11. (a) What is firewall ? Explain the design issues involved in it.   7

(b) Write a short note on antivirus techniques.   6

OR

12. (a) Define the following :

(i) intruder

(ii) viruses

(iii) worms.   6

(b) Write in brief on secure electronic payment system.   7

NTK/KW/15/7544

Faculty of Engineering & Technology
Seventh Semester B.E. (EC/ET) (C.B.S.) Examination
ELECTIVE–I : DATA COMPRESSION AND
ENCRYPTION

Time—Three Hours]   [Maximum Marks—80

INSTRUCTIONS TO CANDIDATES

(1) All questions carry marks as indicated.

(2) Solve Question No. **1 OR** Questions No. **2**.

(3) Solve Question No. **3 OR** Questions No. **4**.

(4) Solve Question No. **5 OR** Questions No. **6**.

(5) Solve Question No. **7 OR** Questions No. **8**.

(6) Solve Question No. **9 OR** Questions No. **10**.

(7) Solve Question No. **11 OR** Questions No. **12**.

(8) Assume suitable data wherever necessary.

(9) Illustrate your answers wherever necessary with the help of neat sketches.

(10) Use of non-programmable calculator is permitted.

1. (a) Explain the steps of Shannon Fano Coding. Given A = (abcde); P(a) = {0.2, 0.2, 0.4, 0.1, 0.1}, calculate its average length, entropy of the source and efficiency. 7

   (b) What are the dictionary based compression schemes ? Explain LZ77 with suitable example. 7

OR

2. (a) Consider source with alphabets A = {a_1, a_2, a_3} with probability model {0.2, 0.6, 0.2} respectively. Perform arithmetic coding and generate a decimal tag for the sequence : $a_1 a_3 a_2 a_1$. 7

   (b) Define the following terms :

   (i) Compression ratio

   (ii) Compression rate

   (iii) Distortion

   (iv) Fidelity and quality. 7

3. (a) Write a short note on digital audio. 6

   (b) Explain DPCM and ADPCM techniques used in Audio Compression. 7

OR

4. (a) Describe the format of μ-law encoder and decoder specified by G.711. Find out the codeword for-656 input sample using μ-law encoder. 7

(b) Explain audio encoder and decoder used in MPEG. 6

5. (a) Explain video encoder and decoder using JPEG. 7

   (b) Write a short note on Video Compression. 7

OR

6. (a) Explain different 2-dimentional image transform. 7

   (b) Describe the features of video compression as compared to image compression. Explain MPEG industry standard for video compression. 7

7. (a) Explain different types of Security attacks. 7

   (b) Write a short note on stegnography. 6

OR

8. (a) Explain simplified DES, with all its steps. 7

   (b) Write short note on Triple DES. 6

9. (a) State and explain Chinese remaine theorem and its significance. 7

   (b) Explain RSA algorithm giving a simple example of it. 6

OR

10. (a) What do you mean by Elliptic curve cryptography ? Explain. 7

    (b) Write a short note on digital signature. 6