Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam – 2081 Bhadra/Ashwin

Program:	**Diploma in Computer Engineering/ Information Technology**	**Full Marks: 80**
Year/Part:	**II/II (2022)**	**Pass Marks: 32**
Subject:	**Statistics and Probability**	**Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Group 'A' **[3×10=30]**

Attempt ALL questions.

1. Raj obtained samples of CFL bulbs, from two suppliers. He got the sample tested in his laboratory for the length of the life. The result of the tests is given below:

Length of Life	No. of Bulbs	
	Supplier A	Supplier B
100-200	8	6
200-300	10	12
300-400	10	12
400-500	6	8

Which suppliers bulbs show greater variability in the length of life?

2. Calculate the coefficient of correlation between the ages of 100 mothers and daughters from the following data:

Age of mothers (in years)	Age of daughters (in years)				
	5-10	10-15	15-20	20-25	25-30
15-25	6	3	-	-	-
25-35	3	16	10	-	-
35-45	-	10	15	7	-
45-55	-	-	7	10	4
55-65	-	-	-	4	5

3. What do you mean by statistics? Write down scope of statistics. Why statistics is important in Engineering?

Cont. .....

Group 'B' [10×5=50]

Attempt ALL questions.

4. What do you understand by secondary data? Explain the various sources of secondary data.
5. Find the geometric mean and harmonic mean of 32, 35, 36, 37, 39, 41, 43.
6. Find the 7^{th} decile and 60^{th} percentile from following data:

Marks	20-30	30-40	40-50	50-60	60-70	70-80
No. of Students	3	10	15	16	4	2

7. Calculate the standard deviation and coefficient of variation from the following data:

Class	0-20	20-40	40-60	60-80	80-100
Frequency	5	7	13	9	6

8. Draw a pie charts form the following:

City	Waling	Bidur	Banepa	Kusma	Dharan
Milk production (in liter)	800	750	550	400	500

9. Find the regression equation of Y on X form the following data. Also, estimate the value of Y when X=10.

X	5	9	13	17	21
Y	3	8	13	18	23

10. Find the mode from the following data:

Value	0-10	10-20	20-30	30-40	40-50
Frequency	8	10	15	20	12

11. A can solve 90% of the problem given in a book and B can solve 70%. What is the probability that at least one of them will solve a problem selected at random from the book?
12. If 25% of the electric bulbs manufactured by a company are defective, find the probability that out of 5 bulbs chosen at random (a) no bulb (b) 1 blub (c) at least one bulb will be defective.
13. On average there are four road accidents per week in Kathmandu. Using Poisson distribution, find the probability of:
    a. No. of accidents per week
    b. 3 accidents per week
    c. At least 2 accidents per week

Good Luck !

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Scholarship Exam - 2080 Magh/Phagun

Program:	**Diploma in Computer Engineering/ Information Technology**	**Full Marks: 80**
Year/Part:	**II/II (2022)**	**Pass Marks: 32**
Subject:	**Statistics and Probability**	**Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

[3×10=30]

Group 'A'

Attempt ALL questions.

1. a. Define primary data. What are the methods of collecting primary data?

   b. Define classification of data. Explain the objects and methods of classification.

2. Draw the histogram and frequency polygon of the following data. Also, find the mode.

Sale (in Rs.)	0-50	50-100	100-150	150-200	200-250	250-300
No. of shop	4	8	6	5	4	2

3. a. Calculate the coefficient of correlation from the following data:

X	2	4	5	6	8	11
Y	18	12	10	8	7	5

   b. Find the lower and upper quartiles form the following data:

Class	0-10	10-20	20-30	30-40	40-50
Frequency	15	14	16	20	15

Group 'B'

[10×5=50]

Attempt any TEN questions.

4. Find the geometric mean and harmonic mean form the following data:

   20, 22, 24, 26, 28

5. The mean and standard deviation of a set of 100 items were found to be 40 and 12 respectively. On checking it was found that two items were wrongly taken as 23 and 15 instead of 43 and 18. Calculate correct mean and standard deviation.

6. Find the 6^{th} deciles and 40^{th} percentiles from the data given below:

Variables	10	20	30	40	50	60
Frequency	2	4	6	5	3	1

Cont. .....

7. Represent the following data by percentage bar diagram:

Items of Expenditure	Expenditure (in Rs.)	
	A	B
Food	160	220
Clothing	80	100
Education	160	320
Fuel and Lights	400	640
Others	480	600

8. Find the mean deviation from median and its coefficient from the following data:

Class	40-50	50-60	60-70	70-80	80-90
Frequency	10	12	25	25	3

9. Find the mean, variance and standard deviation for the following probability distribution:

X	100	200	300	400	500	600
P(x)	0.05	0.1	0.15	0.3	0.3	0.1

10. Find the regression equation of X on Y from the data. Also, find the value of X when Y=5

Price (X)	10	12	13	12	16	15
Demand (Y)	40	38	43	45	37	43

11. Four cards are drawn at random form a well shuffled deck of 52 cards. Find the probability that all four cards are (a) spade (b) black.
12. Three lights are chosen from 15 bulbs of which 5 are defective. Find the probability that (a) none of them defective (b) at least one defective.
13. If 25% of the workers in a factory are suffering from disease. If 10 workers are chosen at random. Find the probability that (a) 5 workers are suffering (b) at least 1 worker is suffering.
14. The daily wages of 1000 workmen are normally distributed around the mean of Rs. 70 and standard deviation 5. Find the probability that the workers whose wages (a) between Rs. 69 and Rs. 72 (b) greater than 75.

OR

The mean and varience of a binominal distribution are 3 and 2 respectively. Find n, p and q.

Good Luck !

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Back Exam - 2080 Magh/Phagun

Program: Diploma in Computer/IT Engineering — **Full Marks: 80**

Year/Part: II/II (2013, 2018, 2016) — **Pass Marks: 32**

Subject: Statistics and Probability — **Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Group 'A'

[3×10=30]

Attempt ALL questions.

1. The following table gives bivariate frequency distribution of 50 clerks according to age in years and pay in rupees.

Age	Pay			
	250–300	300–350	350–400	400–450
20–30	8	3	–	–
30–40	2	5	2	2
40–50	–	2	9	6
50–60	–	–	5	6

Calculate the coefficient of correlation between the age in years and pay in rupees.

2. Following are the marks obtained by two students A and B in 10 test of 100 marks each:

Tests	1	2	3	4	5	6	7	8	9	10
A	44	80	76	48	52	72	68	56	60	54
B	48	75	54	60	63	96	72	51	57	66

If the consistency of the performance is the criteria for awarding a prize, who should get the prize?

3. Find the G.M. and H.M. of the following data:

Expenditure (Rs.)	No. of Families
200–300	10
300–400	15
400–500	25
500–600	16
600–700	14

Cont. .....

Group 'B'

[10×5=50]

Attempt ALL questions.

4. Give that A.M. is equal to 7.3, find the missing frequency in the following data:

X	5	6	7	8	9
Frequency	4	6	12	?	8

5. Find the quartile deviation and its coefficient from the following data:

Class	0–40	40–80	80–120	120–160	160–200	200–240	240–280
Frequency	5	15	30	18	10	8	4

6. Draw a histogram, frequency polygon and the frequency curve representing the following figures:

Lengths of Leaves (CMS)	4–6	6–8	8–10	10–12	12–14	14–16
No. of Leaves	10	12	16	30	18	8

7. Define statistics. What are the limitations of statistics?

8. Find mean deviation from median and its coefficient from the following data:

Class	0–10	10–20	20–30	30–40	40–50
Frequency	5	8	15	16	6

9. Calculate the coefficient of correlation from the following data of price and demand:

Price	4	6	9	12	14	20
Demand	14	12	10	14	13	16

10. A problem in statistics is given to three students A, B, C whose chances of solving it are $1/3$, $1/4$, $1/5$ respectively. Find the probability that the problem will be solved.

11. If 20% of the electric bulbs manufactured by a company are defective, find the probability that out of 4 bulbs chosen at random (a) 1 (b) 0 (c) at most 2 bulbs will be defectiv

12. Find the 6th decile and 30th percentile from the following data:

Class	0–10	10–20	20–30	30–40	40–50	50–60
Frequency	8	12	20	40	12	8

13. The numbers of accidents occurring in a plant in a month follows Poisson distribution with mean as 5.2. Find the probability of occurrence of less than 2 accidents in a plant during a randomly selected month.

Good Luck !

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2079 Chaitra/2080 Baishakh

Program: Diploma in Computer/IT Engineering | **Full Marks: 80**

Year/Part: II/II (2013, 2016, 2018) | **Pass Marks: 32**

Subject: Statistics & Probability | **Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Group 'A'

Attempt All questions. **[3x10=30]**

1. Luci obtained samples of CFL bulbs from two suppliers. She got the sample tested in her laboratory for the lengths of the life. The results of the tests are given below:

Length of Life (in hours)	No. of Bulbs	
	Supplier A	Supplier B
100-200	8	6
200-300	10	12
300-400	16	12
400-500	6	8

Which supplier's bulb show greater variability in the length of the life?

2. Following are the marks obtained by the students X and Y in 6 tests of 100 marks each:

Test	1	2	3	4	5	6
X	56	72	48	69	64	81
Y	63	74	45	57	82	63

If the consistency of the performance is the criteria for awarding a prize, who should get the prize?

3. What do you mean by statistics? Write down scope of statistics.

Group 'B'

Attempt ALL questions. [10x5=50]

4. Calculate the G.M. and H.M. form the following data:
   32, 35, 36, 37, 39, 41, 43
5. Differentiate between primary and secondary data. Point out the sources of secondary data.

Cont.....

6. Draw a pie chart to represent the area in millions of square kilometers of oceans of the world:

Ocean	Area (Million Square Kilometer)
Pacific	70.8
Atlantic	41.2
Indian	28.5
Antarctic	7.6
Arctics	4.8

7. Find the regression equation of γ on χ from the following data:

X:	5	9	13	17	21
Y:	3	8	13	18	23

8. From the following data, calculate the marks in mathematics obtained by a student who has secured 80 marks in English:

	Math	English
Mean Mark	80	64
S.D. of Mark	3	4

Correlation of coefficient, r = -0.40

9. A class consists of 60 boys and 40 girls. It two students are chosen at random, what will be the probability that: i) Both are Girls ii) One Boy and one Girl

10. The mean and standard deviation of the binomial distribution are 40 and 6 respectively. Find the value of n.p and q.

11. A dice is thrown 3 times. Getting an even number is considered as a success. Find the probability of getting i) No success ii) at least one success.

12. If a random variable X follows Poisson distribution such that P(X=1)= P(X=2), find: a. the mean of the distribution

b. P(X-0)

13. Find mean, standard deviation and C.V.from the following data :

Size :	6	9	12	15	18
Frequency :	7	12	19	10	3

Good Luck !

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2078, Chaitra-2079 Baishakh

Program: Diploma in IT/Computer Engineering | **Full Marks: 80**

Year/Part: II/II (2008, 2016, 2013, 2018) | **Pass Marks: 32**

Subject: Statistics and Probability | **Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Group 'A'

[3×10=30]

Attempt ALL questions.

1. What is statistics? Write down important of statistics.
2. Find the regression equation of X on Y and Y on X from the following data:

X	5	9	13	17	21
Y	3	8	13	18	23

3. The table given below presents the frequency distribution of weight s of 80 apples selected at random from a bit consignment.

Weight (In gms.)	110-119	120-129	130-139	140-149	150-159	160-169	170-179	180-189
Frequency	5	7	12	20	16	10	7	3

Find median, two quartiles, 4th decile and 80th percentile.

Group 'B'

[10×5=50]

Attempt ALL questions.

4. List out the methods of collecting primary data.
5. Find the geometric mean and harmonic mean of 32, 35, 36, 37, 39, 41, 43.
6. Find mean deviation from mean and its coefficient from the following data:

Class	0-10	10-20	20-30	30-40	40-50
Frequency	5	8	15	16	6

7. Calculate the mean and coefficient of variation from the following data:

Profit (in Rs.)	0-10	10-20	20-30	30-40	40-50
No. of Shops	8	13	16	8	5

8. A bag contains 8 white and 3 red balls. If two balls are drawn at random, find the probability that (i) both are white (ii) both are red (iii) one is of each color.

Cont.....

9. Draw a histogram and frequency polygon of the following data:

Temp (°C)	5-10	10-15	15-20	20-25	25-30	30-35
No. of Days	2	5	12	18	10	3

10. Calculate Karl Pearson's coefficient of correlation from the following data:

X	6	2	10	4	8
Y	9	11	9	8	7

The arithmetic means of X and Y series are 6 and 8 respectively.

11. The probability of hitting a target is $\frac{1}{5}$. If six hitting are made, find the probability that: (i) none will strike the target (ii) exactly 2 will strike the target.

12. A chance that A, B and C can solve a problem is $\frac{1}{3}, \frac{1}{4}$ and $\frac{1}{5}$ respectively. Find the probability that the problem will be solved.

13 On average there are four road accidents per week in Kathmandu. Using Poisson Distribution, find the probability of:

(a) no accident per week
(b) 3 accidents per week
(c) at least 2 accidents per week.

Good Luck !

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2077, Chaitra

Program: Diploma in Computer/IT Engineering **Full Marks: 80**

Year/Part: II/II (2018, 2013, 2016, 2008, New+Old) **Pass Marks: 32**

Subject: Statistics & Probability **Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Group 'A'

Attempt All questions. **[3x10=30]**

1. The following table gives bivariate frequency distribution of 50 clerks according to age in years and pay in rupees. [10]

Pay

Age	250-300	300-350	350-400	400-450
20-30	8	3	-	-
30-40	2	5	2	2
40-50	-	2	9	6
50-60	-	-	5	6

Find the correlation coefficient

2. From the data given below state which model of refrigerator has greater uniformity? [10]

Life (in years)	0-2	2-4	4-6	6-8	8-10	10-12
Model A	5	16	13	7	5	4
Model B	2	7	17	19	9	1

3. The weight of 50 students of a class are classified below. Compute median and 7^{th} decile. [10]

Wt.(kgs):	40-50	50-60	60-70	70-80	80-90
No. of Student:	10	12	25	25	3

Group 'B' [10x5=50]

4. Calculate G.M. and H.M. from the following data: [5]

Class	75-125	125-175	175-225	225-275	275-325
Frequency	10	20	30	6	4

5. Draw the histogram and frequency polygon from the following data: [5]

Marks	0-10	10-20	20-30	30-40	40-50
Frequency	15	26	65	30	10

6. The mean and standard deviation of the binomial distribution are 40 and 6 respectively. Find the value of n.p and q. [5]

7. Find the coefficient of correlation from the following data: [5]

X	123	125	137	139	141	135	147
Y	26	31	41	41	46	36	51

8. A dice is thrown 3 times. Getting an even number is considered as a success. Find the probability of getting. [5]

   i) No success ii) at least one success

9. A class consists of 60 boys and 40 girls. It two students are chosen at random, what will be the probability that. [5]

   i) Both are Boys ii) One Boy and one Girl

Cont.....

10. Find the regression equation of y on x from the following data: [5]

X:	5	9	13	17	21
Y:	3	8	13	18	23

Also, find the value of y when x is 10.

11. Find the quartile deviation (Q.D.) and its coefficient from the following data : [5]

Variable	10-15	15-20	20-25	25-30	30-35	35-40	40-45
Frequency	2	4	6	7	3	1	5

12. Find the mode from the following data: [5]

Value :	0-10	10-20	20-30	30-40	40-50
Frequency :	8	10	15	20	12

13. Find mean, standard deviation and C.V.from the following data : [5]

Size :	6	9	12	15	18
Frequency :	7	12	19	10	3

Good Luck !

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2076, Shrawan/Bhadra

Program: Diploma in Computer/IT Engineering **Full Marks: 80**

Year/Part: II/II (2010, IT 2016/2008) **Pass Marks: 32**

Subject: Statistics & Probability **Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Attempt All questions.

Group 'A' [3x10=30]

1. Family income and its percentage spent on food in the case of hundred families gave the following bivariate frequency distribution. Calculate the coefficient of correlation.

Food Expd %)	Family Income (Rs)				
	200-300	300-400	400-500	500-600	600-700
10-15	-	-	-	3	7
15-20	-	4	9	4	3
20-25	7	6	12	5	-
25-30	3	10	19	8	-

2. Calculate A.M., median and mode from the following data:

Class	100-110	110-120	120-130	130-140	140-150	150-160
Frequency	6	8	10	18	15	20

What type of distribution is it? Write with reason.

3. Following data represent the lives of two models of refrigerators A and B.

Life (in years)	0-2	2-4	4-6	6-8	8-10	10-12
Model A	5	16	13	7	5	4
Model B	2	7	17	19	9	1

State which model has greater uniformity?

Cont.....

Group 'B' [10x5=50]

4. Define statistics. What is the importance of statistics? Write with examples.

5. Find the G.M. and H.M. from the following data:

Wages(in RS)	10-30	30-50	50-70	70-90
No. of workers	15	25	20	10

6. Calculate the 4^{th} decile and 80^{th} percentile from the following data:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of Students	5	8	7	12	28	20	10	10

7. Calculate the Karl person's coefficient of correlation between the following prices and sales:

Price (in Rs.)	25	19	28	26	20	18	24	20	22	18
Sales (in Rs.)	60	54	66	70	53	59	62	51	65	50

8. Find the most likely production corresponding to a rainfall 40 mm from the following data:

	Rainfall (in mm)	Production (in m ton)
Average	30	500
S.d.	5	100

Coefficient of correlation = 0.8

9. A bag contains 4 white, 5 red and 6 black balls. Two balls are drawn at random. What is the probability that (a) both are of same colours (b) one is white (c) both are of different colours.

10. The incidence of occupations diseases in an industry is such that the workman have a 20% chance of suffering from it. What is the probability that out of six men, four or more will contact the disease?

11. A random variable X has the following probability functions.

X	-2	-1	0	1	2	3
P(X)	0.1	k	0.2	2k	0.3	k

Fins the value of K, mean and variance.

12. Calculate M.D. from mode and its coefficient from the following data:

Class	0-10	10-20	20-30	30-40	40-50
Frequencies	4	8	6	12	10

13. Draw a less than and more than give from the following data:

Rainfall (in mm)	10-20	20-30	30-40	40-50	50-60	60-70
No. of days	4	6	10	20	18	2

Also, Compute the Value of median.

Good Luck !

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2075, Shrawan/Bhadra

Program: Diploma in Information technology /Computer Engineering — **Full Marks: 80**

Year/Part: II/II [New + Old Course] — **Pass Marks: 32**

Subject: Statistics and Probability — **Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Group 'A'

Attempt All the Questions. **[3×10=30]**

1. The following table gives bivariate frequency distribution of 50 clerks according to age in years and pay in rupees.

Age	Pay			
	250-300	300-350	350-400	400-450
20-30	8	3	-	-
30-40	2	5	2	2
40-50	-	2	9	6
50-60	-	-	5	6

Calculate the coefficient of correlation.

2. Calculate A.M., median and mode from the following data:

Value	0-9	10-19	20-29	30-39	40-49	49-50	60-69
Frequency	8	10	15	20	15	10	8

Explain the nature of distribution also.

3. Following are the marks obtained by the students X and Y is 6 tests of 100 marks each.

Test	1	2	3	4	5	6
X	56	72	48	69	54	81
Y	63	74	45	57	82	63

If the consistency of the performance is the criteria for awarding a prize, who should get the prize?

Cont. .....

Group 'B'

Attempt All questions. **[10×5=50]**

4. Distinguish between primary and secondary data. What are the sources of secondary data?

5. Find the G.M. and H.M. from the following data:

Marks	20-30	30-40	40-50	50-60	60-70
No. of students	2	7	10	4	6

6. Calculate the 9th decile and 80th percentile from the following data:

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	5	8	7	12	28	20	10

7. Calculate the Karl person's coefficient of correlation from the following data:

X	7	8	a	9	11
Y	8	4	10	6	2

Arithmetic means of x and y series are 6 and 8 respectively.

8. Find the regression equation of X on Y from the following data:

X	5	7	8		10	12	18
	11	8	6		5	4	2

Estimate the value of X when Y=12.

9. Suppose three people are selected at random from a group of 7 men and 6 women. What is the probability that 2 men and 1 woman are selected?

10. The average percentage of a failure in a certain examination is 25%. What is the probability that out of 5 students 2 or more students will pass the examination?

11. A random variable x has the following probability distribution.

X	-1	0	1	0
P (X)	1/3	1/6	1/6	1/3

Calculate the expected value of X, variance and S.D.

12. Find the Quartile deviation and its coefficient from the following data:

Marks	20-30	30-40	40-50	50-60	60-70	70-80
No. of Students	2	5	6	8	4	4

13. Draw a pie-chart for the following percentage composition of a family expenditure:

Food = 40% Rent = 20% Clothing = 15%
Education 10% Health 10% Other Items = 5%

Good Luck !

Council for Technical Education and Vocational Training
Office of the Controller of Examinations
Sanothimi, Bhaktapur
Regular/Back Exam-2074, Shrawan/Bhadra

Program: Diploma in Computer/IT Engineering
Year/Part: II/II [IT 2008, D.Com 2010]
Subject: **Statistics and Probability**

Full Marks: 80
Pass Marks:32
Time: 3 *hrs*

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Group-A

Attempt (All) Questions. **[10x3=30]**

1. Find the Mean, Median and Mode from the following data:

Wages(Rs)	10-20	10-30	10-40	10-50	10-60
No. of Workers	15	33	63	83	100

2. Find the regression equations of Y on X and X on Y form the following data and estimate the probable value of y when x is 125

x:	75	85	95	105	110	115
Y:	63	68	74	86	100	113

3. Calculate the quartiles and hence find C.V from the data.

Variable	Frequency	Variable	Frequency
10-15	2	30-35	21
15-20	5	35-40	16
20-25	7	40-45	8
25-30	13	45-50	3

Group-B

Attempt (All) Questions. **[10x5=50]**

4. Distinguish between primary and secondary data. Point out the sources of secondary data.

5. Find the 7^{th} Decile and 60^{th} Percentile from the following data:

Marks	20-30	30-40	40-50	50-60	60-70	70-80
No. of Student	3	10	15	16	4	2

Contd...

6. Draw both "less than" and "more than" Ogives from the following data of Rain fall (mm) and compute the value of the median.

Rain fall	10-20	20-30	30-40	40-50	50-60	60-70
No. of days	4	6	10	20	18	2

7. Calculate Karl Pearson's coefficient of correlation from the following data:

X:	52	65	48	72	90	42	68	77
Y:	59	52	58	69	100	63	74	88

8. Suppose 3 people are selected at random from a group 7 men and 6 women. What is the probability that 2 men and 1 woman are selected.

9. If A, B, C are three mutually exclusive events with $\frac{1}{3}$ P(A) = $\frac{2}{3}$ P(B) = $\frac{1}{6}$ P(C) $find\ P(A), P(B)\ and\ P(C)$

10. From the past record it was found that 20% of items are defective. If we choose six items at random. By using Binomial probability law. Find the probability that.
    i) None of them will be defective.
    ii) Exactly two will be defective.

11. Calculate the G.M. and H.M. of the following data:

Variable:	12	18	24	37	41	44	56
frequency:	2	9	15	24	17	9	4

12. Draw a Pie Diagram to represent the following population in a town.

males	females	girls	boys	total
2000	1800	4200	2000	10000

13. What are standard deviation and the coefficient of variation? What are the main objects of coefficient of variations?

Good Luck!

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2073, Bhadra/Aswin

Program: Diploma in Information Technology/Computer Engineering | **Full Marks: 80**

Year/Part: II/II (New Course) | **Pass Marks: 32**

Subject: Statistics and Probability | **Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Group (A)

Attempt All questions. **[3×10=30]**

1. From the data of marks obtained by students in Math and Physics, find the Karl Pearson correlation coefficient and interpret the result.

Mark in Math	Marks in Physics				
	23-30	30-40	40-50	50-60	60-70
25-35	5	9	3	-	-
35-45	2	10	25	2	-
45-55	1	2	12	2	3
55-66	-	-	4	16	5
65-75	-	-	-	4	2

2. From the data given below state which series is more uniform and why?

Length(cm)	10-20	20-30	30-40	40-50	50-60	60-70
No. of items form A	10	18	32	40	22	18
No. of items form B	18	22	40	32	29	10

3. Find mean, median and mode of income of the following data.

Income (000Rs)	0-500	500-1000	1000-1500	1500-2000	2000-2500	2500-3000
No. of Workers	231	304	400	296	123	68

Group (B)

Attempt All questions. **[10×5=50]**

4. Define the term statistics and write down the function of statistics.
5. If Average height of all the 51 plants is 40 cm. Find the missing frequencies corresponding to the height 30 and 50 cm.

Height (cm)	10	20	30	40	50	60
No. of plants	2	3	-	21	-	5

Cont. .....

6. Prepare the sub-divided bar diagram on percentage basis to the data.

Items of expenditure	Expenditure (Rs.)
Food	150
Clothing	125
Education	250
Miscellaneous	190
Rent	300

7. Find the quartile deviation from the data.
74, 75, 78, 84, 72, 66, 79, 61, 91, 52.

8. Find the regression line of mileage (y) on driving speed (x). Also Estimate the mileage of car if driving speed is 67.

Driving speed(x)	30	50	40	55	30	25	60	25
Mileage(y)	28	25	25	23	30	37	21	35

9. The probability that a contractor will get a plumbing contract is 2/3 and probability that he will get an electric contract is 4/9. If the Probability of getting at least one contract is 4/5. What is the Probability that he will get both the contracts?

10. By using the following probability distribution, find the expected sales (1000Rs.) and variance

Day	I	II	III	IV	V	VI	VII
Sales	90	60	190	50	75	55	80
Probability	0.25	0.18	0.12	0.05	0.1	0.2	0.1

11. If average number of road accident per month at certain intersection of road is 4. By using the Poisson Probability. Find:
i) Probability of no accident in a month
ii) Probability of 2 accidents in a month
iii) probability of less than 2 accidents in a month

12. Find geometric mean and harmonic mean from the data of salary(Rs).

Salary(Rs)	3500	4400	5100	7500	9000	10400
No. of Persons	5	7	10	15	13	16

13. Draw histogram and frequency polygon to the data.

Class	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	10	15	32	42	26	12	6

Good Luck !

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Program: Computer/IT Engineering

Full Marks: 80

Year/Part: II/II NEW COURSE **Pass Marks: 32**

Subject: Statistics and Probability **Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt ALL questions.

Group – 'A' **3x10=30**

1. What are the importances of diagram? Draw the angular diagram of following data.

Item of expenditure	Family- A	Family - B
Food	2000	2400
Clothing	800	1600
Hose rent	1000	1200
Education	300	800
Fuel and light	400	400
Miscellaneous	500	800

2. Calculate mean, median and mode from the following data.

Class	10-19	20-29	30-39	40-49	50-59	60-69	70-79
Frequency	8	10	15	20	15	10	8

Also, explain the nature of distribution.

3. If two dice are rolled once, what is the probability of gating?
   (i) a total score of 8
   (ii) a total of 4 or 5
   (iii) a total of divisible by 5
   (iv) a total score is 20
   (v) Showing same numbers.

Group - 'B' 10x5 = 50

4. Define the primary and secondary data. Point out the sources of secondary data.

5. In a sample study about coffee drinking habits in two towns, the following information was received.

   Town A: Male were 55%, male non-coffee drinkers were 30% and female coffee drinkers were 15%.

   Town B: Female were 40%, total coffee drinkers were 45% and male non-coffee drinkers were 20%. Present the above information in tabular form.

6. Find G.M. and H.M. from following data.

Marks	0-10	10-20	20-30	30-40	40-50
No. of Students	1	5	11	20	3

7. Calculate the 6th decile and 30th percentile from following data.

Class	100-150	150-200	200-250	250-300	300-350	350-400
Frequency	2	5	19	12	14	5

8. Goals scored by two teams A & B in football season were as follows:

No. of goals in match:			0	1	2	3
No. of Match	A	:	5	20	8	2
	B	:	10	12	3	10

Which team has greater uniformity?

9. Find quartile deviation and the coefficient of quartile deviation from following data.

X	10	20	30	40	50	60	70	80	90	100
F	2	4	8	20	15	19	9	7	5	1

10. Find the regression equation of demand on price from the data given below

Price (X)	5	6	7	9	15
Demand (Y)	10	12	13	17	18

11. A husband and wife appear an interview for two vacancies in the same post. The probability of husband's selection is 1/5 and that of wife selection is 1/7. What is the probability that

(i) both of them will be selected.

(ii) none of them will be selected.

(iii) only one of them will be selected.

12. In 4 tosses of a coin find the probability of getting:

(i) two heads (ii) no head

(iii) at least one head

13. A random variable X has the following probability function.

Value of x	-2	-1	0	1	2	3
P (x)	K	0.1	0.2	2K	0.3	K

Find the value of k and calculate the mean and variance.

THE END