Printed Pages: 02 **Sub Code: EBM 801**

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B.TECH
(SEM VIII) THEORY EXAMINATION 2018-19
COMMUNICATION ENGINEERING

Time: 3 Hours *Total Marks: 100*

Note: 1. Attempt all Sections. If required any missing data, then choose suitably.

SECTION A

1. Attempt all questions in brief. **2 x 10 = 20**

a) What is modulation index?
b) What do you understand by a Frequency spectrum of a wave?
c) Explain sampling theorem.
d) Explain the difference between PCM and PPM.
e) What is Satellite Orbits?
f) Describe the satellite parameters.
g) Explain the Shannon's theorem for information coding.
h) Explain the Channel capacity and Bandwidth.
i) Describe the advantages of cellular communication system.
j) Differentiate between channel capacity and channel assignment.

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a) Explain the term amplitude modulation? Give a graphical representation of an AM wave. Draw the frequency spectrum of FM wave.
b) Describe the principle of pulse modulation. Explain the Pulse Code Modulation Technique with advantages and applications.
c) Describe the satellite link model in Satellite Communication systems. Explain the GPS services.
d) What are error-detection codes? Describe the various types of error-detection codes and explain how they detect data errors.
e) Compare various cellular standards. Describe the features of GSM & GPRS systems.

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Describe transmission efficiency. Derive an expression for the transmission efficiency of AM wave.

(b) What is a super heterodyne receiver? Differentiate between a super heterodyne AM receiver & a super heterodyne FM receiver.

4. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Explain digital modulation systems. Describe various digital modulation systems with one application.

(b) Explain the difference between a PWM wave & PPM wave. Describe a method for the conversion of a PWM wave to PPM wave.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain the working of a microwave radio system with the help of a block diagram.

(b) Explain the terminal station and a repeater station in a Microwave communication system.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain the fundamental principle of information, Entropy & Information rate. Derive a relation describing the relation between Entropy & Information.

(b) What is S/N trade off? Explain how noise signal can be reduced without degrading the quality of information signal.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain the uniqueness of mobile radio environment & Performance metrics in cellular system.

(b) Describe the principle of operation of a basic cellular system. Describe the performance analysis of CDMA-2000 and WCDMA.