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Name of Examination : **Summer 2021** - (Preview)

Course Code & Course Name : **ET253U - Analog Communication**

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Maximum Marks : **60**

Duration : **3 Hrs**

[Edit](#) [Print](#) [View Answer Key](#) [Close](#) **Answer Key Submission Type:** Marking scheme with model answers and solutions of numerical

Instructions:

1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.

1) Solve all sub questions

- a) The antenna current of an AM broadcast transmitter, modulated to a depth of 40% by an audio sin wave, is 11A. It increases to 12A as a result of simultaneous modulation by another audio sin wave. what is the modulation index due to this second wave? [05]
- b) Derive FM wave equation. [05]
- c) i. Define types of angle modulation [02]
OR
ii. Give the classification of noise. [02]

2) Solve any three sub questions

- a) Explain frequency division multiplexing [04]
- b) Explain ratio detector with its amplitude limiting facility [04]
- c) Define pre-emphasis and De-emphasis with its curves. [04]
- d) Explain filter method of SSB generation with block diagram. [04]

3) Solve any three sub questions

- a) Draw and explain block diagram of AM super heterodyne radio receiver [04]
- b) Explain amplitude limiting circuit. [04]
- c) State sampling theorem and explain its types [04]
- d) Draw and explain block diagram of generalised communication system. [04]

4) Solve any three sub questions

- a) A receiver connected to an antenna whose resistance is $50\ \Omega$ has an equivalent noise resistance of $30\ \Omega$. Calculate the receiver's noise figure in decibels and its equivalent noise temperature [04]
- b) Draw and explain block diagram of stabilised reactance modulator. [04]
- c) Explain automatic gain control in detail [04]
- d) What is modulation? Explain the needs of modulation [04]

5) Solve any three sub questions

- a) Explain PCM transmitter with its block diagram [04]
- b) Find the carrier and modulating frequencies, modulation index, and maximum deviation of the FM wave represented by equation $v = 12 \sin (6 \times 10^8 t + 5 \sin 1250 t)$. [04]
- c) Compare AM and FM radio receiver. [04]
- d) Explain generation and detection of PAM with diagram.. [04]

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