

# RAMAKRISHNA MISSION VIDYAMANDIRA

Belur Math, Howrah – 711 202

ADMISSION TEST – 2015

ECONOMICS (Honours)

Date : 19-06-2015

Full Marks : 50

Time: 12.30 p.m – 02.00 p.m

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

## Group – A

1. Write in brief (around 300 words) what steps would you take for the economic development of the country if you are selected as the Prime Minister of the country. [20]

## Group – B

2. Find the value of  $\int_{-1}^1 \frac{|x+2|}{x+2} dx$ . [5]
3. Let  $f(x) = x^2 e^x$ .  
a) Find the regions where  $f$  is increasing and where  $f$  is decreasing. [3]  
b) Find the local maxima and minima of  $f$ . [2]
4. Show that  $\lim_{x \rightarrow 1} \frac{x + x^2 + x^3 + \dots + x^n - n}{x - 1}$  is  $\frac{n(n+1)}{2}$ . [5]
5. Show that  $f(x) = x \left( \frac{a^x - 1}{a^x + 1} \right)$  is an even function,  $a > 0$ . [5]
6. The Harmonic mean of two numbers is 4. Their arithmetic mean is  $A$  and geometric mean is  $G$ . It has also been found that  $2A + G^2 = 27$ . Find the two numbers. [5]
7. How many 6-letter words can be formed with A, B and C so that each letter appears at least once in each word? [5]

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