2/21

2104N259

Candidate's Seat No :_____

IMBA Semester-4 Examination

PHM

Found. of Stat (FoS)-II

April-2023

Time : 2-30 Hours] **[Max. Marks : 70**

Instructions :(1) This paper contains **FIVE** questions.
(2) All questions are compulsory.
(3) Question No.**2, 3, 4** have internal options.
(4) Figures in the right side in parenthesis indicate marks.

Q:1 A factory produces 50 cylinders per hour. samples of 4 cylinders are taken at random from the production at every hour and the diameters of cylinders are measured. draw $\bar{x}$ and R charts and decide whether the process in under control or not. [For n=4,A2 = 0.73,D3=0 , D4=2.28] **(14)**

Q:2 A population consists of the four members 3, 7, 11, 15. consider all possible samples size two which can be drawn with replacement form. find the population mean population standard deviation, the mean of sampling distribution and standard deviation of sampling distribution of mean. **(14)**

Using with the method of the simple random with sampling and simple random without sampling method in detail.

OR

Q:2 To test the significance of the variation in the retail prices of a commodity in 3 principles cities. Dehradun, Kolkata and Darjeeling. Four super market were chosen at random in each city and the prices who lack confidence in their mathematical ability observed in rupees were as follows: **(14)**

Dehradun	16	8	12	14
Kolkata	14	10	10	6
Darjeeling	4	10	8	8

Do the data indicate that the prices in the 3 cities are significantly different? elaborate your answers in details.

Q:3 As head of the department of a physical education you have the responsibility for testing and comparing lifetimes of 4 Generic ayurveda medicines. suppose you test the life-time of 3 Ayurveda Medicines of each of the Four Brands. **(14)**

the data are shown below, each entry representing the lifetime of an ayurveda

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measured in hundreds of Medicines:

Ayurveda Medicine			
A	B	C	D
20	25	24	23
19	23	20	20
21	21	22	20

Can we infer the mean lifetimes of the Four ayurveda medicines brands are equal? elaborate with the explanations of the ANOVA Table.

OR

Q:3 12 students were given intensive coaching and 5 tests were conducted in a month. the scores of tests 1 and 5 are given below. **(14)**

No. of students	Marks in 1st Test	Marks in 5th test
1	50	62
2	42	40
3	51	61
4	26	35
5	35	30
6	42	52
7	60	68
8	41	51
9	70	84
10	55	63
11	62	72
12	38	50

Do the data indicate any improvement in the scores obtained in the test 1 and 5? elaborate in detail.

Q:4 Find the probability of acceptance of a lot when fraction defective of the lot is 0.015 using a single sampling plan (1000, 200, 1). elaborate in detail. **(14)**

OR

Q:4 For a single sampling plan (1000, 100,2) AQL=p1'=0.01 and LTPD=p2'=0.06 Find producers risk and consumer's Risk in detail.(e^{-1}= 0.368 , e^{-6} = 0.002479) **(14)**

Q:5 Explain the types of the population in detail. also elaborate the difference between the Sample mean and the population mean in detail. **(14)**