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INSTITUTE OF INDIGENOUS MEDICINE, UNIVERSITY OF COLOMBO
DEGREE OF BACHELOR OF AYURVEDA / UNANI MEDICINE AND SURGERY
LEVEL II SECOND SEMESTER EXAMINATION MARCH - APRIL 2021

SW 2201 / TS 2202- RESEARCH METHODOLOGY AND BIO STATISTICS II

Date: 31.03.2021
Time: 9.00 am -- 10.00 am

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Answer all questions.

Part I - Structured Questions

1.

1.1. Define the confidence Interval. (03 Marks)

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1.2. Calculating confidence interval; what need to know? (03 Marks)

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1.3. A sample of 16 persons who were selected at random in a clinic of Swasthavritta at Ayurveda Teaching hospital Borella. Their fasting blood sugar (FBS mg/dl) levels were checked and noted as follows:

95, 108, 97, 112, 99, 106, 105, 100, 99, 98, 104, 110, 107, 111, 103, 110.

Assuming if the FBS of these persons follow a normal distribution of variance of 25 and an unknown mean:

What is the distribution of the sample mean? (04 Marks)

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1.4 Determine the confidence interval at 95% for the population mean. (10 Marks)
(At 95%, Z = 1.96).

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2.

2.1. What are the errors in hypothesis testing? (04 Marks)

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2.2. What is the formula to calculate degrees of freedom (*df*) in two sample t- test.? (04 Marks)

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2.3 What is Chi-square test? (04 Marks)

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2.4 The mean ESR level of 25 patients was 06 mm/hr with standard deviation of 2.5 mm/hr. Assuming that ESR level is normally distributed what is the 95% confidence interval for the mean ESR level of population.

(At 95%, with $df = 24$, get critical t value = 2.06) (08 Marks)

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Part II – Essay Question

1.

The random sample of six men age below 50 years shows their total cholesterol levels in mg/dL are as follows.

144.156.144.180.174.168.

1.1 Calculate sample mean. (05 Marks)

1.2 Calculate sample standard deviation. (10 Marks)

1.3 Find the 95% confidence interval for the mean total cholesterol level of population.

(At 95%, with $df = 5$, get critical t value = 2.571). (15 Marks)

1.4 It is desired to test if there is any significant difference between the average ages of students at two-higher educational institutes. A random sample of 10 students from institute (A) revealed the average age to be 23 years with a standard deviation of 4 years. A similar random sample of 08 students from institute (B) revealed an average age of 26 years with a standard deviation of 5 years.

At 0.05 level of significance, is there a difference between the average age of students at the two institutes.

Clearly mention null and alternative hypothesis. (30 Marks)

(At 0.05 level of significance and df=16, t -value is 2.12)

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{(s_1^2 / n_1 + s_2^2 / n_2)}}$$

31.03.2021

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