JAIN COLLEGE

463/465, 18th Main Road, SS Royal, 80 Feet Road, Rajarajeshwari Nagar,
Bangalore - 560 098

Date: Dec-2017 ***SUBJECT: STATISTICS***

II PUC
MOCK-II

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

Instructions to candidates:

1. **Write the serial number of questions properly as given in the question paper while answering**
2. **Write the correct and complete answers.**

Section- A

I. ***Answer any ten of the following questions:*** ***10 X 1 = 10***

1. Define Fecundity
2. Name the index number, which does not satisfy unit test.
3. Write down the Dorbish-Bowley's quantity index number.
4. Which index number is used for the measurement of seasonal variation?
5. Write down the P.M.F of a hyper geometric distribution.
6. Write down range and parameters of Bernoulli distribution
7. Write down the chi-square test statistic for test of variance.
8. Define point estimation in the test of hypothesis.
9. Write a merit of acceptance sampling in SQC.
10. What is T.P?
11. What is meant by two person zero sum game?
12. Given H_1: $\mu_{1>}\ \mu_{2.}$Write down $H_{0.}$

Section- B

II. ***Answer any ten of the following questions:*** ***10X 2 = 20***

13. Mention any two vital events occurring in human population.
14. If $P_{01}(P)$ = 270 and $P_{01}(DB)$ =265.4 , then find $P_{01}(L)$.
15. State circular test in index number.
16. Given the parabolic equation $y=a+bx+cx^{2.}$ Write down the normal equations.
17. Differentiate between interpolation and extrapolation.
18. Mention two features of students t-distribution.
19. Calculate mean and variance of hyper geometric distribution with a=12,b=8,n=5.
20. Define acceptance region and rejection region under testing of hypothesis.
21. Calculate $SE(P_1-P_2)$, given n_1=80, n_2=40, P_1= 0.8 and P_2=0.4.
22. Write down upper and lower control limits for number of defects when standards are known.
23. Does the following game have saddle point?

	B_1	B_2
A_1	3	2
A_2	5	4
A_3	0	-1

24. Mention the two objectives of transportation problem.

Section- C

III. Answer any eight of the following questions: ***8X 5 = 40***

25. A) Calculate Crude birth rate and general fertility rate for the following data

Age (years)	0-14	15-19	20-29	30-39	40-49	50+
Population						
Men	12000	14500	12800	9400	8400	7500
Women	11100	13200	11600	8800	7900	7200
No. Of live births	-	196	460	500	231	-

B) The quinquennial A.S.F.R for women of child-bearing group of a community are 25, 60, 70,40, 20, 12 and 5. Compute T.F.R.

26. Test whether Marshall-Edgeworth's satisfy time reversal test.

Items	2004		2006	
	Price(in Rs)	Quantity	Price(in Rs)	Quantity
A	8	15	9	15
B	7	12	8	13
C	10	10	10	10
D	12	14	15	16

27. A family budget enquiry reveals that the average expenditure of families on food, clothing, house rent, fuel and miscellaneous are 30%, 10%, 20%, 20% and 20% respectively of the respective group indices are 130,170,160,200 and 180. Find the consumer price index number.
28. Compute 5 yearly moving averages for the following time series and indicate trend

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Value	27	28	30	32	29	31	34	36	35

29. Use Newton's method to find the number of employees, whose wages 600 per day.

Wages	300	500	700	900	1100
No of employees	36	31	24	22	18

30. There are 100 wristwatches in a box, 4 of them are defective. Random samples of 4 wristwatches are selected. What is the probability of getting less than 3 defective wristwatches? If there are 50 such boxes, in how many of them will you find exactly one defective wristwatch?
31. Write down the features of Normal distribution.
32. From the following table, test whether the sample means differs significantly at 5% L.O.S.

	I	II
Sizes	80	90
Means	52	55
SD	8	7

33. A random sample of 400 tins of Vanaspati as mean weight 4.96 kgs and SD 0.4 kgs. Test at 1% LOS that the average weight of tins of Vanaspati is less than 5kgs.
34. Draw R-chart for the following data and give your conclusion. R: 6,5,8,4,1,2 and n=5

35. Solve the following game using the principle of dominance

Player B

Player A	B_1	B_2	B_3	B_4
A_1	1	2	0	-3
A_2	4	6	3	5
A_3	3	-1	-2	0

36. For the following transportation problem, find the initial basic solution by MMM and obtain the cost associated with the solution.

		Warehouse			
		I	II	III	Availability
Factors requirement	A	15	10	9	350
	B	15	8	9	100
	C	10	6	4	110
	b_j	80	150	330	

Section- D

IV. ***Answer any two of the following questions:*** ***2 X 10 =20***

37. From the following data calculate CDR's and STDR's of two cities A and B by taking City B as standard population.

Age in years	City A		City B	
	Population	Deaths	Population	Deaths
0-20	5000	100	7000	105
20-50	14000	392	15000	465
50-70	20000	300	25000	500
70 & above	1000	200	3000	390

38. Construct Fischer's index number for the following data. Test whether it satisfies T.R.T & FR.T

COMMODITY	Base year		Current year	
	Price (Rs)	Quantity	Price (Rs)	Expenditure
A	7	70	9	100
B	9	80	11	110
C	15	25	20	40
D	20	30	25	40

39. Fit a linear trend for the following time series and obtain trend values. Estimate the trend value for 2010.

Year	2004	2005	2006	2007	2008	2009
Sales	79	87	106	111	117	130

40. Following is the data regarding the number of mistakes per page found in a book. Fit a Poisson distribution. Test at 5% L.O.S. that it is good fit.

No of mistakes per page	0	1	2	3	4
No. of pages	24	13	5	5	3

Section- E

V. Answer any two of the following questions: ***2 X 5 = 10***

41. The daily wages of workers of a factory are normally distributed with mean Rs.700 and SD Rs.40. Find the probability of workers whose daily wages will be a) More than Rs.800

    b) Between Rs.690 and Rs.720.

42. For the following data test whether the effect of vaccine in controlling the independence of a certain disease. Test at 5%LOS.

	Affected	*Unaffected*
Inoculated	*1*	*25*
Non-inoculated	*13*	*7*

43. Following is data regarding the I.Q. of five students before and after treatment of Yoga.

I.Q before	118	120	116	115	125
I.Q after	125	118	125	120	130

44. The cost of a scooter is Rs36,000. Its maintenance cost and resale value at different age given below:

Years of service	*1*	*2*	*3*	*4*	*5*	*6*
Maintenance cost (Rs)	*800*	*1300*	*1900*	*2700*	*3900*	*5400*
Resale value (Rs)	*28000*	*22000*	*20000*	*18000*	*17000*	*16000*

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