

SRK/KW/14/7048/7058

**Faculty of Engineering & Technology**  
**Fifth Semester B.E. (Electronics Engg.) ET/EC**  
**(C.B.S.) Examination**

**COMMUNICATION ELECTRONICS**

Time : Three Hours]

[Maximum Marks : 80

**INSTRUCTIONS TO CANDIDATES**

- (1) All questions carry marks as indicated.
- (2) Due credit will be given to neatness and adequate dimensions.
- (3) Assume suitable data wherever necessary.
- (4) Illustrate your answers wherever necessary with the help of neat sketches.


1. (a) Explain with the help of circuit diagram of plate modulation Class C-amplifier. 6

— (b) An audio frequency signal  $10 \sin 2\pi 500 t$  is used to amplitude modulate a carrier  $50 \sin 2\pi \times 10^5 t$ .

Calculate :

(i) Modulation index

(ii) Sideband frequencies and Bandwidth

 (iii) Amplitude of each sideband

(iv) Total power delivered to the load of  $600 \pi$ .

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**OR**

2. (a) Explain the third method of SSB generation. 7  
 (b) Explain the operation of balanced modulator using diode with mathematical analysis. 7
3. (a) Explain in brief the following in relation to frequency modulation :  
 (i) Maximum frequency deviation  
 (ii) Modulation index  
 (iii) Frequency spectrum and bandwidth  
 (iv) Pre-emphasis. 8  
 (b) Give the difference between Narrowband FM and Wideband FM. 5

**OR**

4. (a) Explain the working of Armstrong Modulator with neat sketch. 6  
 (b) In an FM system when the audio frequency is 500 Hz and the AF voltage is 2.4 V, the deviation is 4.8 kHz. If the AF voltage is now increased to 7.2 V, what is the new deviation ? If the AF voltage is raised to 10 V while the AF is dropped to 200 Hz, what is the new deviation ?  
 Find the modulation index in each case. 7
5. (a) Explain the generation and demodulation of PWM. 6  
 (b) Explain the sampling theorem. What are the different types of sampling ? 7

**OR**

6. (a) Explain Differential Pulse Code Modulation in detail. 7
- (b) Explain in detail pulse code modulation. What are the basic features of a PCM system ? 6
7. (a) Describe the nature of shot noise current for diode in temperature limited region. 6
- (b) Explain in detail :
- (i) Flicker Noise 3
- (ii) Avalanche Noise. 4

OR

8. (a) Explain signal to Noise ratio. What is the significance of signal to noise ratio in the communication system ? 6
- (b) Derive the equation for Noise Figure for two stage amplifier. 7
9. (a) What is image rejection of receiver having RF amplifier and IF of 450 kHz ? If  $Q$ 's of the relevant coil are 60 at an incoming frequency of : 7
- (i) 1400 kHz
- (ii) 60 MHz. 7
- (b) Draw block diagram of Superheterodyne Radio Receiver and explain each block in brief. 7

OR

10. (a) Explain Demodulation of DSBSC. 7

- (b) Explain Foster-Seeley Discriminator method of FM Demodulation. 7
11. (a) Distinguish between Time Division Multiplexing and Frequency Division Multiplexing. 6
- (b) Write short notes on. :
- (i) Code Division Multiplexing 3
- (ii) Coaxial Cables: 4

OR

12. Write short notes on :
- (a) Microwave Link 5
- (b) Tropospheric Scatter Link 4
- (c) Submarine Cables. 4