**SHRI S. H. KELKAR COLLEGE OF ARTS, COMMERCE & SCIENCE, DEVGAD**
**BACHELOR OF MANAGEMENT STUDIES(BMS)SEM-I EXTERNAL EXAMINATION,Oct, 2023**
**SUB-BUSSINESS STATISTICS** **Class:- FYBMS**
**TIME:** **DURATION:**
**Date:-** **MAX. MARKS:- 75**

Note: 1) All Questions carry equal marks of 15 each. 2) Use of Non-Programmable Calculators is allowed.
3) Figures to the right indicate full marks. 4) All questions are compulsory.

**Q .1 A) Select and write the most appropriate correct answer from the from the given alternatives for each sub-question.** **[8]**

Q1. When quantitative data are arranged in the order of their occurrence or historical order, the resulting statistical series is called a _____

a) Time series b) Numerical series c) Complex series d) None of the above

Q2. Data collected from various published and unpublished sources is called as _____ of data .

a)collection b)presentations c)analysis d)interpretation

Q3. Choose the correct option

a) Statistics present the data in complex form. b) Statistics represents the data in numerical form.

c) Statistics dose not facilitates comparison. d) Statistics studies the individual

Q4. The amount of computation involved in Marshal-Edgeworth's formula method is same as the _____.

a)Fisher's Ideal Formula b) Lapser's Formula c)Paasche's Formula d)Kelly's Formula

Q5. _____ divides the observations in four equal parts.

a) Quartile b) median c) mean d) percentile

Q6. _____ method is also called " Line of Best Fit".

a)Least Square method b) Method of moving Average

c)Fitting a Straight line trend Method d)Weighted Average Method

Q7. The _____ of an event is a measure of the likelihood that the event will occur.

a) Permutations b) Combinations c) Probability d) Index Number

Q8. If the point are not countable the sample space is called_____.

a)Discrete Sample Set b)Continuous Sample Set c) Intersection of set d) Complement of a set

**Q.1 B) State whether true or false.** **[7]**

1] The point (-3,1) lies in first quadrant.

2] If the mean ,median and mode are equal the distribution is positively skewed.

3]Time series analysis is used to detect patterns of change in statistical data over regular intervals of time.

4] The value of every observations in the details taken into account when we calculate median.

5] Range is determine by only two point of data set .

6] A forecast is a projection of past patterns into the future.

7] Seasonal variations is repetitive and of predicable in nature.

**Q.2Attempt any one of the following questions** **[15]**

[a] i) Prepare a frequency distribution for the following data giving the IQ of 50 students

100, 105, 107, 115,125,124,108,112,114,103,109,111,109,112,112,116,120,121,125,126,122,121,132, 134,129,115,117,111,102,102,109,110,119,125,127,129,120,115,117,119,118,113,114,116,119,123, 122,121,127,130.

Also get relative and percentage frequencies.

ii) Write a short note on 1)Statistical investigation 2 )Errors in statistic

OR

[b] i) Draw the histogram for the following data

1)

| Age last birthday | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 |
|---|---|---|---|---|---|
| No.of persons | 4 | 20 | 35 | 20 | 10 |

2)

| Sales in 1000 rs. | 0-500 | 500-1000 | 1000-1500 | 1500-2000 | 2000-2500 |
|---|---|---|---|---|---|
| No. Of firms | 34 | 50 | 100 | 90 | 70 |

ii) The table below gives the frequency distribution of weights of 85 apples.

| Weights in gms | 110-119 | 120-129 | 130-139 | 140-149 | 150-159 | 160-169 | 170-179 | 180-189 |
|---|---|---|---|---|---|---|---|---|
| Frequency | 1 | 8 | 12 | 18 | 22 | 9 | 7 | 8 |

Determine the median and arithmetic mean.

**Q.3 Attempt any one of the following questions** **[15]**

[a] i) Write a note on skewness and kurtosis.

ii) Calculate the quartile deviation for the sales of 50 shops.

| Sales ( in 100Rs.) | No. Of Shops | Sales( in 100 Rs.) | No. Of shops |
|---|---|---|---|
| 100-110 | 4 | 130- 140 | 9 |
| 110-120 | 7 | 140-150 | 6 |
| 120- 130 | 20 | 150-160 | 4 |

OR

[b] i) The following data gives the marks (out of 100) in paper I and marks in (out of 150 ) in paper II in mathematics .Find the coefficient of correlation .

| Marks Paper I | 61 | 68 | 68 | 64 | 65 | 70 | 63 | 62 | 64 | 65 |
|---|---|---|---|---|---|---|---|---|---|---|
| Marks Paper II | 113 | 123 | 130 | 115 | 110 | 125 | 100 | 113 | 116 | 115 |

ii) The two regression line between x and y are given below find $\bar{x}\ \bar{y}$ *and* $r$.

100y-45x-1400=0 , 4y-5x+200=0

**Q.4 Attempt any one of the following questions** **[15]**

[a] i) Find the trend values for the following data giving the no. of students in commerse college using three yearly cycle.

| Year | No. of student | Year | No. of student |
|---|---|---|---|
| 1989 | 1500 | 1994 | 2000 |
| 1990 | 1700 | 1995 | 1980 |
| 1991 | 1800 | 1996 | 1900 |
| 1992 | 1750 | 1997 | 2200 |
| 1993 | 1850 | 1998 | 2200 |

ii) Fit trend line to the following data giving the milk production of co-operative society.

| Year | Milk (in 100 lit) | Year | Milk (in 100 lit) |
|---|---|---|---|
| 1985 | 20 | 1988 | 35 |
| 1986 | 25 | 1989 | 38 |
| 1987 | 27 | 1990 | 41 |

OR

[b] i)Find the trend curve using 4 weekly moving averages for the following data .

| Week | Production (1000kgs) |
|---|---|
| 1 | 90 |
| 2 | 88 |
| 3 | 85 |
| 4 | 92 |
| 5 | 90 |
| 6 | 88 |
| 7 | 91 |
| 8 | 93 |
| 9 | 91 |
| 10 | 91 |
| 11 | 90 |

ii) Construct a suitable index number with the help of the following data for the year 1969

| Commodity | Wheat | | Rice | | Gram | |
|---|---|---|---|---|---|---|
| year | Quantity | Price | Quantity | Price | Quantity | Gram |
| 1965 | 15 | 14 | 5 | 20 | 10 | 4 |
| 1969 | 12 | 24 | 4 | 27 | 8 | 7 |

**Q.5 Attempt any one of the following questions** **[15]**

[a] i) Explain the meaning of terms 1)decision theory 2) Act 3)state of nature 4)pay off

5) Regret value or opportunity loss

ii) Following is the pay off matrix corresponding to four states of nature $S_1$ , $S_2$ ,$S_3$, $S_4$.

| State of nature | Course of action | | | | Probability of state |
|---|---|---|---|---|---|
| | $A_1$ | $A_2$ | $A_3$ | $A_4$ | |
| $S_1$ | 50 | 400 | -50 | 0 | 0.15 |
| $S_2$ | 300 | 0 | 200 | 300 | 0.45 |
| $S_3$ | -150 | 100 | 0 | 300 | 0.25 |
| $S_4$ | 50 | 0 | 100 | 0 | 0.15 |

[b] i)Prove that If S is a sample space and A,B are two events in S , then

$P(A \cup B) = p(A) + P(B) - P(A \cup B)$ .

ii) A Card is drawn at random from well shuffle led full pack of cards .Event A& B are defined as follows 1) A is the event that the card is spade

2) B is the event that the card is king. Also find $P(A \cup B)$