Karunya University
(Karunya Institute of Technology and Sciences)
(Declared as Deemed to be University under Sec.3 of the UGC Act, 1965)

End Semester Examinations - 2015-16 Even Semester - May 2016

14EC3016 Error Control Coding

Set A

Time : 3 hrs
Total Marks: 100

1. Discuss the properties of the Galois Field?

OR

2. a.Find all the irreducible polynomials of degree 4 over GF(2). (10)

   b.Construct the group under modulo 6 addition and modulo 3 multiplication (10)

3. Construct a table for GF (2^5). Obtain all the minimal polynomials. (20)

OR

4. Decode the received binary BCH code of three bit error correcting vector whose received word is r(000101000000100) (20)

5. a. Analyze the error correction procedure for BCH and non binary BCH codes. (10)

   b. Consider the (7, 4) cyclic code generated by $g(X) = 1+X+X^3$. Encode the message sequence u (1011) and also decode the vector r (1001011). (10)

OR

6. Consider a triple error correcting Reed Solomon code with symbols from GF (2^4). Decode the received vector $r(X) = \alpha^7X^3+\alpha^3X^6+\alpha^4X^{12}$ (20)

7. Decode the sequence m(10011100110000) of a (2, 1, 3) using sequential decoding of convolution codes whose generators are g^1(1011) and g^2(1111).

OR

8. Draw the modified state diagram and find the transfer function of (2,1,3) convolution encoder whose generators are g^1(1011) and g^2(1111).

9. Brief on Turbocodes its encoding and decoding process using BCJR algorithm.

Wishing you All the Best