Con. 6600–13. **GS–7245**

(3 Hours) **[Total Marks : 100**

N.B. :(1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions out of remaining **six**.
(3) Make **suitable** assumption wherever **necessary** and clearly **justify** them.

1. Answer the following (any **four**) :— **20**
   (a) Explain Tracking in AM receiver.
   (b) What are the causes of fold over distortion ? How can it overcome
   (c) Explain how PPM is generated from PWM.
   (d) List the advantages of digital communication over analog communication system. Explain in brief.
   (e) Explain pre-emphasis and De-emphasis in brief with the help of circuit diagram.

2. (a) Why is frequency moduation preferred for stereophonic broadcasting ? Explain in brief. **5**
   (b) An AM broad casting station operates at its maximum allowed total output of 100 kW at 90% modulation. How much of this power is the intelligence signal ? **5**
   (c) Explain high power AM–DSBFC modulater with schematic diagram. **10**

3. (a) Explain measurements of Receiver Performance in detail. **10**
   (b) What is noise ? List the types of noise and explain each in brief. **10**

4. (a) Explain in detail pulse width modulation (PWM) with the help of circuit diagram. **10**
   (b) Explain Delta modulation. Draw the output signal waveform ? Also differentiate Delta modulation and Adaptive Delta Modulation. **10**

5. (a) The Signal to Noise ratio of an AM system is 25dB. The highest audio frequency transmitted is 30 kHz. If the transmitted carrier power is reduced by one-tenth and FM with a deviation of $\pm$ 15 kHz is employed, what signal to noise ratio is obtained. **10**
   (b) Explain foster Seeley discriminator with the help of schematic diagram. **10**

[TURN OVER

6. (a) Explain VSB transmission. **5**

(b) What is superheterodyne dune tracking. Explain in brief. **5**

(c) The output voltage of a transmitter is given by 500 (1 + 0·4 sin 3140 t) sin 6·28t. **10**
This voltage is fed to a load of 600 Ω resistance. Then Calculate—

(i) Carrier frequency

(ii) Modulation frequency

(iii) Carrier Power

(iv) Mean power output

(v) Peak power output.

7. Write short notes (any **four**) :— **20**

(a) FM noise triangle

(b) Ratio Detector

(c) Squelch Circuit

(d) Primam causes of ISI

(e) AVG and AGC.
