FAST NUCES KARACHI CAMPUS

Assignment-I (BATCH 2020)

Submission Data &Time: Max. Marks: 20

06 March, 2022 at 4:00 p.m. Sharp

PROBABILITY & STATISTICS

INSTRUCTIONS (i) All questions carry equal marks.
(ii) Attempt all three questions

Q 1. Industrial engineers periodically conduct "work measurement" analyses to determine the time required to produce a single unit of output. At a large processing plant, the number of total worker-hours required per day to perform a task was recorded for 50 days. The data are shown below.

128	119	95	97	124	128	142	98	108	120
113	109	124	132	97	138	133	136	120	112
146	128	103	135	114	109	100	111	131	113
124	131	133	131	88	118	116	98	112	138
100	112	111	150	117	122	97	116	92	122

a. Compute the mean, median, and mode of the data set.
b. Find the range, variance, and standard deviation of the data set.
c. Construct the intervals $\bar{y}$ *s, y*¯2*s, and* $\bar{y}$ 3*s,* . Count the number of observations that fall within each interval and find the corresponding proportions. Compare the results of the Empirical Rule (Normal distribution). Do you detect any outliers?
d. Construct a box plot for the data. Do you detect any outliers?
e. Find the 70^{th} percentile for the data on total daily worker-hours. Interpret its value.

Q. 2 Following are the marks (out of 100) obtained in a Mathematics course of the Engineering undergraduates.

(a) Determine the descriptive statistics of the data.
(b) Transform each mark according to the following grade ranges.

A: Marks + 2;
B: + Marks < + 2 ;
C: Marks < + ;
D: Marks <
E: 2 Marks < ;
F: 3 Marks < 2

Where μ = mean and σ= Standard deviation

(c) Describe the result in your words with the help of **bar graph** and **Pie chart** of grads

Roll No.	Marks	Roll No.	Marks	Roll No.	Marks	Roll No.	Marks
1	76	12	43	23	43	34	69
2	63	13	68	24	78	35	27
3	57	14	64	25	86	36	97
4	40	15	78	26	67	37	47
5	42	16	68	27	55	38	83
6	65	17	55	28	88	39	74
7	72	18	75	29	60	40	63
8	73	19	51	30	82	41	77
9	95	20	77	31	96	42	77
10	80	21	40	32	68	43	82
11	75	22	79	33	71	44	50