Enrollment No……

Master of Technology

Third Semester Main Examination, Dec-2020

Information Theory & Coding [MTDC301]

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 Explain entropy and its properties. Explain uncertainty and information and entropy of binary memory.

Q.2 Describe Huffman coding. What is prefix coding and coding theory?

Q.3 What do you understand by binary symmetric channel and its application of BSC.

Q.4 Explain the capacity of infinite bandwidth. Describe the practical communication system in light of Shannon's theorem.

Q.5 Explain mutual information and its properties Write Hamming code and their application.

Q.6 Write the probability of undetected error for linear block code in BSC. Explain Galois field and its construction in GF(2m) and its basic properties.

Q.7 Explain error detecting and correcting capabilities of block code. Describe cyclic code and its basic properties.

Q.8 Describe generator and parity check matrix of cyclic codes. Explain encoding and decoding circuits.

Enrollment No……

Master of Technology

Third Semester Main Examination, Dec-2020

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) Discuss the sensitivity of OTDR in relation to commercial reflect meters. Also discuss the working of OTDR.
(b) Discuss the dispersion in optical fiber with diagram.

Q.2 (a) Explain the designing of optical temperature sensor with neat diagram.
(b) Compare and contrast the major technique employed to obtain a measurement of the refractive index profile for an optical fiber.

Q.3 (a) Discuss the measurement of the preparation constant of fiber modes

(b) What do you mean by monochrometer? Explain with suitable diagram.

Q.4 (a) Explain the technique of WDM. Also draw an optical fiber system illustrating wavelength division multiplexing.
(b) Discuss how optical polarization use to design photoclastic pressure sensor.

Q.5 (a) Discuss the measurement of fiber scattering losses.
(b) Describe with the aid of suitable diagram the common method used to determine the effective cut off wavelength in single mode fiber

Q.6 (a) Describe what is meant by optical domain reflectometry? Discuss how the techniques may be used to take field measurement on optical fiber.
(b) With help of neat sketch explain the working of beam splitters

Q.7 (a) Compare the contrast two simple techniques used for the measurement of numerical aperture of optical fibers.
(b) With the aid of block diagram explain the working of optical opectrum analyzer.

Q.8 Write short note on – (any three)
(i) Polarization controllers
(ii) Fiber optic strain sensor.
(iii) Beam splitters.
(iv) Birefringences measurement