RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous Degree College with P.G. Section under University of Calcutta)

FIRST YEAR

B.A./B.SC. FIRST SEMESTER (July – December), 2011

Mid-Semester Examination, September, 2011

Date : 13/09/2011 **ELECTRONICS (General)**

Time : 11 am – 12 noon Paper : I Full Marks : 25

Answer <u>All</u> : [12·5×2 = 25]

1. a) In case of K-map which non-weighted code is used? And also state why is it used? Simplify the boolean function F(w, x, y, z) = ∏m (0, 1, 2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 14).
   b) The equation $5x^2 - 50x + 125 = 0$ has its roots as 5 and 8. Find base of the number system.
   c) If xy = 0, then prove that x´y + xy´ = x+y using Boolean algebra. [6½+4+2 = 12½]

2. a) Compare and contrast between 1's complement and 2's complement arithmetic? State the disadvantage(s) of 1's complement arithmetic?
   b) Prove that NOR operator is not associative.
   c) Design a combinational circuit that takes as input in 2 4 2 1 code and produces its equivalent gray code. [3+2½+7 = 12½]