Reg. No. | | | | | | | | | |

CMH 404

I Semester M.Com. Degree Examination, December 2018
Choice Based Credit System (CBCS)
COMMERCE
Business Statistics

Time : 3 Hours Max. Marks : 70

SECTION – A

Note : Answer **any four** questions out of seven, **each** question carries **10** marks, answer to **each** question should **not** exceed **4** pages. **(4×10=40)**

1. Simplify $\frac{4\sqrt{3}}{2-\sqrt{2}} - \frac{30}{4\sqrt{3}-\sqrt{18}} - \frac{\sqrt{18}}{3+2\sqrt{3}}$.
2. If $C_0, C_1, C_2, ..., C_n$ denote the coefficients of the expansion of $(1 + x)^n$ prove that $C_0 + 3C_1 + 5C_2 + ... + (2n + 1).C_n = (n + 1)2^n$.
3. Sum to n terms the series 0.7 + 0.77 + 0.777 + ...
4. What are the components of a time series ? How would you isolate trend by the method of least squares ? Illustrate your answer by an example.
5. What are indices and surds ? Explain the laws of indices.
6. Explain empirical or statistical approach to probability.
7. What do you understand by Statistical Quality Control (S.Q.C.) ? Discuss briefly its need and utility in industry.

SECTION – B

Answer **any two** questions out of **three** questions, **each** question carries **15** marks, answer to **each** question should **not** exceed **7** pages. **(2×15=30)**

8. The following table gives the profits of a concern for 5 years ending 1996 :

Year :	1992	1993	1994	1995	1996
Profits : **(in Rs. thousands)**	1.6	4.5	13.8	40.2	125.0

Fit an equation of the type $Y_c = ab^X$

P.T.O.

9. a) State and prove the 'multiplication' law of probability with suitable example.

   b) The number of defects per unit in a sample of 330 units of manufactured product was found as follows :

No. of defects :	0	1	2	3	4
No. of units :	214	92	20	3	1

   Fit a Poisson distribution to the data.

   (Given : $e^{-0.439} = 0.6447$).

10. a) Explain clearly the basis and working of control charts for mean and range.

    b) The following data refers to visual defects found during the inspection of the first 10 samples of size 56 each from a lot of two-wheelers manufactured by an automobile company :

Sample number :	1	2	3	4	5	6	7	8	9	10
Number of defectives :	4	3	2	3	4	4	4	1	3	2

   Calculate the values for central line and the control limits for P-chart (Fraction Defective Chart) and comment if the process can be regarded in control or not).
