17640

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – Dip.RA-2024
Course Name – Principles of Electronic Communication
Course Code - DEC30101
(Semester III)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) For generation of FSK the data pattern must be represent in
a) RZ format b) NRZ format
c) split phase Manchester d) none of these

(ii) The bit rate of a digital communication system is 34 Mbps. The modulation scheme is QPSK. Calculate the bout rate of the system
a) 68 Mbps b) 34 Mbps
c) 17 Mbps d) 85 Mbps

(iii) Coherent demodulation of FSK signal can be effected by employing
a) correlation receiver b) BPF and envelope detector
c) matched filter d) discriminator detection

(iv) Select the correct option: Most of the signals found in nature are _____
a) continuous-time and discrete-time b) continuous-time and digital
c) digital and analog d) analog and continuous-time

(v) Identify, in communication system noise is most likely to affect the signal
a) at transmitter b) in channel
c) in information source d) at destination

(vi) State, communication is the process of
a) keeping in touch b) broadcasting
c) exchanging information d) entertainment by electronics

(vii) The length of the antenna to transmit a signal must be choose at least
a) 1/3 wavelength b) 1/4 wavelength
c) 2/3 wavelength d) 2/4 wavelength

(viii) If the noise level of a signal is increased then examine the capacity of a band limited AWGN channel

a) is increased
b) is decreased
c) remains constant
d) none of these

(ix) Flat-top sampling shows

a) aliasing
b) an aperture effect
c) loss of signal
d) none of these

(x) The modulation index of an AM wave is changed from 0 to 1. Select the transmitted power

a) unchanged
b) halved
c) doubled
d) increased by 50%

(xi) State the maximum efficiency of AM

a) 0.3333
b) 0.5
c) 0.222
d) 0.87

(xii) A signal is band - limited at fm Hz is sampled at a rate less than 2fm. Observe the reconstructed signal

a) smaller in magnitude
b) higher in magnitude
c) have higher frequency suppressed
d) distorted

(xiii) PLL can be select to demodulate

a) PAM signal
b) PCM signal
c) FM signal
d) DSB-SC signal

(xiv) The most common detector employed in an AM radio broadcast receiver is

a) envelope detector
b) coherent detector
c) discriminator
d) ratio detector

(xv) Foster Seeley discriminator is employed for

a) FM detection
b) AM detection
c) PCM detection
d) ADM detection

Group-B

(Short Answer Type Questions) 3 x 5=15

2. State the sampling theorem. (3)

3. Define Frequency Modulation (FM) and discuss its key characteristics. (3)

4. Prepare a comparative study on AM and FM. (3)

5. Discuss the relative merits of ASK, PSK and FSK. (3)

6. Explain the companding used in PCM. (3)

OR

Explain inter symbol interference (ISI) and state how it can be minimized. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Identify the Key Applications where Pre-Emphasis and De-Emphasis are Used. (5)
8. Calculate the power content of the carrier and each of the sidebands for an AM signal with m = 0.8 and a total power of 2500 W. (5)
9. Sketch an envelope detector circuit and explain its principle of operation. (5)

10. Focus on the disadvantages of BPSK and explain how they can be improved. (5)

11. Compare between A-law and μ-law companding. (5)

12. Draw the block diagram for generation of PCM system and explain it. (5)

OR

Draw the block diagram for detection of PCM system and explain it. (5)

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