17314

BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – B.Tech.(RA)-2022/B.Tech.(RA)-2023
Course Name – Analog and Digital Communication
Course Code - PCC-ECR402
(Semester IV)

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) 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

(ii) 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

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

(iv) Which modulation technique is applied in TV telecast, to modulate the sound signal?
- a) VSB
- b) SSB
- c) FM
- d) AM

(v) Choose the main advantage of PCM system
- a) lower bandwidth
- b) lower power
- c) lower noise
- d) none of these

(vi) Regenerative repeaters can be employ in
- a) analog communication system only
- b) digital communication system only
- c) analog and digital communication systems
- d) none of these

(vii) 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

(viii) The signal to quantization noise ratio in n bit PCM system is associate-
- a) independent value of n
- b) increase with increasing value of n
- c) depends upon the sampling frequency employed
- d) decreases with the increasing value of n

(ix) In commercial TV transmission in India picture and sound signals are modulated respectively by employing-

a) VSB and FM
b) VSB and VSB
c) FM and VSB
d) AM and FM

(x) Quantization noise produces in

a) time division multiplexing
b) frequency division multiplexing
c) pulse code modulation
d) pulse frequency modulation

(xi) In DM granular noise produces when the modulating signal

a) increase rapidly
b) remain constant
c) decrease rapidly
d) none of these

(xii) Vestigial sideband modulation is generally employed for

a) satellite system
b) broadband system
c) TV transmission
d) point-to-point communications

(xiii) A special AM broadcasting transmitter radiates 10 kW when the depth of modulation is 60%. Compute the carrier power

a) 9 kW
b) 7.8 kW
c) 8.47 kW
d) 9.5 kW

(xiv) A modulation index of 0.5 would be relate as

a) 0.5 of modulation depth
b) 55 % of modulation depth
c) 5% of modulation depth
d) 50% of modulation depth

(xv) In digital transmission, the modulation technique that shows minimum bandwidth is

a) DM
b) PCM
c) DPCM
d) PAM

Group-B

(Short Answer Type Questions) 3 x 5=15

2. State the Carson's rule. (3)

3. Explain the importance of depth of modulation in communication. (3)
4. Define the terms attenuation and dispersion in communication systems. (3)
5. Explain modulation and detection in communication. (3)
6. Explain the properties of line coding. (3)

OR

Compare delta modulation and adaptive delta modulation. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Explain the FM wave generation using the direct method and focus on the demerits of this method. (5)

8. Draw the block diagram for detection of PCM system and explain it. (5)
9. Describe the adaptive delta modulation technique. (5)
10. Present a comparative study on BASK, BPSK and BFSK signals. (5)

11. The total power content of an AM wave is 600 W. Determine the percent of modulation of the signal if each of the sidebands contains 75 W of power. (5)
12. With neat block diagram explain the generation of delta modulation. (5)

OR

With neat block diagram explain the reception of delta modulation. (5)

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