

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, December 2023

BCA, Semester III

Roll No.....

AS1106 : Statistical Computing

Time: 2.5 hours

Max. Marks: 30

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Use of non-programmable calculators is allowed.
3. Good Luck!!!

Q1. Multiple choice questions. Select the correct answer and justify your answer in one line.

5
[CO1,
CO2,
CO3,
CO4]

- a. If both dependent and independent variables increase in an estimating equation, then the coefficient of correlation falls in the range-
(a) $-1 \leq r \leq 0$ (b) $0 \leq r \leq 1$
(c) $-3 \leq r \leq 3$ (d) $-0.5 \leq r \leq 0.5$
- b. If one event is unaffected by the outcome of the another event, the two events are said to be
(a) dependent (b) independent (c) mutually exclusive (d) none of these
- c. The number of observations in a set of data covered in the interval Q1 to Q3
(a) 50% (b) 75% (c) 25% (d) 100%
- d. The standard deviation of the binomial distribution is
(a) np (b) npq (c) $\sqrt{np}$ (d) $\sqrt{npq}$
- e. In a normal curve with mean $\mu = 50$ and $\sigma = 4$, how much area will be to the left of μ
(a) 68.45% (b) 95.27% (c) 50% (d) none of these

Q2. The number of solar heating systems available to the public is quite large and their heat storage capacities are quite varied. Here is a distribution of heat storage capacity (in days) of 28 systems that were tested recently by a testing agency

4
[CO2]

Days	Frequency
0-1	2
1-2	4
2-3	6
3-4	7
4-5	5
5-6	3
6-7	1

The agency knows that its report on the test will be widely circulated and used as the basis for solar heat allowances.

- (a) Compute the mean, median and mode of these data.
- (b) Select the central tendency from (a) which best reflects the central tendency of the given data and justify your answer.

- Q3. Estimate the blood pressure of a woman whose age is 45 years. 4
1000 light bulbs with a mean life of 120 days are installed in a new factory and their length of life is normally distributed with standard deviation of 20 days. [CO3]
(a) Find the probability that a randomly selected bulb will expire before 90 days?
How many bulbs will not expire before 160 days.

- Q4. The probability that a trainee will remain with a company is 0.6. The probability that an employee earns more than Rs 30,000 per month is 0.5. The probability that an employee who is a trainee remained with the company or who earns more than Rs 30,000 per month is 0.7. What is the probability that an employee earns more than Rs 30,000 per month given he is a trainee who stayed with the company? 4
[CO3]

OR

From a sales force of 150 persons, one will be selected to attend a meeting. If 52 of them are unmarried, 72 are college graduates and $\frac{3}{4}$ of the 52 that are unmarried are college graduates, find the probability that the salesperson selected at random will be neither single nor a college graduate.

- Q5. Tickets are numbered from 1 to 100. They are well shuffled and a ticket is drawn at random. What is the probability that the drawn ticket has 4
[CO3]
(a) an even number?
(b) the number 5 or a multiple of 5?
(c) a number which is greater than 75?
(d) a number which is a square?

- Q6. Suppose 10 percent of new scooters will require warranty service within the first month of its sale. If a scooter manufacturing company sells 1000 scooters in a month, 3
[CO3]
(a) Find the mean and standard deviation of the scooters that require warranty service.
(b) Calculate the probability that less than 3 scooters will require the warranty service.

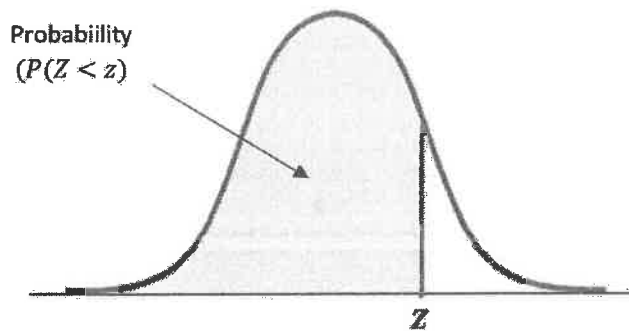
OR

Find the probability that at most 5 defective bolts are found in a box of 200 bolts if it is known that 2 percent of such bolts are expected to be defective. Also find the probability of getting no defective bulb.

- Q7. The following data give the ages and blood pressure in (mmHg) of 10 women 6
[CO4]

Age	56	42	36	47	49	42	60	72	63	55
Blood Pressure	147	125	118	128	145	140	155	160	149	150

- (a) Find the correlation between ages and blood pressure.
(b) Determine the least square regression equation of blood pressure on age.



z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5754
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7258	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7518	0.7549
0.7	0.7580	0.7612	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7996	0.8023	0.8051	0.8079	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9430	0.9441
1.6	0.9452	0.9463	0.9474	0.9485	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9700	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9762	0.9767
2.0	0.9773	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9865	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9980	0.9980	0.9981
2.9	0.9981	0.9982	0.9983	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998	0.9998

