Mandatory Practical Practice Questions (Excluding practical questions)

1. A die is rolled 120 times and the number of 6s obtained is as follows. Fit Binomial distribution for the following data and graphically represent the probabilities

X	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Frequency	15	27	36	24	12	6	3	1

2. 7 coins are tossed 115 times with the number of heads obtained as follows. Fit Binomial distribution for the following data and graphically represent the probabilities.

No. of heads (X)	0	1	2	3	4	5	6	7
frequency	0	4	13	28	42	20	6	2

3. Calculate Karl Pearson's correlation coefficient for the following data:

Father's Height	**68**	**70**	**72**	**74**	**76**	**78**	**80**
Son's Height	66	68	70	72	74	76	78

4. Calculate Karl Pearson's correlation coefficient for the following data:

Age of husband	21	24	27	29	31	35	38
Age of wife	19	21	25	26	29	32	34

5. The lifetime (in hours) of a light bulb is tested for 300 bulbs and recorded as follows. Fit exponential distribution for the following data and graphically represent the probabilities.

Lifetime	0-50	50-100	100-150	150-200	200-250	250-300	300-350	350-400
Frequency	150	75	35	20	10	5	3	2

6. The life time (in hours) of a chip of television set is tested for 200 T.V. sets and recorded as follows. Fit exponential distribution for the following data and graphically represent the probabilities.

life time	0-30	30-60	60-90	90-120	120-150	150-180	180-210	210-240
frequency	108	45	21	9	8	5	4	0

7. Generate 5 random numbers from a normal distribution with mean 0 and standard deviation 1

8. Generate 10 random numbers uniformly distributed over interval (0,1).

9. The number of hours of study per week for 100 students are recorded as follows. Fit a Poisson distribution for the following data and graphically represent the probabilities.

Hours of Study	**0**	**1**	**2**	**3**	**4**
No. of Students	20	30	35	10	5

10. The number of chances taken by each candidate to hit the target first time successfully are recorded as follows. Fit geometric distribution for the following data and graphically represent the probabilities.

No. of chances taken (X)	1	2	3	4	5	6
No. of candidates	145	68	46	211	11	4

11. The average weight of a bag of apples is 3 pounds with a standard deviation of 0.5 pounds. The weights are normally distributed. What is the probability that a randomly selected bag weighs between 2.5 and 3.5 pounds?

12. The average number of acres burned by forest and fires in New Mexico is 4,300 acres per year, with a standard deviation of 750 acres. The distribution of the number of acres burned is normal. What is the probability that between 2,500 and 4,200 acres will be burned in any given year?

13. The number of cars that pass through a busy intersection in a day follows a Poisson distribution with a mean of 500 cars. What is the probability that fewer than 400 cars will pass through the intersection in a day?

14. Fit Poisson distribution for the following data and graphically represent the probabilities.

No. of deaths (X)	0	1	2	3	4	5
frequency	142	156	69	27	5	1

15. The following data shows the number of hours studied and the corresponding test scores for 10 students. Create a scatter plot and calculate the correlation coefficient.

Hours studied (X)	**2**	**3**	**5**	**7**	**8**	**10**	**12**	**15**	**18**	**20**
Test score (Y)	65	67	70	71	73	75	78	81	85	89

16. Present the following data through a scatter-plot diagram and calculate covariance.

X	2	8	18	20	28	30
Y	5	12	18	23	45	50

17. The following data shows the number of hours of sleep per night for 100 people. Fit a normal distribution for the data and graphically represent the probabilities.

Hours of sleep (X)	**4**	**5**	**6**	**7**	**8**	**9**
No. of people (Y)	2	10	30	40	15	3

18. Fit normal distribution for the following data and graphically represent the probabilities.

Class	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
frequency	5	12	13	42	76	12	3	15

19. The mean number of people who visit a website in an hour is 20. What is the probability that fewer than 10 people will visit the website in an hour?

20. The mean number of bacteria per ml of a liquid is known to be 6. Find the probability that in 1 ml of the liquid, there will be: (a) 0 bacteria (b) less than 4 bacteria

21. A jar contains 5 red marbles and 7 blue marbles. If 3 marbles are drawn at random from the jar without replacement, what is the probability that exactly 2 of them are red?

22. Suppose an urn contains 10 marbles: 4 violet, 2 yellow, and 4 blue. A marble is drawn at random and then put back in the bag and another marble is drawn. This experiment is repeated 8 times. What is the probability that the outcome will result in exactly 4 yellows and 4 blues?

23. A fair die is rolled 8 times. What is the probability of getting at least 5 sixes

24. Find the probability of getting heads at least 5 times tossing an unbiased coin for 6 times.

Note: Please solve all using excel