IA2 assignment –CO3 Questions

B1

1. Can it be concluded that the average life span of an Indian is more than 70 years, if a random sample of 100 Indians has average life span of 71.8 years with standard deviation of 8.9 years?

2. The following table gives the values of protein from cow's milk & buffalo's milk. Examine if these difference are significant.

Cows milk:	1.90	1.95	2.00	2.02	1.85	1.80
Buffalos milk	2.12	2.00	2.20	2.45	2.20	2.10

3. Random samples of 220 students in a college were asked to give opinion in terms of yes or no about the winning of their college cricket team in a tournament. The following data are collected.

	Class in college		
	Ist year	IInd year	IIIrd year
Yes	43	20	37
No	23	57	40

Test whether there is any association between opinion and class in college using χ^2-test (use 5% LOS)

B2

1. A random sample of 50 items gives the mean 6.2 and standard deviation 10.24. Can it be regarded as drawn from a normal population with mean 5.4 at 5% LOS?

2.

DietA:	5	6	8	1	12	4	3	9	6	10
DietB	2	3	6	8	10	1	2	8		

A group of 10 rats fed on diet A & another group of 8 rats fed on diet B recorded the following increase in weight (gms). Does it show superiority of diet A over diet B ?

3. In an industry 200 workers employed for a specific job were classified according to their performance & training received to test independence of training received & performance. The data are summarized as follows. Use χ^2-test for independence at 5% level of significance & write your conclusion.

Performance	Good	Not good	Total
Trained	100	50	150
Untrained	20	30	50
Total	120	80	200

B3

1. A random sample of 400 items gives the mean 4.45 & variance 4. Can it be regarded as drawn from a normal population with mean 4 at 5% level of significance?

2. Sandal powder is packed into packets by a machine. A random sample of 12 packets is drawn & their weights are found to be 0.49, 0.48, 0.47, 0.48, 0.49, 0.50, 0.51, 0.49, 0.48, 0.50, 0.51, 0.48 kg. Test if the average packing can be taken as 0.5 kg

3 Investigate the association between the darkness eye color in father & son from the following data using χ^2-test (use 5% LOS)

Color of sons eye	Color of fathers eye		
	Dark	Not dark	Total
Dark	48	90	138
Not dark	80	782	862
Total	128	872	1000

B4

1 The following data represent the mark obtained by 11 students in two tests one held at the beginning of the year and the other at the end of the year after giving intensive coaching.

TestI	19	23	16	24	17	18	20	18	21	19	20
TestII	17	24	20	24	20	22	20	20	18	22	18

Do the data indicate that the students are benefited by coaching?

2 A sample of 50 pieces of certain type of string was tested. The mean breaking strength turned out to be 14.5 pounds. Test whether the sample is from a batch of string having a mean breaking strength of 15.6 pounds & standard deviation of 2.2 pounds.

3 A die was thrown 132 times & the following frequencies were observed Test the hypothesis that the die is unbiased using χ^2-test (use 5% LOS)

No obtained	1	2	3	4	5	6	Total
Frequency	15	20	25	15	29	28	132

A1

1 The average of marks scored by 32 boys is 72 with standard deviation 8 while that of 36 girls is 70 with standard deviation 6.Test at 1% level of significance whether the boys perform better than the girls.

2

	No. of samples	Mean	Standard deviation
Type I	8	1134	35
Type II	7	1024	40

Samples of two types of electric bulbs were tested for length of life and the following data were obtained. Check whether 5% LOS the difference in the sample means is significant.

3 The number of car accidents in a metropolitan city was found to be 19, 17, 12, 6,7, 15, 11,9,16, &8 per month respectively. Use χ^2-test to check whether these frequencies are in an agreement with the belief that occurrence of accident was the same during 10 months period. Test at 5%level of significance.

IA2 assignment –CO3 Questions

<table>
<tr><td>A2</td><td></td><td></td></tr>
<tr><td>1</td><td>Two groups A & B of patients each consisting of 200 people are used to test effectiveness of a new serum. Group A is given serum while group B not. It is found that mean of two groups of A & B are 140 & 120 respectively and standard deviation of 14 & 12 respectively . Test at 1% LOS wether the new serum helps to cure the disease.</td><td></td></tr>
<tr><td>2</td><td>Nine items of a sample had the following values 45,47,50,52,48,7,49,53,51. Does the mean of 9 items differ significantly from the assumed population mean 47.5?</td><td></td></tr>
<tr><td>3</td><td>A total number of 3759 individuals were interviewed in a public opinion survey on a political proposal of them 1872 were men and the rest were women. A total of 2257 individuals were in favor of the proposal and 917 were opposed to it. A total of 243 men were undecided and 442 women were opposed to the proposal. Do you justify on contradict the hypothesis that there is no association between sex and attitude, using χ^2-test at 5% LOS</td><td></td></tr>
<tr><td>A3</td><td></td><td></td></tr>
<tr><td>1</td><td>Two samples drawn from two different populations gave the following results . Test the hypothesis at 5% level of significance that the difference of the means of the populations is significant
<table>
<tr><td></td><td>Size</td><td>Mean</td><td>S.D</td></tr>
<tr><td>Sample I</td><td>125</td><td>340</td><td>25</td></tr>
<tr><td>Sample II</td><td>150</td><td>380</td><td>30</td></tr>
</table></td><td></td></tr>
<tr><td>2</td><td>Ten individual are chosen at random from a population & heights are found to be 63, 63, 64, 65, 66, 69, 69, 70, 70, 71.inches. Discuss the suggestion that the height of universe is 65 inches.</td><td></td></tr>
<tr><td>3</td><td>Based on the data below determine if there is relation between literacy and smoking using χ^2-test (use 5% LOS)
<table>
<tr><td></td><td>Smokers</td><td>Non-smokers</td></tr>
<tr><td>Literates</td><td>83</td><td>57</td></tr>
<tr><td>Illiterates</td><td>45</td><td>65</td></tr>
</table></td><td></td></tr>
<tr><td>A4</td><td></td><td></td></tr>
<tr><td>1</td><td>A man buys 100 electric bulbs of each of two well-known makes taken at random from stock for testing purpose. He finds that ‘make A’ has a mean life of 1308 hrs with S.D of 93 hrs ‘make B’ has a mean life of 1248 hrs with S.D of 93 hrs. Test that at 5% LOS the difference in the sample means is significant.</td><td></td></tr>
<tr><td>2</td><td>Memory capacity of 9 students was tested before & after a course of mediation for a month. State whether the course was effective or not from the data below
<table>
<tr><td>Before</td><td>10</td><td>15</td><td>9</td><td>3</td><td>7</td><td>12</td><td>16</td><td>17</td><td>4</td></tr>
<tr><td>After</td><td>12</td><td>17</td><td>8</td><td>5</td><td>6</td><td>11</td><td>18</td><td>20</td><td>3</td></tr>
</table></td><td></td></tr>
<tr><td>3</td><td>A certain drug is claimed to be effective in curing cold in an experiment on 500 persons with cold. Half of them were given drug and half of them were given the sugar pills. The patients reaction to the treatment are recorded in the following table using χ^2-test (use 5% LOS)</td><td></td></tr>
</table>

	Helped	Harmed	No Effect	Total
Drug	150	30	70	250
Sugar pills	130	40	80	250
Total	280	70	150	500

On the basis of this data, can it be concluded that the drug and sugar pills differ significantly in curing cold.