

Mid-West University  
**Examinations Management Office**  
 Birendranagar, Surkhet  
 End Semester (Alternative/Physical) Examination-2078  
 Master of Business Administration (MBA)  
 Semester - I

Subject: Quantitative Approach to Management  
 Full Marks: 50 Pass Marks: 25

Course Code: MGT 516  
 Time: 3:00 Hours

*You are required to answer in your own words as far as applicable.*

**Attempt all of the following Questions:**

**5×10=50**

1. (a) The following table shows the survey results regarding the purchase behavior of Force TV and DVD players in the last six months of 300 household:

Purchased TV	Purchased DVD		
	Yes	No	total
Force TV	38	42	80
Not Force TV	70	150	220
total	108	192	300

- I. Compute the marginal and joint probabilities of the data given.
  - II. What is the probability that they purchased the Force TV or DVD player?
  - III. What is the probability that they purchased a DVD player given that household purchased a force TV?
- (b) On the average, 4 customers per minute at any one of the checkout counters of a grocery store. What is the probability that in the next two minutes there will be 2 customers arriving at a checkout counter?
2. (a) Marry Bartel, an auditor of a large credit card company, knows that, on average, the monthly balance of any given customer is \$112, and the standard deviation is \$56. If Mary audits 50 randomly selected accounts, what is the probability that the sample average monthly balance is below \$100? Also find the probability that the sample average monthly balance is between \$100 and \$130.
- (b) From a population of 540, a sample of 60 individuals is taken. From this sample, the mean is found to be 6.2 and standard deviation 1.368. Construct a 95% confidence interval for the mean.
3. (a) A manufacture intends that his electric light bulbs have a life of 1000 hours. He tests a sample of 20 bulbs, drawn at random from a batch, and discovers that the mean life of the sample bulbs is 990 hours with a standard deviation of 22 hours. Does this signify that the batch is not up the standard?
- (b) Four hundred employees of a factory are classified according to their levels and decisions. Do you agree to the statement that decision varies according to the level of employee?

Decisions	Senior Officer	Officer	Junior Officer	Total
Quick	60	80	70	210
Slow	40	60	90	190
Total	100	140	160	400

**OR**

In the development of new drugs for the treatment of anxiety, it is important to check the drug's effects on various motor functions, one of which is driving. The confab pharmaceutical company is testing three different tranquilizing drugs for their effects on driving skills. Subjects take a stimulated driving test, and their scores reflect their errors. More severe errors lead to higher scores. The results of these tests produced the following table:

Drug 1	245	258	239	241
Drug 2	277	276	263	274
Drug 3	215	232	225	247

At the 0.05 level of significance, does the average of three drugs affect driving skill differently?

4. A sample of 500 respondents was selected in a large metropolitan area to determine the various pieces of information concerning the consumer behavior. Among them one question was, "Do you enjoy clothing?" Of 240 males, 168 answered yes. Of 260 females, 220 answered yes.

I. Is there any evidence of significant difference between males and females in the proportion they enjoy shopping for clothing at 0.05 level of significance?

5. Two products are manufactured on each of the three machines. A pound of each product requires a specified number of hours on each machine, as presented as follows:

Machines	Machine-Hour Requirement	
	Product X	Product Y
1	3	2
2	1	4
3	5	3

The total hours available on machine 1, 2 and 3 are 10, 16 and 12 respectively. The profit contributions per pound of products X and Y are Rs 4 and Rs 3 respectively.

- I. Formulate and solve this problem as a profit maximization linear program.  
II. Which constraints are active and inactive?  
III. What are the slack and surplus associated with the constraints?

**OR**

Three related variable  $X_1$ ,  $X_2$  and  $X_3$  takes the following sets of values:

$X_1$	1	2	3	4	5
$X_2$	2	1	5	4	3
$X_3$	3	1	4	5	2

Calculate the partial correlation coefficient  $r_{12.3}$  and the multiple correlation coefficients  $R_{1.23}$

**The End**