**Enrollment No. …………………………**

**MID SEMESTER EXAMINATION-3 (MARCH-2021)**

**Fourth Semester – B.TECH**

**Statistics – II Paper code: BTCS04CFB2**

**Time Allowed: One Hour Maximum Marks: 15**

**SECTION – 01**

**Long Answer Type Question (Attempt any 1 question among 2 questions) [01x07=07]**

**Q1.** The employees of four different firms are distributed in three skill categories as shown in the following table. Test the hypothesis that there is no relation between and the type of labour. Calculate the value of at the level of significance .

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Firm  Type of  Labour | A | B | C | D |
| Skilled | 24 | 24 | 23 | 49 |
| Semi-skilled | 32 | 60 | 37 | 51 |
| Manual | 24 | 56 | 40 | 80 |

**Q2.** Fit a straight line trend to the following data and estimate the likely profit for the year 1986. Also calculate various trend values.

Year : 1977 1978 1979 1980 1981 1982 1983

Profit : 60 72 75 65 80 85 95

(in lacs of Rs.)

**SECTION – 02**

**Short Answer Type Question (Attempt any 1 question among 2 questions) [01x03=03]**

**Q3.** A survey of 320 families with 5 children each revealed the following distribution.

No. of boys : 5 4 3 2 1 0

No. of girls : 0 1 2 3 4 5

No. of families: 14 56 110 88 40 12

Is the result consistent with hypothesis that male and female births are equally probable?

**Q4.** A fertilizer mixing machine is set to give 12 kg of nitrate for quintal bag of fertilizer. Ten 100 kg bags are examined. The percentage of nitrates per bags are as follows:

11, 14, 13, 12, 13, 12, 13, 14, 11, 12. Is there any reason to believe that the machine is defective?

[ value of t for 9 degrees of freedom is 2.262].

**SECTION – 03**

**Short Notes Type Question (Compulsory) [01x02=02]**

**Q5.** A manufacturer claims that the average mileage of scooters of his company is 40kms/litre. A random sample of 20 scooters of the company showed an average mileage of 42kms/litre. Test the claim of the manufacturer on the assumption that the mileage of scooter is normally distributed with a standard deviation of 2kms/litre. [The value at level of significance be = 1.96]

**SECTION – 04**

**Very Short Answer Type Question (Compulsory) [03x01=03]**

**Q6.** Mention the features of chi-square test.

**Q7**. Secular trend refers to the long-term tendency of data. **True or False.**

**Q8.** In the case of linear trend , is termed as the………….value in the year of…………. **Fill in the blank.**