**SAINTGITS COLLEGE OF APPLIED SCIENCES**

**PATHAMUTTOM, KOTTAYAM**

**SECOND INTERNAL EXAMINATION, MARCH 2020**

**PG Department of Commerce, Semester 4**

**QUANTITATIVE TECHNIQUES FOR BUSINESS II**

Total : 80 **marks** Time: **3 hours**

**Section A**

*Answer any 10 questions. Each question carries 2 marks.*

1. What is weighted index number?
2. Distinguish between Permutation and Combination.
3. What is linear regression?
4. What are the characteristics of regression analysis?
5. What is Multiplicative Model?
6. What is Seasonal Variation?
7. State Bayes’ theory.
8. Explain classical probability.
9. What is Secular Trend?
10. Write a note on least square method?
11. The trend equation of annual sales of XY Company Ltd. is Y=81.6+28.8X

             (Origin- 2017, X-Unit: 1 Year, Y unit annual sales)

              Convert the equation to monthly basis.

1. What is deflating?

(10 x 2 = 20 Marks)

**Section B**

*Answer any 6 questions. Each question carries 5 marks.*

1. What are the problems in construction of index numbers?
2. What are the components of Time Series? Explain.
3. You are given the following trend equation:

               Y=120-3X

                (Origin: 2018, X-unit= 1 year)

                Shift the origin to 2013.

1. Calculate trend values and short term fluctuation from the following data using 5 yearly moving averages.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Production | 390 | 381 | 372 | 405 | 420 | 396 | 387 | 381 | 435 | 474 |

1. Distinguish between fixed base and chain base index numbers.
2. A bag contains 8 Red and 5 White balls. Two successive drawings of 3 balls are made such that ;

Balls are replaced before the second trial;

Balls not replaced before the second trial

Find the probability that the first draw will give 3 white and the second will give 3 red balls.

1. A committee of 6 is to be formed from a group of 7 men and 4 women

Find the probability that the committee consist of.

1. Exactly 2 women
2. At Least 2 women
3. At the most 2 women
4. From the following data construct the index number for 2018 by the family budget method

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Commodity** | **Price 2008** | **Quantity 2008** | **Price 2018** | **Quantity 2018** |
| Rice | 20 | 8 | 40 | 10 |
| Wheat | 10 | 7 | 15 | 8 |
| Sugar | 20 | 2 | 40 | 3 |
| Oil | 50 | 2 | 75 | 2 |

1. Find coefficient of concurrent deviation from the following:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X | 85 | 91 | 56 | 72 | 95 | 76 | 89 | 51 | 59 | 90 |
| Y | 18 | 20 | 16 | 15 | 19 | 18 | 17 | 14 | 18 | 15 |

(6 x 5 = 30 Marks)

**Section C**

*Answer any 2 questions. It carries 15 marks.*

1. The following data gives the age and blood pressure of ten persons:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Age | 56 | 42 | 36 | 47 | 49 | 42 | 60 | 72 | 63 | 55 |
| Blood Pressure | 147 | 125 | 118 | 128 | 145 | 140 | 155 | 160 | 149 | 150 |

1. Determine the regression equation of X on Y and Y on X.
2. Determine the blood pressure of a person whose age is 45.
3. Determine the age when the BP is 170.
4. Determine the correlation coefficient between X and Y.
5. Fit a straight line trend by the method of least squares and estimate the trend values. Also estimate the sales of the year 2019.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Sales (in lakhs) | 80 | 90 | 92 | 83 | 94 | 99 | 92 | 104 |

1. Three persons A, B and C are simultaneously shooting a target. Probability of A hitting the target is ¼ that of B is ½ and that of C is ⅔ and find the probability     a) exactly one of them will hit the target b) at least one of them will hit the target.
2. Calculate Fisher’s Ideal Index from the following data and show whether it satisfies both time reversal and factor reversal tests.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Commodity** | **Price 2017** | **Expenditure 2017** | **Price 2018** | **Expenditure 2018** |
| A | 8 | 80 | 10 | 120 |
| B | 10 | 120 | 12 | 96 |
| C | 5 | 40 | 5 | 50 |
| D | 4 | 56 | 3 | 60 |
| E | 20 | 100 | 25 | 150 |

(2 x 15 = 30 Marks)



*[Scan QR code for Answer Key]*