REVA UNIVERSITY

DEPARTMENT OF ELECTRONICS & COMMUNICATION

Information theory and coding (Code: 14ECS21)

Date: 31/10/2015 Deadline: Monday (02/11/15) Morning *Homework 5 for B.E ECE (V Sem)*

1. Problem 10.11 from Simon haykins book.
2. Problem 10.12 from Simon haykins book.
3. Problem 10.13 from Simon haykins book.
4. Problem 10.14 from Simon haykins book.
5. For a (7,4) cyclic code with generator polynomial $g(X) = 1 + X + X^3$, the received word is $\mathbf{r} = (0100101)$. Correct the single bit error in this word and also draw the syndrome computation circuit.
6. If a cyclic code of codeword block length 15 and message length is 7 (i.e., this is (15,7) code) has generator polynomial $g(X) = 1 + X^4 + X^6 + X^7 + X^8$, answer the following
   (i) Find code vector for message $m(X) = X^2 + X^3 + X^4$.
   (i) Draw the encoding circuit for this code.
7. Consider a (15,11) cyclic code generated by $g(X) = 1+X+X^4$, answer the following questions
   (i) Device a feedback register encoder for this code
   (ii) If the message to be transmitted is $\mathbf{m} = (11001101011)$, then illustrate the encoding procedure by listing state of the register.

Student's name: End of exam