



## POST GRADUATE DIPLOMA IN MANAGEMENT (2018-20) END TERM EXAMINATION (TERM-I)

Subject Name: **Quantitative Techniques in Management**  
Sub. Code: **PG 04**

Time: **02.00 hrs**  
Max Marks: **50**

**Note:**

1. Writing anything except Roll Number on question paper will be deemed as an act of indulging in unfair means and action shall be taken as per rules.
2. All questions are compulsory in Section A, B & C. Section A carries 2 Case Studies, 10 marks each. Section B carries 2 questions of 10 marks each and Section C carries 5 questions of 2 marks each.

### SECTION A

10×02 = 20 Marks

**Q. 1: Case Study:**

Universal Burger is concerned about product waste, so they sampled their burger waste record from the past year with the following results:

**Number of Burgers Discarded During a Shift**

02	16	4	12	19	29	24	7	19	22	14	8	24	31	18	20	16	06
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- a) Construct a frequency distribution for these data and a relative frequency distribution. Use interval of 5 burgers.
- b) One of Universal Burger's goals is for at least 75 for shifts to have no more than 16 burgers wasted. Can you determine from the frequency distribution whether this goal has been achieved?
- c) What percentage of shifts have waste of 21 or fewer burgers? Which distribution did you use to determine your answer?

**Q. 2: Case Study:**

According to ORG- Nielsen survey, the perception of unfairness in the Indian GST Goods and service Tax) Code is spread evenly across income groups and age groups, and education levels. In an April 2018 survey of 1005 adults, ORG- Nielsen reported that all almost 60% of all people said the code is unfair, whereas slightly more than 60% of those making more than Rs 500000 viewed the code as unfair. Suppose that the following contingency table represents the specific breakdown of responses:

**Income Level**

GST Tax Code	Less Than Rs 500000	More than Rs 500000	Total
Fair	225	180	405
Unfair	280	320	600
Total	505	500	1005

- a) Give an example of simple event
- b) Give an example of joint event
- c) If a respondent is selected at random, what is the probability that he or she:
  - i) thinks the tax code is unfair
  - ii) thinks the tax code is unfair and make less than Rs 500000/-
  - iii) thinks the tax code is unfair or make less than Rs 500000/-

**SECTION B****10×02 = 20 Marks**

**Q. 3:** Human Power, the employment agency, has tested many people's data entry skills. Infotech Ltd needs a data entry person, and the person needs to be not only quick but also consistent. Human Power pulls the speed records for 4 employees with the data given below in terms of number of correct entries per minute. Which employee is best for Infotech based on relative dispersion?

Employee/ Speed						
Mohan Lal	63	66	68	62	69	72
Ram Kishore	68	67	66	67	69	
Yog Rishi	62	79	75	59	72	84
Rohan	64	68	58	57	59	

**Q-4:** Discuss various qualitative and quantitative methods of forecasting.

**SECTION C****05×02 = 10 Marks****Q.5 (A):**

- What is the probability of throwing a number greater than 3 with an ordinary die whose faces are numbered from 1 to 6
- In a class of 12 students, 5 are boys and remaining are girls. Find the probability that the student selected is a girl.

**Q. 5 (B):** The owner of "Car Show room" is interested in building a new show room. Owner will build if the average number of Cars sold during the first 6 months of 2017 is at least 300 or the overall monthly average for the year is at least 280. The data for the year 2017 are as follows:

Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
234	216	195	400	315	274	302	291	275	300	375	450

What is the owners decision and why?

**Q. 5 (C):** ABC Consulting has four types of professionals on its staff: managing consultants, senior associates, field staff and office staff. Average rate charged and the billing hours for each of these categories for the last year are as under:

Professionals	Billing (Hrs)	Rate (\$)/hr
Managing consultants	8000	75
Senior associates,	14000	40
Field staff	24000	30
Office staff	35000	15

ABC Consulting is trying to come up with average billing rate for estimating client charges for the next year. What do you think is an appropriate rate?

**Q. 5 (D):** The Manager (Quality Control) of Radisson Hotel has just received two dozen Cauliflowers from her supplier, but she is not ready to accept them. She knows from the invoice that the average weight of Cauliflower is 15 ounce, but she insists that all be of uniform weight. She will accept them only if the average weight is 15 ounces and the standard deviation is less than 1.0 ounce. Here are the weights of the Cauliflowers:

12.6	14.4	14.6	16.2	15.6	13.6	15	15.6	14.4	15	16.2	16.4
16	14.8	15.2	15.4	15.2	14.8	15	16.8	14.8	15.2	12.4	14.8

What is the chef's decision and why?

**Q. 5 (E):** Find the median for the following distribution

Gross profit as percentage of Sales	0-10	10-20	20-30	30-40	40-50
Number of Companies	22	38	46	35	20

