SEAT No._____ No. of Printed Pages : 2

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Sardar Patel University

B.Sc. (semester-V)(NC)CBCS Examination Dec.– 2020

29-12-2020, Tuesday

02:00 pm to 04:00 pm

Electronics & Communication

US05CELC04: Digital communication systems

Maximum Marks: 70

Note: Figure to the right indicates full marks.

Q-1 **Choose the correct Answer.** **[10]**

1. Natural sampling uses _____.

   a) switching circuit b) sample & hold circuit c) multiplication d) chopping

2. In _____ frequency of the carrier signal is based on the information in a digital signal.

   a) ASK b) FSK c) BPSK d) None

3. Flat top sampling uses _____.

   a) sample and hold circuit b) Multiplication c)chopper circuit d) none

4. ASK is the result of combination of shift keying and _____.

   a) analog modulation b) amplitude modulation c) digital modulation d) none

5. The modulation techniques used to converts the analog signal in to digital signal is called as _____

   a) PCM b) PAM c) PWM d) None

6. Which modulation techniques use two voltage levels?

   a) PCM b) PWM c) PAM d) None

7. The _____ or frequency is the minimum rate at which a finite bandwidth signal needs to be sampled to retain all of the information. (/ noise to signal ratio)

   a) Nyquist rate b) S/N ratio c) bandwidth d) none

8. In _____ phase of the carrier signal is based on the information in a digital signal.

   a) PSK b) FSK c) BPSK d) None

9. Which device is used to demodulate a time division multiplexed analog wave?

   a) High pass filter b) low pass filter c)Band pass filter d) band stop filter

10. In _____ amplitude of the carrier signal is based on the information in a digital signal.

    a) ASK b) FSK c) BPSK d) None

Q-2 **Do as directed. (True/false and Fill in the blanks)** **(08)**

1. Serial transmission is not possible without time division multiplexing. (True / False)
2. Power consumption is low in pulse modulation. (True / False)

3. The standard data rate of a voice channel is 128 Kbps in PCM system. (True / False)
4. A PAM signal can be detected using band pass filters. (True / False)
5. The nyquist rate is given by the equation _____.
6. TDM is used to combine _____.
7. How many voltage levels are present in PWM (pulse width modulation)?
8. Frequency shift keying is mostly used in _____.

Q-3 Answer in short.(Any ten) **[20]**

1. Draw the general wave form of flat top sampling.
2. What is aliasing? How it can avoid?
3. Draw the circuit diagram of sample and hold circuit.
4. Give the difference between source coding and line coding.
5. Give the drawback of BPSK.
6. What is DC wandering? When it is arising?
7. Give the types of Digital modulation techniques.
8. What is the drawback of QPSK?
9. Define Nyquist interval.
10. Draw the FSK signal for the digital data 11110010.
11. Explain RZ and NRZ coding format.
12. What are the Disadvantages of Frequency Division Multiplexing (FDM)?

Q-4 Answer the following question. (Any Four) **[32]**

1. Explain Natural sampling with necessary diagram and equations.
2. Explain interpolation? Derive interpolation formula for reconstruction of original signal from sampled signal.
3. Write a short note on: Transmission bandwidth in PCM (Pulse Code Modulation).
4. Explain the demodulation of pulse amplitude modulation (PAM).
5. Write a short note on: Generation of ASK (amplitude shift keying) signal.
6. Explain in detail block diagram of binary frequency shift keying.(BFSK)
7. Explain FDM (frequency division multiplexing) hierarchy in detail.
8. Write a short note on: Frequency division multiplexing.

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