

Indian Maritime University
(A Central University, Goyvt of India)
End Semester Examinations – December 2024
Programme Name: MBA (ITL/PSM)
Semester: I
Subject Code: PG22/21T3104
Subject Name: QUANTITATIVE TECHNIQUES

Date: 13.12.2024

Max Marks: 60

Duration: 03 Hrs

Pass Marks: 30

General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.

Section A

Ten MCQs/Fill in the Blanks of 01 Mark each – Choose the correct answer as applicable.

1. Extreme value have no effect on_____
A. Mean B. Median C. Mode D. SD
2. if all observations are identical, then SD becomes
A. 1 B. -1 C. 0 D 2
3. Which one of the time-series components is short-term and regular
A. Secular Trend B. Cyclic C. Seasonal D. Random
4. which one of following is characteristics of Poisson distribution
A. Mean < Variance B: Mean = Variance
C: Mean > Variance D: Mean < SD
5. if $P(A/B) = P(A)$, then A & B are
A: Dependent B: Independent
C: Conditional D: Mutually Exclusive
6. A fair coin is tossed twice. The probability that two heads will occur is
A: 1.0 B: 0.25 C: 75 D: 0.50
7. Any hypothesis which is tested for the purpose of rejection under the assumption that it is true is -----
A: Statistical Hypothesis B: Composite Hypothesis
C: Null Hypothesis D: Alternative Hypothesis
8. Analysis of variance is a statistical method of comparing the _____ of several populations.
A. standard deviations

- B. variances
 - C. means
 - D. proportions
9. Which of the following index numbers is used to measure the relative change in the price of a basket of goods and services consumed by households?
- A. Producer Price Index (PPI)
 - B. Consumer Price Index (CPI)
 - C. GDP Deflator
 - D. Retail Price Index (RPI)
10. The correlation coefficient is used to determine _____.
- A. A specific value of the y-variable given a specific value of the x-variable
 - B. A specific value of the x-variable given a specific value of the y-variable
 - C. The strength of the relationship between the x and y variables
 - D. None of these

Section B

Five Questions of 02 Marks each

- 11. Validate the statement in brief, Fisher index known as ideal index
- 12. Explain Symmetric and Asymmetric distribution
- 13. Give two appropriate examples for positive and negative correlation
- 14. Write short notes on Type I and Type II errors with respect to hypothesis testing.
- 15. Study the trend by using centered three moving average

Month	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Sale	180	210	225	285	270	300	315	345

Section C

Seven Questions of 8 Marks each of which any 05 questions to be answered.

- 16. List out the significance of Statistics in Business Analytics
- 17. A Pharmaceutical firm would like to establish the relationship between the annual expenditure on R&D and the annual profits. Estimate the annual profits, if R&D expenditure is 10 crores.

Year	2017	2018	2019	2020	2021	2022
R&D Exp.	5	11	4	5	3	2
Annual Profits	31	40	30	34	25	20

18. Find the coefficient of correlation between Return on Market index and Return on Security.

Market Index	24	10	36	-16	20	32	14	60
Security Index	20	12	26	-8	26	28	8	48

19. Time series data for a firm over the past few years are given here

Year	2016	2017	2018	2019	2020	2021	2022	2023
Production (in thousand tonnes)	27	32	29	36	48	62	56	78

- Obtain the straight line trend equation taking 2019-20 as the base year.
- From the trend values for various years eliminate the trend component.
- Estimate the trend values for 2024.

20. Determine the weighted aggregate composite Price Index Number by using Laspeyre, Paasche, and Fisher Methods

Item	2018		2023	
	PRICE	QTY	PRICE	QTY
A	160	15	150	17
B	150	10	200	20
C	240	15	300	15
D	300	10	350	8

21. Explain briefly Probable Sampling Techniques and Non-Probable Sampling Techniques.

22. What are the steps involved in conducting testing of hypothesis?