c) Find the linear regression equation that you consider more relevant for the following set of paired observations and give reasons why you consider it to be so: 10

Age	56	42	72	36	63	47	55	49	38	42	68	60
Blood pressure	147	125	160	118	149	128	150	145	115	140	152	155

Also estimate the blood pressure of a person whose age is 45.

3. Write short notes on ***any two*** of the following concepts: 5×2

a) CPM in operation research

b) Skewness of statistical distribution

c) Adjustment to Time Series data

d) Errors in testing hypotheses

Master of Library and Information Science

(Digital Library) Examination, 2024

(1st Year, 1st Semester)

Quantitative Techniques

Course : MLDL-03

Time : Two Hours Full Marks : 50

The figures in the margin indicate full marks.

Answer the questions as instructed.

1A. a) Differentiate the following concepts: 3×2

i) Seasonal variation and Cyclic fluctuation (as Time Series components)

ii) Relative frequency and Frequency density (as frequency measure of grouped distribution)

b) Calculate standard deviation from the following distribution: 6

Books issued (yearly)	4 – 5	6 – 7	8 – 9	10 – 11	12 – 13	14 – 15
No. of students	4	10	20	15	8	3

c) A random sample of 200 students as library users of Jadavpur University Central Library were asked the question: “Do you think librarians are teachers of teachers?”. The number of users of different academic levels saying ‘yes’ and ‘no’ are: 8

	UG student	PG student	M.Phil. student	Ph.D. student
Yes	15	8	5	2
No	55	42	35	38

Test whether there is any association between opinion and users' level. [Given: Chi-square value is 7.81 at 5% level for 3 d.f.]

OR

1B. a) What do you know about the following concepts?

i) Simple random Sampling

ii) Kurtosis of a frequency curve 2×2

b) Find the median from the following table: 6

Price of books	115	125	135	145	155	165	175	185	195
No. of books	6	25	48	72	116	60	38	22	3

c) Write the steps of constructing a pie-chart. 5+5

The data below give the marks secured by 70 MLIS students in paper-1 of 2nd Semester examination. Construct a frequency distribution of the marks, taking classes of uniform width of 10 marks and 0 as the lower limit of lower most class.

21	31	35	52	64	74	89	53	42	7
22	35	43	67	76	35	46	26	32	40
72	43	38	41	63	71	28	32	45	54
15	18	52	73	86	50	39	55	47	12
44	58	67	85	39	40	50	65	72	69

57	63	5	56	79	37	24	54	82	49
51	54	68	29	34	44	58	62	59	65

2A. a) Show your acquaintance with the following concepts:

i) Mode

ii) Critical region 3×2

b) If the first quartile is 142 and the semi-interquartile range in 18, what is the third quartile? 4

c) Fit a straight-line trend equation by the method of least squares from the following data and then estimate the trend value for the year 1985: 10

Year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Value ('000)	65	80	84	75	77	71	76	74	70	68

OR

2B. a) Write short notes on the following concepts: 2×2

i) Quartile deviation

ii) Longitudinal research

b) Data in the following table show the heights (in cm.) of a group of 60 users in a college library. 6

Height (cm.)	145.0-149.9	150.0-154.9	155.0-159.9	160.0-164.9	165.0-169.9	170.0-174.9	175.0-179.9	180.0-184.9
No. of users	2	5	9	15	16	7	5	1

Draw less-than Ogive based on above data.