

Enrollment No.....

Bachelor of Engineering
Seventh Semester Main Examination, December 2021
Optical Communication [EC703]
Branch: EC

Time: 3:00 Hrs

Max Marks 70

Note : 1. Attempt any five questions out of eight.
2. All question carry equal marks.

- Q.1 (a) Discuss the basic principal of optical communication and its merits and demerits.
(b) Discuss the mode used for optical communication.
- Q.2 (a) Which material used for fiber optics also explain photonic crystal fibers.
(b) Explain MCVD technique for fabricating of optical fiber.
- Q.3 (a) Explain the working principle of LED. Also explain quantum efficiency.
(b) Explain the principle working LASER source.
- Q.4 (a) Discuss about the fiber splicing techniques.
(b) Discuss the principle working 3 Avalanche photo diode.
- Q.5 (a) What do you understand by attenuation in fiber and its causes.
(b) Derive an expression for detector response time.
- Q.6 (a) Discuss about the OTDR.
(b) Discuss the BURST mode receiver.
- Q.7 (a) Explain performance Measurement and monitoring
(b) Explain Erbium doped fiber amplifiers (EDFA).
- Q.8 (a) Discuss the principle of rise time budget.
(b) Discuss the digital receivers performance and also explain the eye diagram ?

Bachelor of Engineering
Seventh Semester Main Examination, December 2021
Microwave Engineering [EC704]
Branch: EC

Time: 3:00 Hrs

Max Marks 70

Note : 1. Attempt any five questions out of eight.

2. All question carry equal marks.

- Q.1 (a) Explain waveguides Discuss propagation of EM wave in circular mode.
(b) Explain difference between TEM & TE wave.
- Q.2 (a) How the wave guide is different from two wire transmission line.
(b) Explain dominant mode of rectangle wave guide.
- Q.3 (a) Explain working of isolator in brief .
(b) What is PIN diode ? Explain its properties and application.
- Q.4 (a) Explain the coupling factor and directivity of the four ports directional counter. Also derive the S- matrix for conflict
(b) Mentioned the symbol and schematic diagram of micro wave circulator Explain the working of the same. Using geometry containing the magnetic tee and one phare shifter along with its simplified S-matrix.
- Q.5 (a) A TWT operate under the following parameter beam voltage $v_b=36\text{v}$
beam current $I_b=30\text{ma}$ characteristic impedance of helix $Z_0=10\pi$ circuit length $N=50$, frequency $f=10\text{GHz}$ determine
i) The gain parameter C
ii) The output power gain A_p in decibel,
iii) All four propagation constants.
(b) What are the limitation of conventional tubes at microwave frequency.
- Q.6 (a) Discuss bolometer method of microwave power measurement .
(b) Describe VSWR Measurement.
- Q.7 (a) Explain waveguide impedance measurement
(b) Explain microwave resonators.
- Q.8 Write short note on: (any three)
i) MASER
ii) Tunnel detectors
iii) BARITT
iv) TWT amplifier

Bachelor of Engineering
Seventh Semester Main Examination, December 2021
Wireless Communication [EC7011]

Time: 3:00 Hrs

Branch: EC

Max Marks 70

Note : 1. Attempt any five questions out of eight. 2. All question carry equal marks.

- Q.1 (a) Discuss about the spectrum limitations for wireless communication services.
(b) Discuss about noise limited systems and its link budget design.
- Q.2 (a) How propagation is achieved in view of diffraction and scattering by rough surfaces. ?
(b) Explain the factors that influence small scale fading.
- Q.3 (a) discuss about ultra-wideband signals with large relative bandwidth.
(b) Explain the time domain measurement analysis.
- Q.4 (a) Explain the channel models briefly.
(b) State the importance of channel sounding.
- Q.5 (a) Describe the structure of wireless communication link
(b) Explain error probability in fading channels with diversity receiver.
- Q.6 (a) Draw the block diagram of a decision – feedback equalizer .
(b) What is AWGN channel and bit error rate ? Explain with suitable diagram.
- Q.7 (a) What are the three most important small scale multipath propagation.
(b) What do you mean by frequency selective channels.
- Q.8 (a) Draw the schematic block diagram of a transmitter for wireless communication.
(b) Explain the different combiner diversity techniques in wireless communication system .

Enrollment No.....

Bachelor of Engineering
Seventh Semester Main Examination, December-2021
Computer Networks [EC705]
Branch: EC

Time: 3:00 Hrs

Max Marks 70

Note : 1. Attempt any five questions out of eight.

2. All questions carry equal marks.

- Q.1 Explain OSI reference layers with their duties.
- Q.2 What are the various network topologies? Explain with example.
- Q.3 Explain slotted ALOHA protocol derive performance formula of slotted ALOHA.
- Q.4 What are various multiplexing techniques? Compare between multiplexer and concentrator.
- Q.5 What is adaptive routing algorithm? Explain various types of adaptive algorithm.
- Q.6 Explain ISDN system Architecture.
- Q.7 Explain distribution system in brief.
- Q.8 Short notes on :
 - (a) Modem
 - (b) Mobile networking
 - (c) CSMA/CD protocol.

Bachelor of Engineering
Seventh Semester Main Examination, December-2021
Satellite Communication [EC702]

Branch: EC

Time: 3:00 Hrs

Max Marks 70

Note : 1. Attempt any five questions out of eight.

2. All question carry equal marks.

- Q.1 (a) Why it is preferable for a remote sensing satellite to be used in a sun-synchronous orbit?
(b) Describe the characteristics and uses of geostationary orbit.
- Q.2 (a) Define Apogee and perigee.
(b) Define Kepler's laws of orbiting bodies and derive an equation to show the third law is true for any orbiting satellite.
- Q.3 (a) How does the earth coverage provided by a satellite depend upon its altitude.
(b) Explain Sun transit outage.
- Q.4 (a) What is polarization of an antenna. Also explain linear polarization and elliptical polarization.
(b) Describe and explain different steps involved in launching a Geostationary satellite.
- Q.5 (a) Explain Polarization of satellite signals.
(b) What is a transponder? Why is it referred to as the brain of a communication satellite.
- Q.6 (a) Why thermal control is used in space segment.
(b) What are the important components of an earth station.
- Q.7 (a) List some of the shortcomings of present day VSAT system.
(b) What are the factors that affect the link design of a satellite.
- Q.8 (a) Mention the services available from DBS system.
(b) Explain TDMA frame structure and synchronization in TDMA network.