Sessional examination 2021

Subject- STATISTICS

Paper- STA-HG/RC-4016-P

Full marks- 20

Time- 2 hours

Answer any two (10×2=20)

1. Fit a straight line trend to the following data by the method of least squares and obtain two monthly trend values for Nov. 2000 and Sept. 2001.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
| Average monthly profit ( crores Rs) | 12.6 | 14.8 | 18.6 | 14.8 | 16.6 | 21.2 | 18.0 | 17.4 | 15.8 |

1. A machine is set to deliver the packets of a given weight. Ten samples of size five each were examined and the following results were obtained :

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Mean | 43 | 49 | 37 | 44 | 45 | 37 | 51 | 46 | 43 | 47 |
| Range | 5 | 6 | 5 | 7 | 7 | 4 | 8 | 6 | 4 | 6 |

Calculate the values for the central line and the control limits for the mean chart and range chart. Comment on the state of control.

1. From the following data calculate price index numbers for 2005 with 1995 as base by
2. Laspeyre’s
3. Paasche’s
4. Marshal Edgeworth
5. Fisher’s

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Commodities | 1995  Price | 1995  Quantity | 2005  Price | 2005  Quantity |
| A | 20 | 8 | 40 | 6 |
| B | 50 | 10 | 60 | 5 |
| C | 40 | 15 | 60 | 15 |
| D | 20 | 20 | 20 | 25 |