BACHELOR OF INSTRUMENTATION & ELECTRONICS ENINEERING FINAL EXAMINATION, 2018
(4th Year,2nd Semester)

TELEMETRY AND REMOTE CONTROL

Time: Three Hours

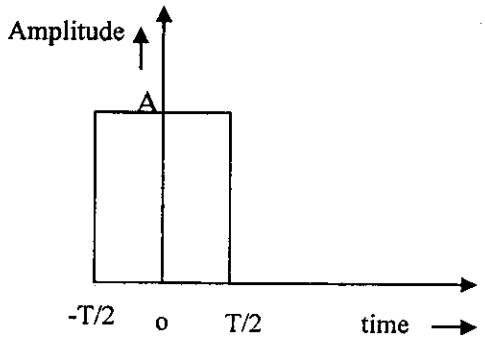
Full Marks: 100

Module 1: Answer any one question

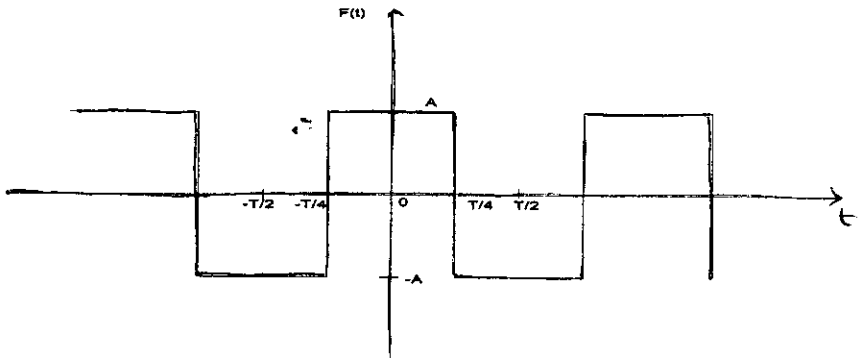
1. i) State the classifications of different signals with example.
   iii) State and prove frequency convolution theorem.
   iv) Deduce Fourier Transformation equation using Fouries Series equation. 6+4+10

2. i) Find the Fourier Transformation of

$$x(t) = \begin{cases} A & for \quad -T/2 < t < T/2 \\ 0 & otherwise \end{cases}$$



ii. Obtain the Fourier Components of the signal given below 10+10



Module 2: Answer any one question

3. a) Explain linear block codes.
   b) The generation matrix for a (6, 3) block code is given below. Find all code vectors of this code.

$$G = \left[\begin{array}{ccc:ccc} 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 & 1 & 0 \end{array}\right]$$

5+15

4. i) Describe the process to generate PAM, PPM and PWM 3x3=9
   ii) Describe PCM transmitter and receiver 7
   iii) Discuss on regenerative repeater. 4

Module -3: Answer any Two

5. a) Find the signal to quantization noise for mid-rise quantization.
   b) Determine the S/N ratio of 512 quantization.
   c) Describe non-uniform quantizer. 10+4+6

6. a) Describe diffential pulse code modulation (DPCM) transmitter and receiver.
   b) Describe quantization noise associated with delta modulation.
   c) What is companding? Describe different types of companders

10+6+4

7. a) Describe adaptive delta modulation (ADM) transmitter and receiver with proper diagram.
   b) State the advantages of ADM over DM.
   c) Discuss TDM and FDM system 8+4+8

8. Describe FSK transmitter and receiver system. Find out its probability of error. 20

9. i) Describe space wave propagation
   ii) What is duct propagation?
   iii) Describe ionospheric wave propagation 7+5+8

Module -4: Answer any one

10. a) Describe the satellite launching steps with proper diagram.
    b) Describe different parts of a satellite.
    c) Describe general block diagram of a communication satellite.

10+5+5

11. i) Give the block diagram of a digital optical communication system and explain the function of each block?
    ii) Distinguish between optical fiber communication system and conventional communication system? List out the advantageous and disadvantage of optical fiber communication?
    iii) Describe numerical aperture in step index and graded index fiber?

5+5+5+5