

B.Tech. SEM -IV Electronics 2014 Course (CBCS) : SUMMER - 2019

SUBJECT: ANALOG COMMUNICATION

Day: Thursday
Date: 30/05/2019

S-2019-2615

Time: 10.00 AM TO 01.00 PM
Max. Marks: 60

N.B:

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Draw neat diagrams **WHEREVER** necessary.
 - 4) Use non-programmable **CALCULATOR** is allowed.
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- Q.1**
- a) Draw the block diagram of communication system and explain each block. (06)
 - b) Discuss the reduction in the height of antenna for increment in carrier frequency. (04)

OR

Explain ground wave propagation, sky wave propagation and line of sight propagation in detail. (10)

- Q.2**
- Discuss in detail following internal noise sources (10)
- | | |
|----------------------|-----------------------|
| i) Thermal noise | iv) Flicker noise |
| ii) Shot noise | v) Transit time noise |
| iii) Partition noise | |

OR

- a) A 600Ω resistor is connected across 600Ω antenna input of radio receiver. The bandwidth of radio receiver is 20KHz. Calculate noise power and noise voltage at room temperature of 27°C . (06)
 - b) Define Noise Factor and Noise figure. (04)
- Q.3**
- a) Define Amplitude modulation and derive mathematical representation to represent AM wave. (06)
 - b) Draw the frequency spectrum of AM wave and find bandwidth required for AM wave. (04)

OR

In AM, the modulating signal is, (10)
 $M(t) = [\text{COS } 2000 \pi t + 0.5 \text{ COS } 4000 \pi t]$ and the carrier is,
 $C(t) = 1.5 \text{ COS } [10,000 \pi t]$.

Calculate:

- i) Modulation Indices
- ii) Amplitude of sidebands
- iii) Frequencies of sidebands
- iv) Draw the spectrum for above AM wave

P.T.O.

- Q.4 a)** Define following terms of FM wave. **(06)**
i) Frequency deviation
ii) Modulation Index
iii) Deviation ratio

- b)** Differentiate between Narrowband FM and Wideband FM. **(04)**

OR

Draw and explain Indirect method for FM generation in detail. **(10)**

- Q.5 a)** Draw TRF receiver and explain its operation. **(06)**

- b)** Explain simple AGC and delayed AGC in short. **(04)**

OR

Draw block diagram of single sideband receiver and explain each block. **(10)**

- Q.6** Explain in detail generation and detection method of PWM with waveforms. **(10)**

OR

Discuss Frequency Division Multiplexing and Demultiplexing technique in detail. **(10)**

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