

Roll No.

Total Pages : 04

GSO/D-20

1079

ELECTRONICS

Paper II

Electronic Communication

Time : Three Hours]

[Maximum Marks : 40

Note : There are nine questions in all carrying equal marks.

Attempt *Five* questions in all. Q. No. **1** is compulsory.

Attempt remaining *four* questions selecting *one* question from each Unit. Use of simple calculator is allowed.

(Compulsory Question)

1. (a) Define the terms modulation index and deviation ratio. 2
- (b) What are the essential requirements of an ideal limiter ? 2
- (c) Why is scanning necessary in T.V. transmission ? 2
- (d) Calculate highest approximate modulating frequency ' f_h ' that 625 line television must be able to handle. 2

Unit I

2. (a) Define DSB-SC, SSB-TC and SSB-SC. What amount of power is carried by each when modulation is 100 per cent ? 4
- (b) Analyze the expression for the sinusoidal carrier voltage which is amplifier modulate by another modulating signal of the same type. 4
3. (a) A transmitter radiates 10 kW with unmodulated carrier wave and about 12.15 kW when amplitude modulated. Calculate the modulation index. One another sine wave produces 30% of modulation. What will be the total radiated power if both sine waves modulate the carrier simultaneously ? 4
- (b) Derive the relation between the depth of modulation and output power of an AM transmitted wave. 4

Unit II

4. (a) Prove that sideband terms produced in frequency modulation may be extended theoretically to infinity. 4
- (b) How the information can be recovered using phase shift detector ? Explain in detail with the help of circuit diagram. 4

5. (a) What do you mean by frequency demodulation ?
How can we demodulate the frequency signal ? **3**
- (b) Define modulation index in FM and frequency deviation. **3**
- (c) What do you understand by significant sidebands in frequency modulation ? **2**

Unit III

6. (a) Define Kell factor. How it affects vertical resolution of a television picture. Show that vertical resolution increases with increase in number of scanning lines. **4**
- (b) What is progressive and interlaced scanning ? Explain. How inter-laced scanning reduces flickers ? **4**
7. (a) Discuss components of composite video signal in brief. **5**
- (b) Explain, why the number of lines in TV system are kept odd ? **3**

Unit IV

8. Draw a neat and clean block diagram of TV Receiver. Explain in detail. **8**

9. (a) Explain the terms :
- (i) complementary colours
 - (ii) hue
 - (iii) saturation
 - (iv) chrominance. 4
- (b) What do you understand by compatibility in TV transmission ? Enlist the requirements that composite colour signal must meet to make the system fully compatible. 4