Date: *SUBJECT: STATISTICS*

II PUC
MOCK - EXAMINATION

Timings Allowed: 3Hrs.   *Total Marks: 100*

SECTION A

Answer any 10 of the following. Each carry 1 mark.   **10x1=10**

1. Give the formula for calculating neo natal mortality rate.
2. Mention any one limitation of index number.
3. How fisher's price index is related to Laspeyer's and Paasches's price index number?
4. What is time series?
5. For a Bernoulli variate the probability of failure is 0.4. find the mean of the distribution.
6. In a Binomial distribution, if n=7 and p= 0.7, find standard deviation.
7. Define critical region.
8. What do you mean by null hypothesis?
9. In transportation problem the number of positive allocations are 6 and m + n -1 = 7. Is the solution degenerate?
10. In SQC what is chancre variation?
11. In LPP, what is meant by feasible solution?
12. What is a rectangular game?

SECTION B

Answer any 10 of the following. Each carry 2 mark.   **10x2=20**

13. Mention the sources of collection of Vital statistics.
14. Given $\sum p_1 q = 150$ $\sum p_0 q = 125$. Compute the suitable index number.
15. State 2 characteristics of index number.
16. Mention all the components of time series.
17. Write any two assumptions of interpolation.
18. Mean and variance of Normal distribution are 20 and 4 respectively. Find lower and upper quartiles.
19. For a Binomial distribution if mean = 4, and variance = 2, find the parameters of the distribution.
20. Sizes of samples are 30 and 35. Population standard deviation are 3 and 6 respectively. Compute S.E of difference of mean.
21. Define the term – Type I error, and Type II error.
22. Define the term a) Process control b) Product control.
23. Write any 2 properties of a game.
24. Under what conditions is E O Q model without shortage applicable?

Answer any 8 of the following. Each carry 5 mark.   8x5=40

25. Compute CDR and ASDR for the following data:

Age (in years)	Population	Deaths
Under 10	20000	600
10-19	10000	240
20-30	50000	1250
40-59	30000	1050
60and above	10000	500

26. Compute CPI from the following data:

Group	Group index 1	Group index 2	Group weight
Food	180	190	45
Cloth	210	200	5
Fuel	250	260	20
Housing	200	190	15
Others	220	220	15

27. State any 5 uses of consumer price index number.

28. Compute 4 yearly moving averages for the following:

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010
Profits	122	166	88	200	244	366	322	400	422

29. From the following data estimate the number of persons earning wages below Rs. 90 per day.

Wages per day	Below 40	40-60	60-80	80-100	100-120
No. of persons	500	240	200	140	100

30. The number accidents happening in a locality follows Poisson distribution with mean 3. On a randomly selected day what is the probability that there will be a) no accidents b) atmost 2 students.

31. In a sample of 1000 students from college 750 were found to use brand A pens and among 900 Student of another college, 600 were found to use the same brand pens. Test whether the proportion of brand A pen users in both colleges are same.

32. From the following random observations can we assume that the population means are same at 5% L.O.S.

X1	23	24	25	22	20	30
X2	28	18	26	30	20	-

33. Solve the following LPP graphically.

Max Z= 5x + 4y

S. t 4x + y ≥ 40

2x + 3y ≥ 60

x ,y ≥ 0

34. Solve the following game. Also obtain the pay – off matrix of other player.

	B1	B2	B3	B4
A1	3	-5	7	4
A2	6	8	7	6
A3	1	3	3	-2
A4	12	4	6	4

35. An auto owner from his past records finds that the maintenance cost per year of an auto whose purchase price is Rs. 80000 are given below. Obtain the optimum replacement policy.

Year	1	2	3	4	5	6	7	8
Maintenance cost (Rs.)	10000	13000	17000	22000	29000	38000	48000	60000
Resale value (Rs.)	40000	20000	12000	6000	5000	4000	4000	4000

36. 10 samples of size 5 were inspected and the number of defectives in each of them were noted as below. Number of defectives: 0,2,3,1,2,3,0,1,2,1. Get the control limits for number of defectives and analyse.

SECTION D

Answer any 2 of the following. Each carry 10 mark. 10x2=20

37. For the following data, compute Standardized Death Rate and hence comment.

Age (in years)	Village A		Village B		Standard Population
	Population	Deaths	Population	Deaths	
0-10	700	20	500	22	650
10-20	1500	25	1700	17	1200
20-60	3020	30	2800	24	3500
60-100	465	20	800	26	700

38. For the following data find Laspyere's Paasche's and Dorbish Bowley price index number. And test for TRT and FRT for Fishers.

Item	Base Year		Current Year	
	PRICE	QUANTITY	PRICE	QUANTITY
A	10	5	12	4
B	15	8	18	7
C	6	3	4	5
D	3	4	3	5

39. Fit an equation of the type $Y = a + bX$ to the following time series. Plot the original and trend values on a graph. Estimate for the year 2007.

Years	2001	2002	2003	2004	2005	2006
Sales (000's)	30	50	85	110	135	170

40. For the following data, fit a poison distribution and test whether it is a food fit for the following distribution: (Test at 1% LOS).

SECTION E

Answer any 2 of the following. Each carry 5 mark. 2x5=10

41. Heights of 1000 soldiers are normally distributed with mean 165cms and SD 6cms. Find the number of soldiers with height. a) less than 160cms b) between 160cms and 170cms.

42. For the following data test whether the intelligence of the child and literacy of parent are independent.

	Good	Average
Educated	45	20
Uneducated	30	55

43. I.Q. of 5 students before and after training are given below:

Student	1	2	3	4	5
Before training	122	126	105	132	111
After training	117	118	123	133	105

44. A company has to supply 12000 units of a product per year to its customers. The shortage cost is assumed to be infinite. The holding cost is Rs. 0.2 per month and set up cost is Rs. 350. Determine a) number of orders per year b) minimum total variable cost per year.