D4BBA2203 (PAGES 3) **Reg.No.....**

Name: .....

FOURTHSEMESTER UG DEGREE EXAMINATION, APRIL 2024

(Regular/Improvement/Supplementary)

BBA

GBBA4C04T: QUANTITATIVE TECHNIQUES FOR BUSINESS

Time:2 ½ Hours **MaximumMarks: 80**

SECTION A: Answer the following questions. Each carries *two* marks.

(Ceiling 25 Marks)

1. Give any two applications of quantitative techniques in business.
2. What do you mean by cyclical fluctuations in time series?
3. Fit a trend line by the method of semi averages to the data given below:

Year:	2000	2001	2002	2003	2004	2005	2006	2007	2008
Value:	60	65	62	58	66	72	75	68	74

4. What are the limitations of an index number?
5. Compute price index number by using Marshall-Edgeworth method to the following data:

Items	P_0	P_1	Q_0	Q_1
A	20	30	10	12
B	4	4	9	16
C	14	25	17	23

6. Calculate the correlation coefficient between the variables X and Y from the following data :

n = 30 ,$\sum X = 118$, $\sum Y = 93$, $\sum X^2 = 556$, $\sum Y^2 = 309$, $\sum XY = 368$

7. What are the limitations of regression analysis?
8. The coefficient of correlation between X and Y is 0.87, σ_x = 3 ,σ_y = 3.06 . Find b_{yx} .
9. Represent union, intersection and complement of a set diagrammatically.
10. What is the probability of obtaining (i) All heads (ii) One head (iii) At least one head (iv) Atleast two heads , when three coins are tossed together?
11. State Bayes' theorem.
12. Let A and B be events with P(A) = 1/2, P(B) = 1/3 and P (A ∩ B) = 1/4. Find P(A|B).
13. What are the uses of binomial distribution?
14. A coin is tossed 5 times. What is the probability of obtaining more than 3 heads?
15. The incidence of occupational disease in an industry is such that the workman has 25% chance of suffering from it. What is the probability that out of six workmen 4 or more will contact the disease?

(PTO)

SECTION B: Answer the following questions. Each carries *two* marks.
(Ceiling 35 Marks)

16. What are the common techniques of operations research? Explain.
17. Distinguish between time reversal test and factor reversal test.
18. Calculate Laspeyre's and Paasche's prices for the following data:

Commodity	Base Year		Current Year	
	Price (Rs)	Quantity (Kg)	Price (Rs)	Quantity (Kg)
Rice	20	10	60	5
Wheat	15	15	40	10
Maize	5	20	15	10

19. Calculate the coefficient of rank correlation from the following data :

X :	45	56	39	54	45	40	56	60	30	35
Y :	40	56	30	44	36	32	45	42	20	36

20. In a correlation analysis, the values of the correlation coefficient and its probable error were found to be 0.90 and 0.04 respectively. Find the value of n.
21. An urn A contains 2 white and 4 black balls. Another urn B contains 5 white and 7 black balls. A ball is transferred from the urn A to urn B. Then a ball is drawn from urn B. Find the probability that it will be white.
22. The probability that a doctor will diagnose a particular disease correctly is 0.6. The probability that the patient will die by his treatment, after correct diagnosis is 0.4. The probability of death after wrong diagnosis is 0.7. A patient who had the disease died. What is the probability that the disease was not correctly diagnosed?
23. Between the hours of 2 p.m and 4 p.m , the average number of telephone calls per minute coming into the switch board of a company is 2.5. Find the probability that during one particular minute , there will be,

    (a) Exactly 2 calls. (b) No phone calls at all. (c) At leat 2 calls

SECTION C: Answer any *two* question. Each carries *ten* marks.

24. Calculate the trend values by finding 4 - yearly moving averages. Show the trend on a graph.

Year:	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Sales:	80	81	85	79	86	94	90	108	120	121	148

25. The following data relate to the scores obtained by 9 salesmen of a company in an intelligence test and their weekly sales in thousand rupees.

Salesmen :	A	B	C	D	E	F	G	H	I
Test score :	50	60	50	60	80	50	80	40	70
Weekly sales :	30	60	40	50	60	30	70	50	60

26. What are the different schools of thought on the interpretation of probability? Explain.
27. 1000 light bulbs with a mean life of 120 days are installed in a new factory; their length of life is normally distributed with standard deviation 20 days. (i) How many bulbs will expire in less than 90 days? (ii) It is decided to replace all the bulbs together, what interval should be allowed between replacements if not more than 10% should expire before replacement?

(2x 10 = 20 Marks)