Master of Technology
Third Semester Main Examination, December 2021
Information Theory & Coding [MTDC301]

Time: 3:00 Hrs   **Max Marks 70**

Note: **Attempt any five questions.**
All questions carry equal marks.

Q.1 (a) Prove the statement "Is a receiver known the message being transmitted, the amount of information carries will be zero.
(b) What do you mean by entropy?

Q.2 (a) Explain the channel capacity theorem in details.
(b) Write and explain Shannon's theorem in brief .

Q.3 Write short notes on ?
i) Shannon Hartley theorem
ii) Linear block codes.

Q.4 (a) What do you understand by convolution codes ? How are these constructed ?
(b) Write and explain Viterbi algorithm for maximum likelihood decoding.

Q.5 (a) Write short notes on
i) Huffman coding
ii) Lempel – Ziv coding .

Q.6 Explain different types of channels with their channel matrix and channel diagram.

Q.7 (a) What are BCH cods ? discuss the steps for decoding BCH codes.
(b) Discuss soft decision Viterbi algorithm.

Q.8 Write short notes (any thee)
i) Hamming codes and their application
ii) Cyclic codes and their properties   iii) convolution codes
iv) Data compression

Master of Technology
Third Semester Main Examination, December 2021
Optical Instrumentation & Measurement [MTDC302(2)]

Time: 3:00 Hrs   **Max Marks 70**

Note: Attempt any five questions. All questions carry equal marks. Assume suitable data if necessary and state them clearly.

Q.1   (a) With the aid of lock diagram explain the working of lock in amplifier.
       (b) Discuss the principle working of optical low coherence reflectometer.

Q.2   (a) Outline the technique that con be employed to provide directional coupling . discuss the designing and working of direction couplers.
       (b) With the help of neat sketch explain the working of beam splitters.

Q.3   (a) Explain with suitable diagram the designing of fiber optic strain sensor.
       (b) Describe magnetic and electric field box fiber optic sensors.

Q.4   (a) Explain how refractive index profit and mode field diameter are measured for single model fiber.
       (b) Explain how to measure non distractive loss in multi-mode fiber.

Q.5   (a) Discuss with to help of suitable diagram the measurement of dispersion in optical fiber.
       (b) derive the relation for finding bandwidth of jointed fibers.

Q.6   (a) Discuss about birefringence measurement and measurement of the propagation constant of fiber mode.
       (b) Derive the relation for boxcer average.

Q.7   (a) Derive the relation for optical power and energy.
       (b) Explain the technique of WDM. Also draw an optical fiber system illustrating wavelength division multiplexey.

Q.8   Write short notes on any dour at the following .
       i) Fiber optic Isolators   ii) Elipsometer   iii) CCD
       iv) OTDR   v) Fiber optic switches