



SM – 422

VI Semester B.Sc. Examination, May/June 2018
(CBCS) (Fresh + Repeaters) (2016-17 and Onwards)
ELECTRONICS – VII
Communication – II

Time : 3 Hours

Max. Marks : 70

Instruction : Answer **all** the questions from Part – A, **any five** from Part – B and **any four** from Part – C.

PART – A

Note : Answer **all** the questions of Part – A in **any one** page, answering the same question multiple times will **not** be considered for evaluation.

Answer **all** the sub-divisions.

(15×1=15)

1. i) The sequence of operations in which PCM is done is
 - a) Sampling, Quantizing, Encoding
 - b) Quantizing, Encoding, Sampling
 - c) Quantizing, Sampling, Encoding
 - d) None of the above
- ii) The Hartley law state that
 - a) The maximum rate of information transmission depends on the channel bandwidth
 - b) The maximum rate of information transmission depends on depth of modulation
 - c) Redundancy is essential
 - d) Only binary codes may be used
- iii) Equalizers can
 - a) Increase the phase delay distortion to acceptable levels
 - b) Reduce the phase delay distortion to acceptable levels
 - c) React to signals of different speeds in different ways
 - d) React to signals of different magnitudes in different ways

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- iv) The Coho a local oscillator in MTI RADAR operates at the
- a) Intermediate frequency
 - b) Transmitted frequency
 - c) Received frequency
 - d) Pulse repetition frequency
- v) The A scope displays
- a) The target position and range
 - b) The target range, but not position
 - c) The target position, but not range
 - d) Neither range nor position, but not only velocity
- vi) Point on the satellite orbits farthest from the earth
- a) Apogee
 - b) Perigee
 - c) Epigee
 - d) Zenith
- vii) A satellite cross-link means
- a) Earth-to-satellite link
 - b) Satellite-to-earth link
 - c) Satellite-to-satellite link
 - d) None of these
- viii) The multiple access method in the satellite communication which has no restriction on time or bandwidth is
- a) TDMA
 - b) FDMA
 - c) CDMA
 - d) QDMA
- ix) Optical fibers rely for their operation on the phenomenon of
- a) Reflection
 - b) Refraction
 - c) Dispersion
 - d) Total internal reflection
- x) In optical fiber, the angle of incident must be greater than
- a) Angle of incidence
 - b) Angle of refraction
 - c) Angle of acceptance
 - d) Critical angle
- xi) Roaming is
- a) The ability to use the cell phone outside the usual service area
 - b) Where call is diverted by switching center to new base station
 - c) The process in which the same set of frequencies can be allocated
 - d) All of the above
- xii) The function of the physical layer in OSI model is
- a) Used for frame formatting
 - b) Used to propagate bits through a network
 - c) Used for packet transmission on the network
 - d) Data tracking in a network



- xiii) 2G standards support
 - a) Limited internet browsing
 - b) Short Messaging Service
 - c) Both a) and b)
 - d) None of the above
- xiv) USB stands for
 - a) Union Serial Bus
 - b) Universal Serial Bus
 - c) Universal Standing Bus
 - d) Union Standing Bus
- xv) Wi-Fi stands for
 - a) Wireless Force
 - b) Wireless Fidelity
 - c) Wide Fidelity
 - d) Wide Force

PART - B

Answer **any five** questions. (5×7=35)

- 2. a) State sampling theorem.
- b) Define ASK, FSK. Sketch their input and output waveforms. (2+5)
- 3. Derive an expression for maximum range of a RADAR system. 7
- 4. Explain the block diagram of CW RADAR and write its advantages and disadvantages. 7
- 5. a) Draw the block diagram of downlink in satellite sub-system and explain its functions.
- b) Define SPS and PPS with respect to GPS. (5+2)
- 6. a) Draw the block diagram of optical fiber communication system.
- b) With a diagram, explain the working of avalanche photo diode. (2+5)
- 7. Derive an expression for numerical Aperture of an optical fiber. 7
- 8. a) Write a note on cell splitting and frequency reuse.
- b) Compare GSM and CDMA. (4+3)
- 9. Draw the seven layered OSI model and explain its operation. 7



PART – C

Answer **any four** questions.

(4×5=20)

10. A system has a bandwidth of 3.6 KHz and signal to noise ratio of 22 dB. Calculate
 - i) Information carrying capacity of this channel
 - ii) The capacity of the channel if its bandwidth changes to 6 KHz.
11. Write a note on :
 - i) Crosstalk
 - ii) Echo suppressors.
12. A RADAR operating at a wavelength of 3 cm has a maximum range of 20 Km with an antenna gain of 40. If a transmitter has a power of 250 KW and minimum receivable power of 10^{-11} W, determine the cross section of the target.
13. Calculate the path loss in satellite communication system for
 - i) Signal of 12 GHz at a distance of 20000 Km.
 - ii) Signal of frequency 8 GHz at a distance of 35786 Km.
14. Compare TDMA and FDMA.
15. The Numerical Aperture (NA) of an optical fiber is 0.35 when surrounded by air. Determine the refractive index of its core when the refractive index of the cladding is 1.52. Also find the acceptance angle.