B.Sc. DEGREE END SEMESTER EXAMINATION - OCTOBER/NOVEMBER 2018

SEMESTER – 1: STATISTICS FOR MATHEMATICS AND COMPUTER APPLICATION

COURSE: **15U1CPSTA1-15U1CRCST1: DESCRIPTIVE STATISTICS**

(Common for Regular 2018 admission and improvement 2017/ supplementary 2017/2016/2015 admissions)

Time: Three Hours   Max. Marks: 75

Use of Scientific calculators and Statistical tables permitted

PART A
*Answer **all** questions. Each question carries **1** mark.*

1. Give a relationship between A.M, G.M and H.M.
2. Define Coefficient of Variation.
3. How does Variance is affected by the change of origin and scale?
4. Give an empirical relation between range and standard deviation.
5. What is meant by Skewness in a frequency distribution?
6. Provide any one use of Time Series analysis.
7. Define index number.
8. Discuss the factor reversal test.
9. What is meant by the curve fitting?
10. Write the normal equations for fitting a power curve of the form $y = ax^b$

PART B
*Each question carries **3** marks. Maximum marks from this part is **15***

11. A candidate obtained the following % of marks in an examination: English 75, Statistics 60, Mathematics 59, Physics 55, and Chemistry 63. Find the weighted mean if weights 2, 1, 3, 3 and 1 respectively are allotted to the subjects. Calculate also the simple mean.
12. Two samples of size 40 and 50 respectively have the same mean but different standard deviations 19 and 8 respectively. Find the standard deviation of the combined sample of size 90.
13. Explain the fitting of straight line of the form $y = ax + b$.
14. Calculate the mean deviation from the mean of : 300, 400, 700, 200, 600, 500, 100
15. What is circular test and what does it signify?
16. What is a Time Series? What are its main components?
17. Define Kurtosis. Given the 2nd, 3rd and 4th central moments are 50, 100 and 6600, find the measure of kurtosis.

PART C
*Each question carries **5** marks. Maximum marks from this part is **20***

18. Calculate the mode from the following table and the mean deviation about the median of the following data

Age (Years):	Below 25	Below 30	Below 35	Below 40	Below 45
No. of Employees:	8	23	51	81	103
	Below 50	Below 55	Below 60		
	113	117	120		

19. From the marks given below obtained by two students taking the same course, find out the more consistent student.

A	58	59	60	65	66	52	75	31	46	48
B	56	87	89	46	93	65	44	54	78	68

20. Write short notes on the following: a) Difference between Skewness and Kurtosis, b) Difference between central moments and moments about any arbitrary origin.

21. Compute Central moments of the observations: 14, 16, 18, 20, 25, and 27.

22. Find out trend by using 4-yearly moving average

Year	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Production (Lakh of tons)	5	6	7	7	6	8	9	10	8	10	11	11

23. From the following data, prepare a consumer price index number for 1984 based upon 1983 (using aggregate expenditure method)

Item	Weight	Prices(1983)	Prices(1984)
A	40	16.00	20.00
B	25	40.00	60.00
C	5	0.50	0.50
D	20	5.12	6.25
E	10	2.00	1.50

PART D

*Each question carries **10** marks. Maximum marks from this part is **30***

24. Find the mean, median and mode of the following data:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No. of Students	3	5	7	10	12	15	12	6	2	8

25. Calculate the first four moments about the mean for the following data.

X	1	2	3	4	5	6	7	8	9
F	1	6	12	25	30	20	9	5	2

26. Fit a second degree parabola to the following data

X	1	2	3	4	5	6	7	8	9
Y	2	6	7	8	10	11	11	10	9

27. Discuss the various steps involved in the construction of consumer price index number.