, 16, 11. Draw box and whisker plot for each set on same number line. Comment on the shape of the distribution of each set. (2+5+3)

1. There are three machine A, B and C producing 1000, 2000 and 3000 articles per hour respectively. These machines are known to be producing 1%, 2% and 3% defectives respectively. One article is selected at random from an hour production of the three machines and found to be defective. What is the probability that the article is produced from: (10)
2. Machine A
3. Machine B, and
4. Machine C
5. Ten unbiased coins are tossed simultaneously. What is the probability of obtaining:

(i) exactly 6 heads, (ii) at least 8 heads, (iii) no head, (iv) at least one head, (v) not more than 3 heads. (2+2+2+2+2)

1. Define confidence interval. A sample of 26 bulbs gives a mean life of 990 hours with a standard deviation of 20 hours. The manufacturer claims that the mean life of bulbs is 1000 hours. Is the sample not up to the standard? (3+7)

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

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

Multiple Myeloma (blood cancer) is characterized by increased blood vessel formulation in the bone marrow that is a predictive factor in survival. One treatment approach used for multiple myeloma is stem cell transplantation with patient's own stem cell. The following data represent the bone marrow micro vessel density for patient who has a complete response to the stem cell transplant.

A random sample of size 1000 from a large population gave the following distribution:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Range | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 |
| No. of patients | 50 | 100 | 150 | 200 | 200 | 100 | 100 | 100 |

If the average of the cell of population is 42, what conclusion do you arrive at about the reliability of the sample? (15)

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