



Regulation R18

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

Subject code: 2P4DC

B.Tech IV Semester Supplementary Examinations, July 2022

ANALOG COMMUNICATIONS

(ECE)

Maximum Marks: 70

Date: 26.07.2022 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Why modulation is needed?
- 2 Give the advantage of COSTAS loop?
- 3 Write the VSB advantages.
- 4 Define the Hilbert Transform.
- 5 What is Angle modulation?
- 6 Write the expression for Carson's rule.
- 7 Define figure of merit.
- 8 Define Average noise figure.
- 9 Define sensitivity.
- 10 Draw the PWM and its corresponding PPM signal.

Part-B

Answer All the following questions.

(10M X 5=50Marks)

- 11.a Differentiate between Time division multiplexing and Frequency division multiplexing techniques. 5
- b Determine the power content of each of the side bands and of the carrier of an AM signal that has a percentage modulation of 85% and contains 1200 watt of total power. 5
- OR
- 12.a Explain the principle used in balanced modulator and describe how a DSB-SC signal is generated using balanced modulator? 6
- b Find the efficiency of the conventional AM and also calculate the % of power saving for DSB-SC signal for the % modulation of 50%? 4
- 13.a Draw block diagram and explain the operation of phase discrimination method. 7
- b Illustrate Quadrature null effect? 3
- OR
- 14.a Categorize the methods for generation of SSB-SC signal and explain any one of the methods in detail. 6
- b Explain the applications of various A.M Systems. 4

- 15.a Explain the difference between Narrow band FM and Wide band FM. 5
b Generate the FM wave using direct method? 5
- OR
- 16.a Detect the FM wave by using balanced frequency discrimination method? 7
b Calculate the transmission bandwidth of FM waves? 3
- 17 Derive the expression to find the figure of merit of a DSB-SC System. 10
- OR
- 18.a Define and calculate noise figure, noise equivalent temperature. 3
b Derive an expression for the S/N ratio for an FM System. 7
- 19.a Draw the block diagram of FM transmitter and explain each block? 6
b Discuss the advantages and disadvantages of TRF receivers. 4
- OR
- 20.a Explain the generation and demodulation of PWM. 6
b A super heterodyne receiver having R.F amplifier is tuned to 555kHz .The local oscillator is adjusted to 1010kHz. Then calculate the I.F and image frequency. 4