



# **BHASKARACHARYA COLLEGE** **OF APPLIED SCIENCES**

## **PROBABILITY FOR COMPUTING Practical File**

---

**Name : Jyoti**

**Roll no. : 2302023**

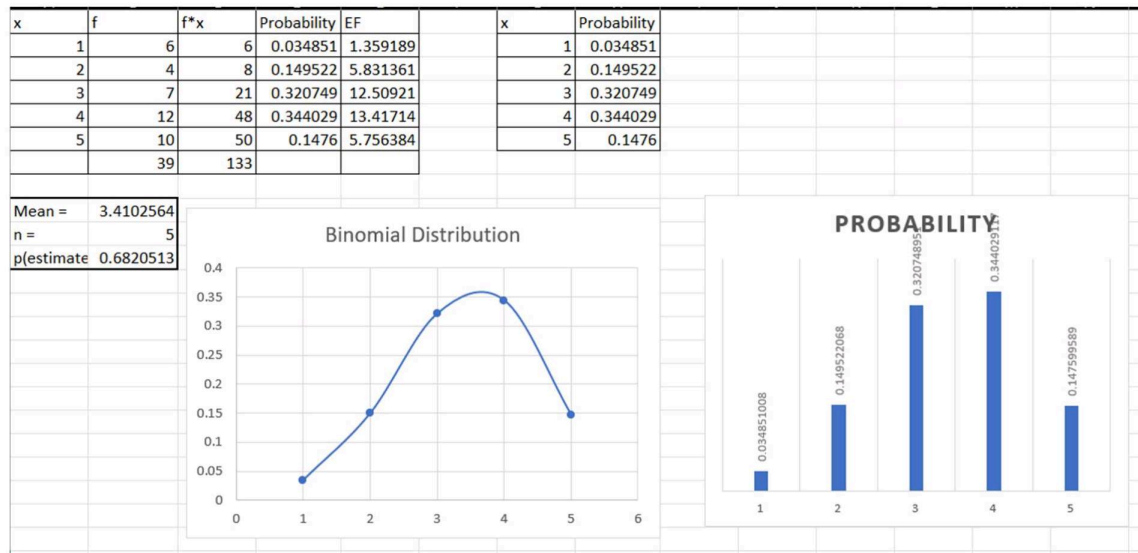
**Course: bsc(h) Computer Science**

**Semester: 2**

**Submitted to : Dr. Asha**

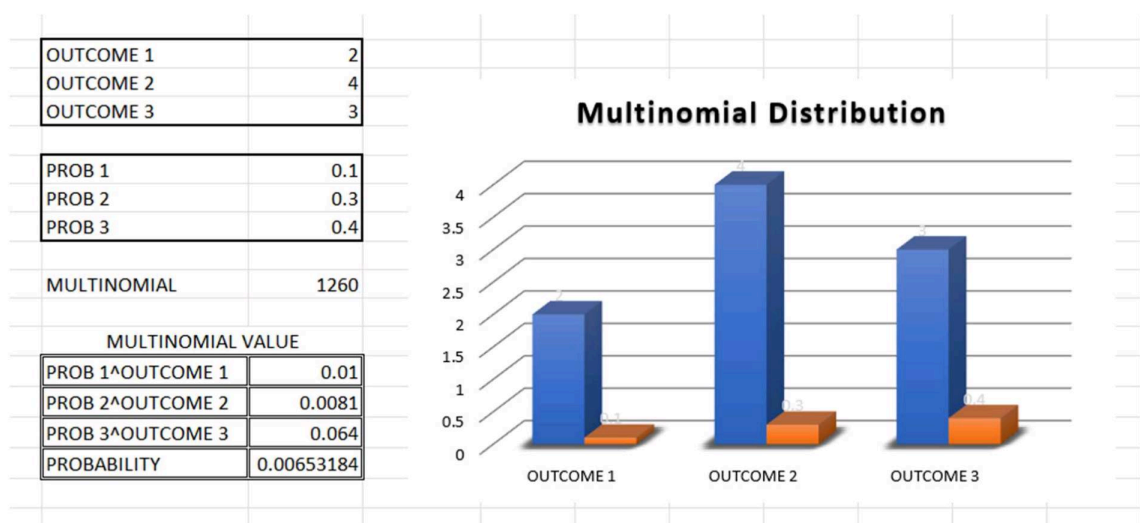
## 1. Plotting and fitting of Binomial distribution and graphical representation of probabilities.

EXCEL :



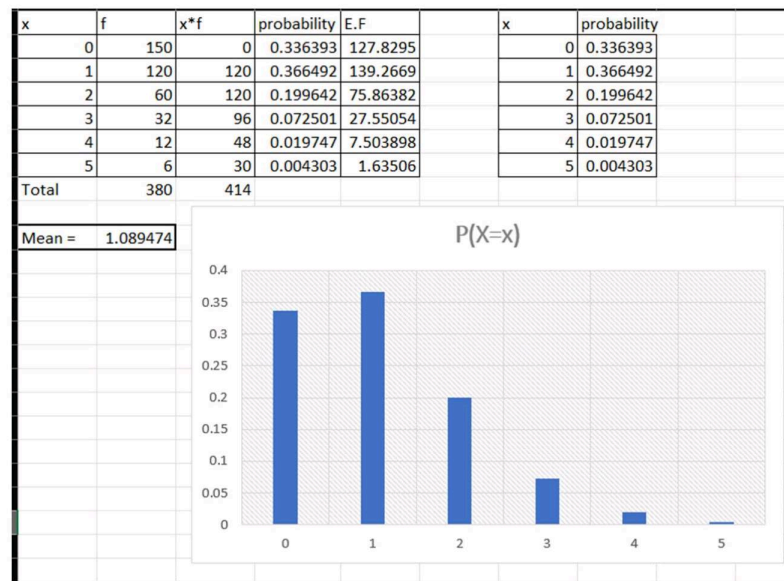
## 2. Plotting and fitting of Multinomial distribution and graphical representation of probabilities.

EXCEL :



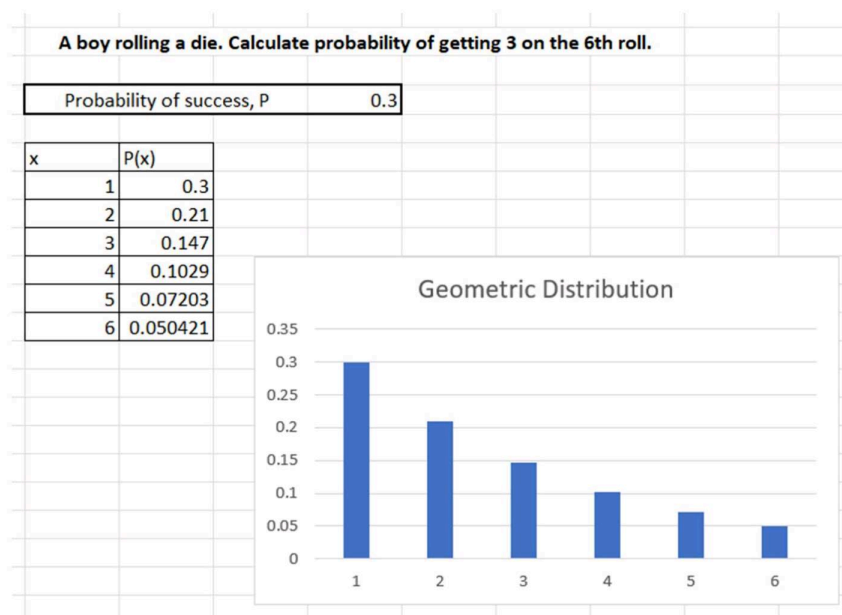
### 3. Plotting and fitting of Poisson distribution and graphical representation of probabilities.

EXCEL :



### 4. Plotting and fitting of Geometric distribution and graphical representation of probabilities.

EXCEL :



## 5. Plotting and fitting of Uniform distribution and graphical representation of probabilities.

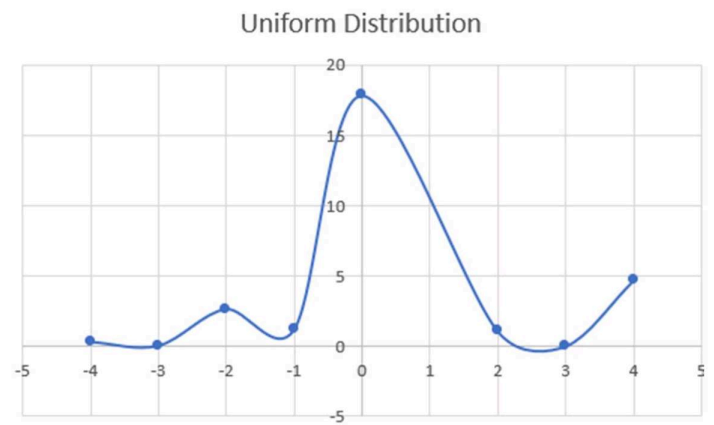
EXCEL :

x	f		x	(oi-ei)^2/ei
-4	12		-4	0.3196903
-3	15		-3	0.0542035
-2	8		-2	2.6559735
-1	10		-1	1.204646
0	30		0	17.841814
2	18		2	1.0630531
3	14		3	0.0011062
4	6		4	4.6736726
Total	113			

Given :  
n = 8      N = 113      Mean = 4.5

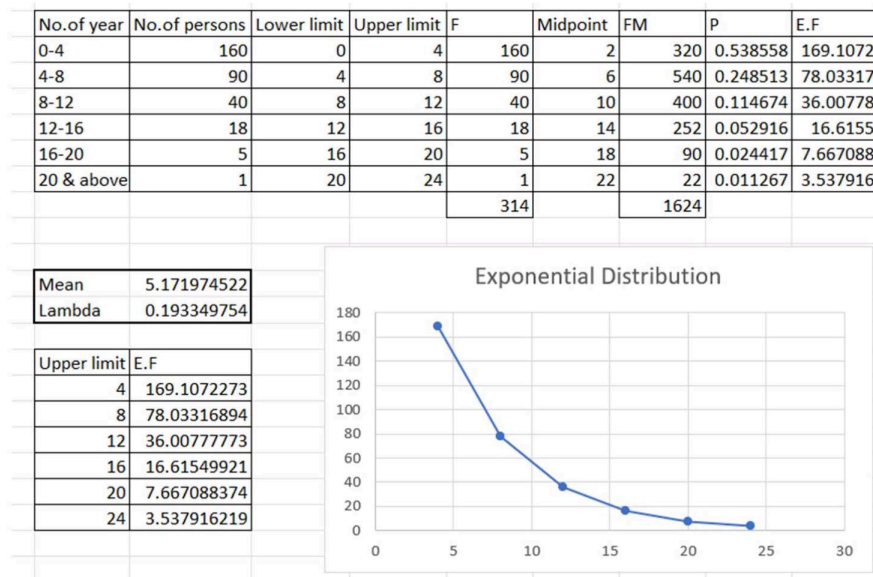
Variance      31.5

x	P(x)	Ei=N.P(x)	oi	(oi-ei)^2/ei
-4	0.125	14.125	12	0.3196903
-3	0.125	14.125	15	0.0542035
-2	0.125	14.125	8	2.6559735
-1	0.125	14.125	10	1.204646
0	0.125	14.125	30	17.841814
2	0.125	14.125	18	1.0630531
3	0.125	14.125	14	0.0011062
4	0.125	14.125	6	4.6736726
	1	113	113	27.814159



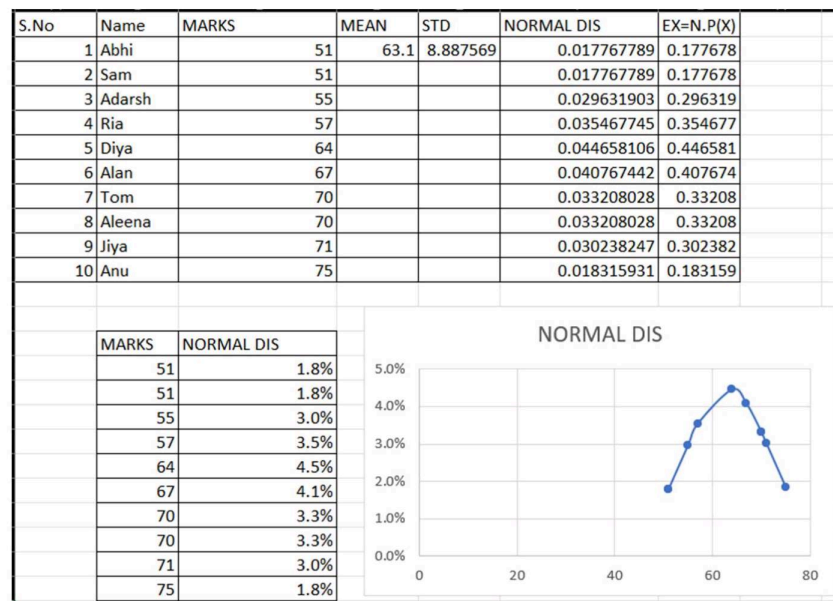
## 6. Plotting and fitting of Exponential distribution and graphical representation of probabilities.

EXCEL :



## 7. Plotting and fitting of Normal distribution and graphical representation of probabilities.

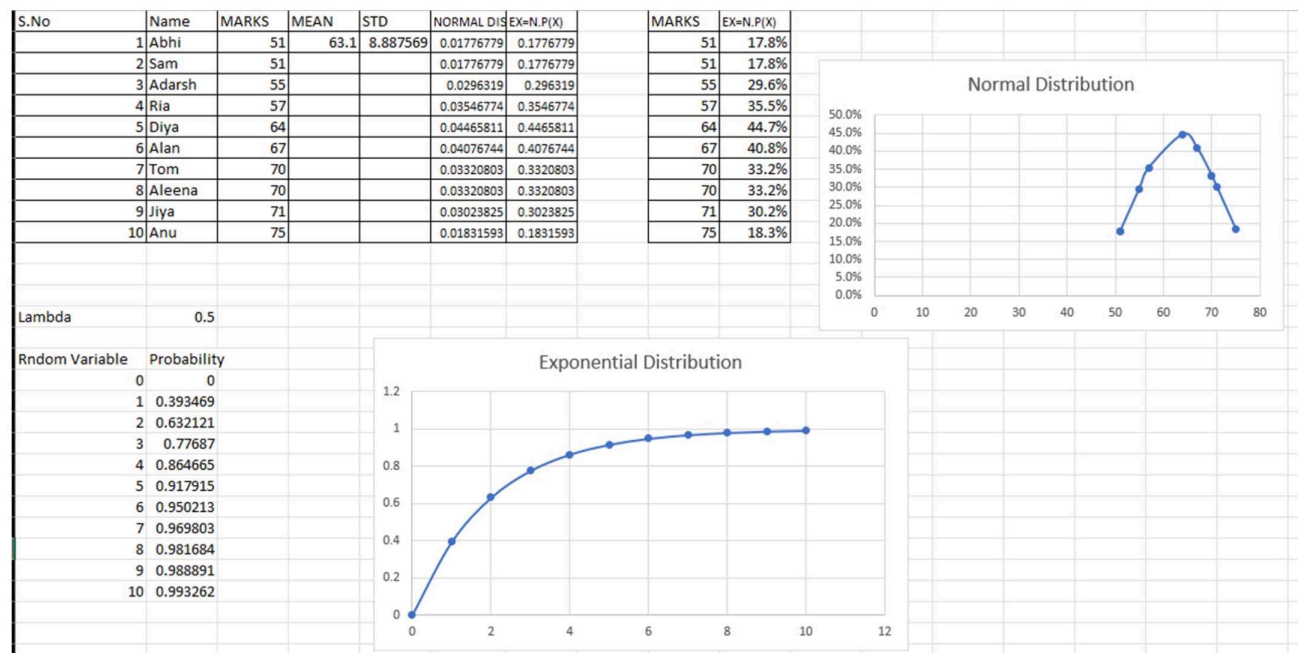
EXCEL :





## 8. Calculation of cumulative distribution functions for Exponential and Normal distribution.

EXCEL :



## 9. Application problems based on the Binomial distribution.

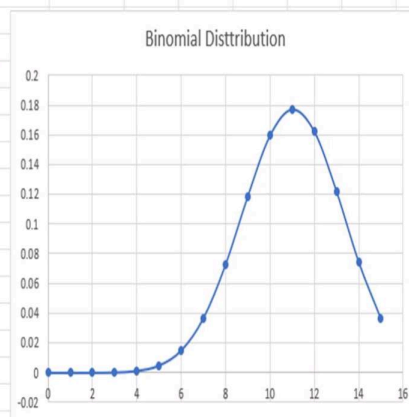
### EXCEL :

Suppose you play a game that you can only either win or lose. The probability that you win any game is 55%, and the probability that you lose is 45%. Each game you play is independent. If you play the game 20 times, write the function that describes the probability that you win 15 out of the 20 times

n (no. of trials)	20
Success in a trial	0.55

p	Find P(X=15)	Answer
0.55	0.036470916	0.036471

k : no. of success	Binomial Distribution
0	1.15945E-07
1	2.8342E-06
2	3.29082E-05
3	0.000241327
4	0.001253559
5	0.004902808
6	0.014980803
7	0.036619741
8	0.072730875
9	0.118524388
10	0.159349455
11	0.177054951
12	0.162300371
13	0.122072074
14	0.074599601
15	0.036470916

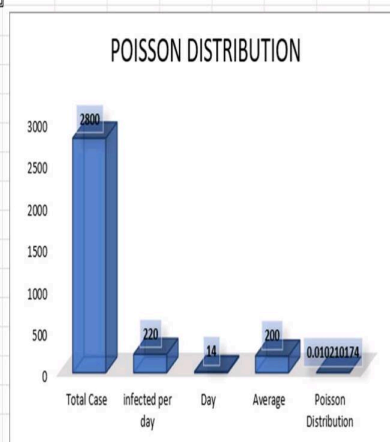


## 10. Application problems based on the Poisson distribution.

### EXCEL :

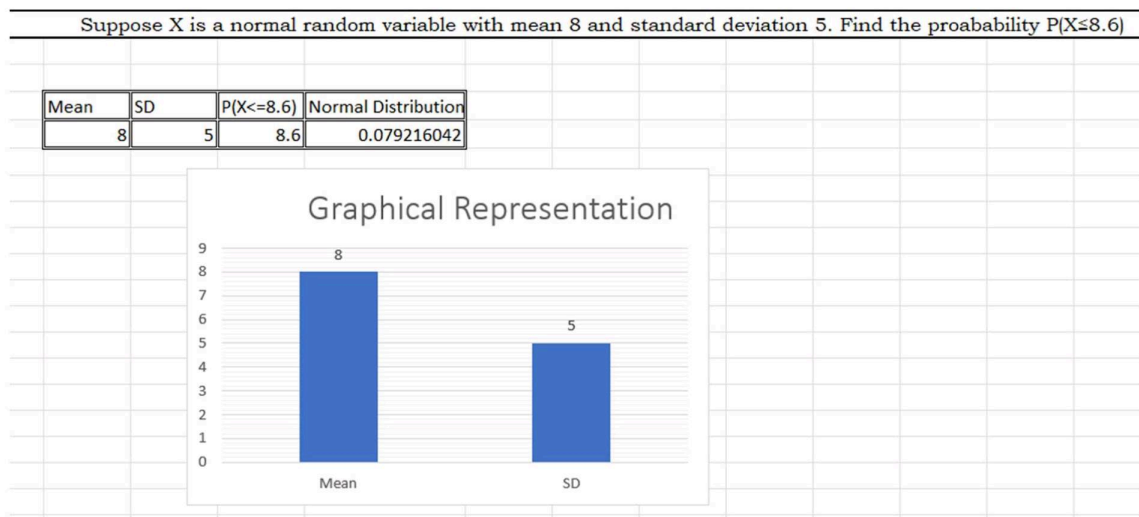
Calculate the probability that there will be 220 infected people by COVID-19 in a one day using the Excel function = POISSON.DIST() if a total of 2800 new cases are recorded in the last 14 days.

Total Case	infected per day	Day	Average	Poisson Distribution
2800	220	14	200	0.010210174



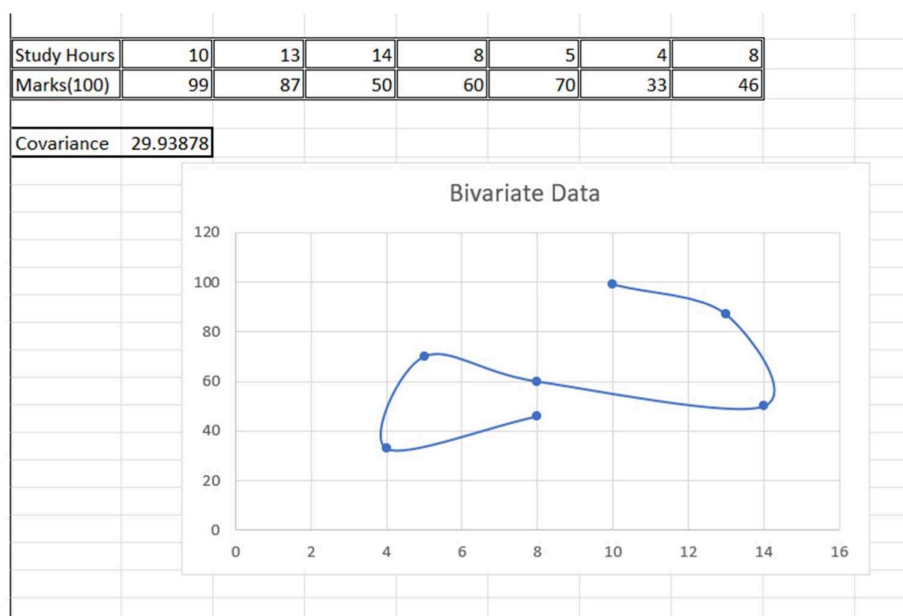
## 11. Application problems based on the Normal distribution.

EXCEL :



## 12. Presentation of bivariate data through scatter-plot diagrams and calculations of covariance.

EXCEL :





### 13. Calculation of Karl Pearson's correlation coefficients.

EXCEL :

X	Y	x=X-mean	y=Y-mean	x^2	y^2	xy
92	7	48.4	2	2342.56	4	96.8
16	2	-27.6	-3	761.76	9	82.8
19	1	-24.6	-4	605.16	16	98.4
62	8	18.4	3	338.56	9	55.2
83	4	39.4	-1	1552.36	1	-39.4
47	2	3.4	-3	11.56	9	-10.2
15	7	-28.6	2	817.96	4	-57.2
36	8	-7.6	3	57.76	9	-22.8
26	4	-17.6	-1	309.76	1	17.6
40	7	-3.6	2	12.96	4	-7.2
43.6	5	0.00	0	6810.4	66	214
		r =	0.319195			
		r = Karl Pearson's correlation coefficient				
		$r = \frac{\sum xy}{\sqrt{\sum x^2 * \sum y^2}}$				

14. To find the correlation coefficient for a bivariate frequency distribution.

EXCEL :

x/y	2	4	6	8	fx	xfx	x^2fx
5	0	1	2	3	6	30	150
10	1	1	2	4	8	80	800
15	2	2	1	1	6	90	1350
20	3	2	0	0	5	100	2000
fy	6	6	5	8	25	300	4300
yfy	12	24	30	64	130		
y^2fy	24	96	180	512	812		

Mean (x)	12		
Mean (y)	5.2		
Covariance	-7.6	Correlation Coefficient	-0.61579
SD (x)	5.291503		
SD (y)	2.332381		

15. Generating Random numbers from discrete (Bernoulli, Binomial, Poisson) distributions.

EXCEL :

15. Generating Random numbers from discrete (Bernoulli, Binomial, Poisson) distributions.	
Type of distribution	Random Value
Binomial Random Number	54

16. Generating Random numbers from continuous (Uniform, Normal) distributions.

EXCEL :

16. Generating Random numbers from continuous (Uniform, Normal) distributions.	
Type of distribution	Random Variable
Binomial Random Variable	0.704764089