Mathematics and Statistics ES1032
Assignment _Statistics

Note: 1) Attempt ONE question from Q.1 to Q.5 as per the number shown against your roll number in the attached list.

Q.1	**Box Plot**
1	The "cold start ignition time" of an automobile engine is being investigated by a gasoline manufacturer. The following times (in seconds) were obtained for a test vehicle: 1.75, 1.92, 2.62, 2.35, 3.09, 3.15, 2.53, 1.91. a) Calculate the sample mean and sample standard deviation. b) Construct a box plot of the data.
2	Following is the data from an experiment investigating the effect of several process variables on the vapour phase oxidation of naphthalene. A sample of the percentage mole conversion of naphthalene to maleic anhydride follows: 4.2, 4.7, 4.7, 5.0, 3.8, 3.6, 3.0, 5.1, 3.1, 3.8, 4.8, 4.0, 5.2, 4.3, 2.8, 2.0, 2.8, 3.3, 4.8, 5.0. a) Calculate the sample mean. b) Calculate the sample variance and sample standard deviation. c) Construct a box plot of the data.
3	The nine measurements that follow are furnace temperatures recorded on successive batches in a semiconductor the manufacturing process (units are): 953, 950, 948, 955, 951, 949, 957, 954, 955. a) Calculate the sample mean, sample variance, and standard deviation. b) Find the median. c) Construct a box plot of the data.
4	The following data are the temperatures of effluent at discharge from a sewage treatment facility on consecutive days 43 47 51 48 52 50 46 49 45 52 46 51 44 49 46 51 49 45 44 50 48 50 49 50 a) Calculate the sample mean and median. b) Calculate the sample variance and sample standard deviation. c) Construct a box plot of the data and comment on the in formation in this display
5	The "cold start ignition time" of an automobile engine is being investigated by a gasoline manufacturer. The following times (in seconds) were obtained for a test vehicle: 1.83, 1.99, 3.13, 3.29, 2.65, 2.87, 3.40, 2.46, 1.89, and 3.35. a) Calculate the sample mean and sample standard deviation. b) Construct a box plot of the data.
Q.2	**Construct a frequency distribution. Histogram using excel or any other free software**
1	Following is the data on the motor fuel octane ratings of several blends of gasoline 88.5, 94.7, 84.3, 90.1, 89.0, 89.8, 91.6, 90.3, 90.0, 91.5, 89.9, 98.0, 88.3, 90.4, 91.2, 90.6, 92.2, 87, 87.7, 91.1, 86.7, 93.4, 96.1, 89.6, 90.4, 91.6, 90.7, 88.6, 88.3, 94.2, 85.3, 90.1, 89.3, 91.1, 92.2, 83.4, 91.0, 88.2, 88.5, 93.3, 87.4, 91.1, 90.5, 100.3, 87.6, 92.7, 87.9, 93.0, 94.4, 90.4, 91.2, 86.7, 94.2, 90.8, 90.1, 91.8, 88.4, 92.6, 93.7, 96.5, 84.3, 93.2, 88.6, 88.7, 92.7, 89.3, 91.0, 87.5, 87.8, 88.3, 89.2, 92.3, 88.9, 89.8, 92.7, 93.3, 86.7, 91.0,90.9, 89.9, 91.8, 89.7, 92.2
2	The percentage of cotton in material used to manufacture men's shirts follow 34.2, 33.1, 34.5, 35.6, 36.3, 35.1, 34.7, 33.6, 37.8, 36.6, 35.4, 34.6, 33.8, 37.1, 34.0, 34.1, 33.6, 34.7, 35.0, 35.4, 36.2, 36.8, 35.1, 35.3, 32.6, 33.1, 34.6, 35.9, 34.7, 33.6, 32.9, 33.5, 33.8, 34.2, 33.4, 34.7, 34.6, 35.2, 35.0, 34.9, 35.8, 37.6, 37.3, 34.6, 35.5, 32.8, 32.1, 34.5, 34.7, 33.6, 32.5, 34.1, 35.1, 36.8, 37.9,36.4
3	The following data are the numbers of cycles to failure of aluminium test coupons subjected to repeated alternating stress at 21,000 psi, 18 cycles per second 1115, 1310, 1540, 1502, 1258, 1315, 1085,798, 1020, 865, 2130, 1421, 1109, 1481, 1567, 1883, 1203, 1270, 1015, 845, 1674, 1016, 1102, 1605, 706, 2215, 785, 885, 1223, 375, 2265, 1910, 1018, 1452, 1890, 2100, 1594, 1501, 1238, 990, 1468, 1512, 1750, 1642 , 1416, 1560, 1055, 1764, 1330, 1608, 1535, 1781, 1750, 1000, 1820, 1940, 1120, 910, 1730, 1102, 1578, 758, 2023, 1315, 1269, 1260, 1888,1782, 1522, 1792
4	The female students in an undergraduate engineering core course at ASU self-reported their heights to the nearest inch. The data are 62, 64, 66, 67, 65, 68, 61, 65, 67, 65, 64, 63, 67, 68, 64, 66, 68, 69, 65, 67, 62, 66, 68, 67, 66, 65, 69, 65, 70, 65, 67, 68 ,65, 63, 64, 67, 67

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5	An important quality characteristic of water is the con centration of suspended solid material. Following are 60 measurements on suspended solids from a certain lake. 42.4, 65.7, 29.8, 58.7, 52.1, 55.8, 57.0, 68.7, 67.3, 67.3, 54.3, 54.0, 73.1, 81.3, 59.9, 56.9, 62.2, 69.9, 66.9, 59.0, 56.3, 43.3, 57.4, 45.3, 80.1, 49.7, 42.8, 42.4, 59.6, 65.8, 61.4, 64.0, 64.2, 72.6, 72.5, 46.1, 53.1, 56.1, 67.2, 70.7, 42.6, 77.4, 54.7, 57.1, 77.3, 39.3, 76.4, 59.3, 51.1, 73.8, 61.4, 73.1, 77.3, 48.5, 89.8, 50.7, 52.0, 59.6, 66.1, 31.6

Roll No	Q.1	Q. 2
1	3	5
2	4	4
3	3	2
4	4	2
5	5	4
6	3	4
7	5	4
8	1	3
9	2	3
10	1	1

Roll Numbers 1 to 10 attempt questions as per shown in table.

Roll Numbers 11 to 69, divide your roll number by 5, whatever is the remainder , attempt question number = remainder.

(If remainder is zero, attempt question number 5)