

B.TECH. DEGREE EXAMINATION, MAY 2014**Fourth Semester**

Branch : Electronics and Communication/Applied Electronics and Instrumentation/Electronics and Instrumentation Engineering

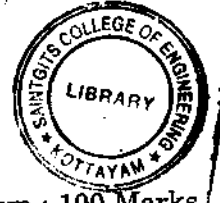
COMMUNICATION ENGINEERING—I (L, A, S)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours

Maximum : 100 Marks

**Part A***Answer all questions.**Each question carries 4 marks.*

1. A 500 W carrier is simultaneously modulated by two audiowaves with modulation percentages 35 and 45 respectively. What is the total power radiated ?
2. Why FM is found to be more noise immune than AM ?
3. What is pre-emphasis ? Why it is done ?
4. What are the limitations of modulated transistor amplifiers ? When are they used ?
5. With block diagram, explain TRF receiver.
6. Calculate the image frequency of an AM radio broadcast station, operating with a carrier of 920 kHz. What is its significance ?
7. Compare various modified SSB systems.
8. What do you mean by companding ? What are its advantages ?
9. What is ASTIC ? What is its need ?
10. What are the merits and demerits of powerline communications ?

(10 × 4 = 40 marks)

Part B*Answer all questions.**Each full question carries 12 marks.*

11. The output voltage of a transmitter is given by $400 (1 + 0.4 \cos 6280 t) \cos (3.14 \times 10^7 t)$. This voltage is fed to an antenna load of 600Ω resistance. Calculate (a) carrier frequency ; (b) modulating frequency ; (c) modulated frequency ; (d) carrier power ; (e) total power output ; (f) derive the equations used.

Or

Turn over

12. (a) Describe the spectrum of FM wave and give its properties. (9 marks)
- (b) When a 50.4 MHz carrier is frequency modulated by a sinusoidal AF modulating signal, the highest frequency reached is 50.405 MHz. Calculate :
- (i) the frequency deviation produced.
 - (ii) carrier swing of the wave.
 - (iii) lowest frequency reached.
- (3 marks)
13. Describe the circuit of FET reactance modulator and derive the related equations.
- Or*
14. Explain the generation of wide band FM using Armstrong technique. Give circuit diagrams of any four blocks in it.
15. With the neat circuit diagrams, describe slope detector and ratio detector. Compare and contrast between their performances.
- Or*
16. With appropriate circuit diagrams, explain (i) Simple AGC circuit ; (ii) delayed AGC circuit. Compare and contrast between their performances.
17. Explain the need for VSB in TV system, in contrast to DSB and SSB. With the transmitter and receiver response characteristics explain how VSB correction is made.
- Or*
18. With necessary diagrams, explain two different methods of SSB generation. Compare them.
19. With neat block diagrams, explain how a call is established between two subscribers of a land line telephone.
- Or*
20. Describe the working of a 500 line EPABX.

(5 × 12 = 60 marks)

