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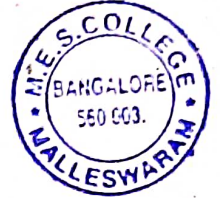
VI Semester B.Sc. Degree Examination, September/October- 2022

ELECTRONICS

Communication - II

Paper : VII

(CBCS Repeaters/Regular Scheme 2018-19 Onwards)



Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates :

Answer all Questions from Part-A, any five questions from Part-B and any Four questions from Part C.

PART-A**Answer all the subdivisions.****(15 × 1 = 15)**

1. i) According Nyquist theorem the minimum sampling rate should be
- Twice the lowest frequency of the information
 - Twice the highest frequency of the information
 - Equal to the highest frequency of the information
 - None of the above
- ii) Waveform shown below refers to
- PWM
 - PAM
 - ASK
 - FSK



- iii) Distortion in digital transmission is reduced with the use of
- Suppressors
 - Coaxial cables
 - Equalizers
 - Amplifiers
- iv) The main disadvantage of CW Doppler RADAR is that
- It does not give the target range
 - It does not give the target velocity
 - A transponder is required at the target
 - It does not give the target position

[P.T.O.]



- v) With reference to the Satellite orbit, 'Perigee' is the
 - a) Farthest point from the earth
 - b) Closest point from the earth
 - c) Point of full link with earth station
 - d) Satellite's parking slot
- vi) Intelsat satellites are usually placed in
 - a) Circular polar orbit
 - b) Inclined elliptical orbit
 - c) Geostationary orbit
 - d) None of the above
- vii) G P S operates with
 - a) Space segment
 - b) User segment
 - c) Control segment
 - d) All the above
- viii) Light travels in an optical fiber with the principle of
 - a) Refraction
 - b) Line of sight propagation
 - c) Scattering
 - d) Total internal reflection
- ix) LED works on the Principle of
 - a) Spontaneous Emission
 - b) Stimulated Emission
 - c) Potential gradient in Reverse bias
 - d) Potential gradient in Forward bias
- x) The larger the acceptance angle of the fiber
 - a) The harder the launching becomes
 - b) The easier the launching becomes
 - c) No propagation takes place
 - d) All the above effects
- xi) Wi-Max is the wireless technology for
 - a) Local area network
 - b) Wide area network
 - c) Metropolitan area network
 - d) Both a & b



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- xii) Roaming in cellular communication helps the subscriber to
- a) Save battery power
 - b) Make multiple tasks
 - c) Get service while travelling outside the registered cell
 - d) Make only video calls
- xiii) USB stands for
- a) Union serial bus
 - b) Universal serial bus
 - c) Universal standing bus
 - d) Union standing bus
- xiv) IMEI number in a Cell phone is the
- a) Information of Mobile Equipment Identity
 - b) International Mobile Equipment Information number
 - c) International Mobile-Equipment Identity number
 - d) Integrated Mobile Equipment Identity number
- xv) The data rate of 3G system is around _____
- a) 2 Mbps
 - b) 150 Mbps
 - c) 40 Mbps
 - d) 100 Mbps

PART - B

Answer Any Five Questions

(5×7=35)

2. What is pulse modulation ? Name four types of Pulse modulation and sketch their output waveforms.
3. a) Explain briefly Echo suppressors.
b) Explain the basic Principle of RADAR system with a block diagram. **(3+4)**
4. Explain Doppler effect. Draw the block diagram of an MTI RADAR and explain the function of each block.
5. Draw the block diagram of a satellite C band transponder and explain its operation.

[P.T.O.]



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6. a) Explain with a diagram, the operation of an avalanche photo diode
b) Write the advantages and disadvantages of OFC over metallic cables (4+ 3)
7. List various losses in optical fibers. Explain any two of them.
8. Explain the following with respect to cellular communication system.
i) Base station ii) MTSO iii) PSTN iv) Hand off
9. a) Draw the signal flow diagram of a mobile to land line in cellular communication system and explain its operation.
b) Mention the advantage and the disadvantage of TDMA over FDMA (5+2)

PART - C

Answer any Four questions.

(4 × 5= 20)

10. A digital transmission channel has a bandwidth of 4 kHz and 25dB S/N ratio. Calculate the maximum information carrying capacity. What happens to the information carrying capacity if the S/N ratio becomes 15 dB.
 11. List the advantages and disadvantages of digital transmission technique over its Analog counterpart.
 12. A RADAR with 600kW peak transmitting power operates at 10GHz. Calculate its maximum range of detection when its minimum receivable power is 10^{-10} W, the capture area of its antenna is 5m^2 and the radar cross sectional area of the target is 30m^2 .
 13. Draw the block diagrams of uplink and down link models in satellite communication system.
 14. A remote sensing Satellite operates at 2GHz frequency, calculate the path loss at a distance of 1500 kms. Also calculate the new path loss if the operating frequency changes to 4 GHz.
 15. A glass clad fiber is made with a core glass of refractive index 1.55. Cladding is doped to give a fractional difference of 0.004. Find the refractive index of cladding, critical Internal angle of reflection and numerical aperture.
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