

Ankit Das

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST-2 EXAMINATION (April 2019)
B-Tech (6th SEM)

Course Code: **16B22CI621**

Max. Marks: 25

Course Name: **DATA ANALYSIS AND SIMULATION TECHNIQUES**

Course Credit: 4

Max. Time: 1.5 HOUR

Note: All questions are Compulsory

1. [CO-3] A departmental store, A, has four competitors: B, C, D, and E. Store A hires a consultant to determine if the percentage of shoppers who prefer each of the five stores is the same or equal. A survey of 1100 randomly selected shoppers is conducted, and the results about which one of the stores shoppers prefer are below. Is there enough evidence using a significance level $\alpha = 0.05$ to conclude that the proportions are really the same? [4 marks]

Store	A	B	C	D	E
Number of Shoppers	262	234	204	190	210

2. [CO-3] Udisha claims that girls take more black and white and color photographs than boys, but Lavish (who is a photographer) is skeptical. If Lavish collects the following data, would it be correct to say that he should reject Udisha's claim that gender affects tendency to take photographs? (default significance level of 0.05) [4 marks]

	B/W	Colour	Total
Female	72	489	561
Male	48	530	578
Total	120	1019	1139

3. [CO-1] Assume Dhruv and Shruti have been placed in Microsoft India's Quality control division. The distribution of their testing activity times at their stations is as follows: [5 marks]

Time in Sec.	Time frequency For Dhruv	Time frequency for Shruti
10	4	4
20	6	5
30	10	6
40	20	7
50	40	10
60	11	8
70	5	6
80	4	4

The lost contribution is Rs. 30000 per hour, if any job has to wait in the production line. (Cost of job lateness).

(a) Simulate operation of the line for nine times for each of the Testing Engineer. Use the random numbers given below:

Operation 1 for Dhruv :	14	61	01	82	96	00	44	23	74
Operation 2 for Shruti:	36	07	76	91	55	56	25	04	32

(b) Assuming Shruti is running white box testing and Dhruv is running Black box testing in the software modules and Shruti must wait until Dhruv completes the first unit testing before starting work, will she have to wait to process any of the other nine modules? They are working as a group. Compute the total idle time of each testing engineer for the batch of nine modules. Also calculate the cost of job lateness for both of them.

4. [CO-2 & 5] a) write four differences between OLAP and OLTP. [2 marks]

b) What are the properties of Petrinets?

[3 marks]

What is Source Transition and What is Sink Transition?

[2 marks]

5. [CO-6] a) What is SIMETHICS?

[2.5 marks]

b) What are the desirable software features for a Simulation Software? [2.5 marks]

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Chi-square Distribution Table

d.f.	.995	.99	.975	.95	.9	.1	.05	.025	.01
1	0.00	0.00	0.00	0.00	0.02	2.71	3.84	5.02	6.63
2	0.01	0.02	0.05	0.10	0.21	4.61	5.99	7.38	9.21
3	0.07	0.11	0.22	0.35	0.58	6.25	7.81	9.35	11.34
4	0.21	0.30	0.48	0.71	1.06	7.78	9.49	11.14	13.28
5	0.41	0.55	0.83	1.15	1.61	9.24	11.07	12.83	15.09
6	0.68	0.87	1.24	1.64	2.20	10.64	12.59	14.45	16.81
7	0.99	1.24	1.69	2.17	2.83	12.02	14.07	16.01	18.48
8	1.34	1.65	2.18	2.73	3.49	13.36	15.51	17.53	20.09
9	1.73	2.09	2.70	3.33	4.17	14.68	16.92	19.02	21.67
10	2.16	2.56	3.25	3.94	4.87	15.99	18.31	20.48	23.21
11	2.60	3.05	3.82	4.57	5.58	17.28	19.68	21.92	24.72
12	3.07	3.57	4.40	5.23	6.30	18.55	21.03	23.34	26.22
13	3.57	4.11	5.01	5.89	7.04	19.81	22.36	24.74	27.69
14	4.07	4.66	5.63	6.57	7.79	21.06	23.68	26.12	29.14
15	4.60	5.23	6.26	7.26	8.55	22.31	25.00	27.49	30.58
16	5.14	5.81	6.91	7.96	9.31	23.54	26.30	28.85	32.00
17	5.70	6.41	7.56	8.67	10.09	24.77	27.59	30.19	33.41
18	6.26	7.01	8.23	9.39	10.86	25.99	28.87	31.53	34.81
19	6.84	7.63	8.91	10.12	11.65	27.20	30.14	32.85	36.19
20	7.43	8.26	9.59	10.85	12.44	28.41	31.41	34.17	37.57
22	8.64	9.54	10.98	12.34	14.04	30.81	33.92	36.78	40.29
24	9.89	10.86	12.40	13.85	15.66	33.20	36.42	39.36	42.98
26	11.16	12.20	13.84	15.38	17.29	35.56	38.89	41.92	45.64
28	12.46	13.56	15.31	16.93	18.94	37.92	41.34	44.46	48.28
30	13.79	14.95	16.79	18.49	20.60	40.26	43.77	46.98	50.89
32	15.13	16.36	18.29	20.07	22.27	42.58	46.19	49.48	53.49
34	16.50	17.79	19.81	21.66	23.95	44.90	48.60	51.97	56.06
38	19.29	20.69	22.88	24.88	27.34	49.51	53.38	56.90	61.16
42	22.14	23.65	26.00	28.14	30.77	54.09	58.12	61.78	66.21
46	25.04	26.66	29.16	31.44	34.22	58.64	62.83	66.62	71.20
50	27.99	29.71	32.36	34.76	37.69	63.17	67.50	71.42	76.15
55	31.73	33.57	36.40	38.96	42.06	68.80	73.31	77.38	82.29
60	35.53	37.48	40.48	43.19	46.46	74.40	79.08	83.30	88.38
65	39.38	41.44	44.60	47.45	50.88	79.97	84.82	89.18	94.42
70	43.28	45.44	48.76	51.74	55.33	85.53	90.53	95.02	100.43
75	47.21	49.48	52.94	56.05	59.79	91.06	96.22	100.84	106.39
80	51.17	53.54	57.15	60.39	64.28	96.58	101.88	106.63	112.33
85	55.17	57.63	61.39	64.75	68.78	102.08	107.52	112.39	118.24
90	59.20	61.75	65.65	69.13	73.29	107.57	113.15	118.14	124.12
95	63.25	65.90	69.92	73.52	77.82	113.04	118.75	123.86	129.97
100	67.33	70.06	74.22	77.93	82.36	118.50	124.34	129.56	135.81

