

DECEMBER 2006

Code: D - 12
Time: 3 Hours

Subject: COMMUNICATION ENGINEERING
Max. Marks: 100

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q. 1. must be written in the space provided for it in the answer book supplied and nowhere else.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or best alternative in the following: (2x10)

a. Thermal noise power is proportional to

- | | |
|-------------------|------------------|
| (A) \sqrt{B} . | (B) \sqrt{T} . |
| (C) \sqrt{BT} . | (D) BT. |

b. If the amplitude of carrier wave is 10 V and the modulation index is 30%, the amplitude of sidebands will be

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|------------|-----------|
| (A) 1.5 V. | (B) 3 V. |
| (C) 6 V. | (D) 30 V. |

c. The bandwidth used for commercial FM broadcast signal is about

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|--------------|--------------|
| (A) 15 kHz. | (B) 75 kHz. |
| (C) 100 kHz. | (D) 200 kHz. |

d. Pre-emphasis is used to improve noise immunity

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|-------------------------------------|
| (A) at higher baseband frequencies. |
| (B) at lower baseband frequencies. |
| (C) over the entire baseband. |
| (D) for AM. |

e. VSWR on transmission line lies in the range

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|---------------------|---------------------|
| (A) 0 to 1. | (B) -1 to +1. |
| (C) 1 to ∞ . | (D) 0 to ∞ . |

f. In TV transmission systems, sync-pulses are accommodated during

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|------------------------|--------------------------|
| (A) colour burst. | (B) horizontal blanking. |
| (C) vertical blanking. | (D) none of these. |

(8)

- Q.6** a. Explain how an FM signal can be demodulated using a PLL. **(8)**
- b. What are the different types of losses in optical fibers? Explain. **(8)**
- Q.7** a. Explain how the dominant mode is generated in a rectangular waveguide. **(8)**
- b. Write a note on pulse position modulation. **(8)**
- Q.8** a. Explain the following terms in relation to the ionosphere:
- (i) Virtual height.
 - (ii) MUF. **(8)**
- b. Describe the operation of a rhombic antenna. **(8)**
- Q.9** a. Describe briefly the use of blanking and synchronizing pulses in TV signals. **(8)**
- b. State the advantages and disadvantages of satellite communication. **(8)**