Date: *SUBJECT: STATISTICS*

II PUC
MOCK PAPER II

Timings Allowed: 3Hrs 15 Minutes.   *Total Marks: 100*

Instructions:
1.Graph sheets and statistical tables will be provided on request.
2.Scientific calculators may be used
3.All working steps should be clearly shown

SECTION-A

I.Answer all the following questions.   10×1=10

1. Give the formula for calculating neo natal mortality rate.
2. Define quantity relative.
3. How Fisher's price index number is related to Laspeyre's and Paasche's index numbers?
4. Give an example for secular trend in time series.
5. For a binomial distribution mean is 12 and variance is 10. Give your conclusion.
6. Name the distribution in which mean is greater than variance.
7. Define confidence coefficient.
8. what is point estimation?
9. For a chi square distribution if variance =10,find the parameter of the distribution.
10. In a Statistical quality control what is a chance variation?
11. Write down two advantages for inventory.
12. Define feasible solution in L.P.P.

SECTION-B

II.Answer all the following questions.   10×2=10
13.Given the CDR for a population of 20000 is 8,find the number of deaths.
14.Write any two Characteristics of an index number.
15.Explain circular test.
16.Write normal equations for fitting a straight line trend.
17.Write any two assumptions for interpolation and Extrapolation.
18.Write down the range and parameters of a Hyper Geometric Distribution.
19. If X is a Normal variate with mean μ and S.D. σ, find the probability that X takes a value in the 3σ neighborhood of μ.
20.Sizes of two samples are 30 and 35 . Population standard deviations are 3 and 6 respectively. Compute S.E. of difference of means.

21. If

a	b
c	d

Are the cell frequencies ,write the chi square statistic in testing independence of attributes.

22.Define single sampling plan and double sampling plan.
23.What is replacement policy? Name a situation where replacement is carried out.
24. What are the needs to carry inventory?

SECTION-C

III.Answer all the following questions.   **8×5=40**

25. Compute GRR from the following data

Age(in years)	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Female Population(in '000s)	37	46	35	32	31	25	22
No. of births	1211	7342	9222	6500	2382	432	10

26 .Explain the different steps in the construction of consumer price index number.

27. Compute the consumer price index number by aggregative expenditure method

Items	Price (Rs)		Expenditure
	2005 (100)	2010	
Rice	16	22	320
Wheat	12	18	96
Pulse	20	35	40
Sugar	17	20	85
Oil	50	55	150
Salt	10	8	30
Clothing	40	20	160
Fuel	200	380	200
Housing Rent	1500	2500	3000
Others	2200	3000	17000

28. Find trend values of the following time series by four yearly moving average method.

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Sales('000)	20	60	10	50	30	70	20	60	40	80

29. Estimate the production for the year 2006 and 2012 from the following data by using Binomial expansion method.

Years	2000	2002	2004	2006	2008	2010	2012
Production	30	42	56	-	80	97	-

30. 5% of the bulbs manufactured by a company is found to be defective. Find the probability that a box of 100 bulbs contains a)exactly 4 ii)3 or more defectives.

31. For the following data test whether the intelligence of the child and literacy of parent are dependent.

	Good	Average
Educated	45	20
Uneducated	30	55

32.A random sample of 200 employees of a firm has mean salary Rs.12000 and standard deviation Rs.300.Test whether the mean salary of the employees of the firm is regarded as more than Rs.12500(test at %% level of significance).

33. From a sample of 15 observations , the standard deviation was found to be 3.Test at 5% level of significance the population S.D is less than 3.1

34. Calculate the control limits for mean and range charts for the following data on the basis of fuses, Samples of size5 being taken every hour.

Sample no.	1	2	3	4	5	6	7	8	9	10	11	12
Sample mean	69.4	63.4	57	64	57.4	82	85	112.4	33.4	46	93.6	95.6
Sample range	45	48	62	48	36	81	78	42	69	84	48	75

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

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

36.Obtain an initial basic feasible solution for the following T.P by NWCR method. Also obtain transportation cost .

	x	y	z	supply
A	10	11	2	17
B	8	9	6	33
C	1	7	5	38
D	3	14	12	22
Demand	46	44	30	120

SECTION-D
IV.Answer all the following questions.   **2×10=20**

37. For the following two localities compute standardized death rates and comment.

Age(in years)	Standard population	Locality A		Locality B	
		Population	ASDR	Population	ASDR
0-9	25,000	8,000	15	4,000	20
10-29	30,000	12,000	6	10,000	8
30-59	35,000	10,000	14	6,000	16
60& above	15,000	4,000	60	2,000	40

38. Construct Dorbish Bowley's Q_{01} from the following data and test whether Fisher's price index number satisfies FRT

	Price		Expenditures	
	2008	2010	2008	2010
A	12	10	96	90
B	18	20	72	100
C	15	20	90	160
D	10	8	90	64

39. From the following data fit an exponential curve of the type $Y=ab^x$ and estimate the profit for the year 2015.

Year	2008	2009	2010	2011	2012	2013	2014
Profit	9	22	26	46	52	40	49

40.Fit a Binomial distribution to the data and test for goodness of fit at 5% level of significance

No.of defective items	0	1	2	3	4	5	6	7
No.of samples	2	45	46	32	33	15	25	11

SECTION-E

IV. Answer all the following questions.   **2×5=10**

41. There are 20 fruits in a basket, out of which 8 are mangoes and rest are oranges. A girl picks 5 fruits at random from the basket. Find the probability that she gets 3 mangoes.

42. A lot contains 2% defective items.40 items chosen from it. Another lot contains 1% defective items.60 chosen from it. Find $E(p_1-p_2)$ and $S.E(p_1-p_2)$.

43. The following table gives the number of defectives found during inspection of 8 samples of size 100 each. Find the   suitable control limits.

Sample no.	1	2	3	4	5	6	7	8
No.of defectives	1	3	2	2	1	0	2	1

44. Ten students are selected at random from a college and their heights are found to be 100,104,110,118,120,122,124,126 and 128 cms. Test at 5% level of significance that the average height of the students of the college is 110cms.