

# RAMAKRISHNA MISSION VIDYAMANDIRA

Belur Math, Howrah – 711 202

ADMISSION TEST – 2019

ECONOMICS (Honours)

Date : 20-06-2019

Full Marks : 50

Time: 03·00 p.m. – 4·30 p.m.

**[Use a separate Answer Book for each group]**

## Group – A

Answer all the following questions :

[6×5]

1. A valid identifier in the programming language COBOL consists of a string of one to six alphanumeric characters (from the characters : A, B, C, ....., Z, 0, 1, 2, 3,.....,9) beginning with a letter. How many COBOL identifiers are there?
2. If the third term in the expansion of  $\left(\frac{1}{x} + x^{\log_{10} x}\right)^5$  is 1000, find the value(s) of x.
3. There is a five-volume dictionary among 50 books arranged on a shelf in random order. If the volumes are not necessarily kept side by side, what is the probability that they occur in increasing order from left to right?
4. A function  $f : \mathbf{R} \rightarrow \mathbf{R}$  satisfies the equation  $f(x+y) = f(x)f(y)$  for all real values, and  $f(x) \neq 0$ . Suppose that  $f(x)$  is differentiable at  $x = 0$  and  $f'(0) = 2$ . Prove that for all  $x \in \mathbf{R}$ ,  $f'(x) = 2f(x)$ .
5. Evaluate  $\int_0^{1.7} [x^2] dx$ .

## Group – B

### [Essay Writing]

6. Increase in the number of private vehicles has caused problems like rising air pollution, traffic jams, lack of parking space, road rage etc. The solution lies in the use of public transport.

‘The importance of Public Transport’. — Write an essay on this topic within 300 words.

[20]

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