

Roll No. _____

[Total No. of Pages : 3

SVS 322 B-14
B.Sc. Vth Semester Degree Examination
Electronics
(Communication Electronics - I)
Paper - 5.1

Time : 3 Hours

Maximum Marks : 80

Instructions to candidates:

- i) Answer **all** questions from section - A
- ii) Answer any **Five** questions from section - B
- iii) Answer any **Four** questions from section - C

Section - A

1. Choose the correct answer

(1×5=5)

- i) Indicate which of the following modes cannot exist in rectangular wave guide.
 - a) $Tm_{m,0}$
 - b) $TE_{1,1}$
 - c) $Tm_{3,2}$
 - d) $TE_{m,n}$
- ii) A yagi Uda antenna is relatively ----- antenna
 - a) Omni directional
 - b) No directional
 - c) Uni directional
 - d) None of these
- iii) In "AM", band width is ----- the audio signal frequency
 - a) Thrice
 - b) Twice
 - c) Four times
 - d) None of these
- iv) Pre - emphasis circuit in FM - transmitter emphasizes the
 - a) Low frequency terms
 - b) Middle frequency terms
 - c) Both a & b
 - d) High frequency terms
- v) Which of the following is the In - direct way of generating "FM" wave
 - a) "FET" reactance modulator
 - b) "BJT" reactance modulator
 - c) Varactor diode modulator
 - d) None of the above

2. Fill in the blanks

- i) Very high frequency waves travels as ----- (1×5=5)
- ii) An antenna behaves as a resonating circuit only when its length is -----
- iii) If the modulation is 100%, then signal amplitude is ----- carrier amplitude
- iv) ----- region of the diode characteristics curve is used in linear diode Detector
- v) In a "TRF" radio receiver, the RF and detector stages are tuned to -----

3. State Whether the following statements are 'true' or "false".

(1×5=5)

- i) In "TM" mode there is no component of electric field in the direction of propagation.
- ii) Impedance of half wave dipole antenna is 72 Ohms.
- iii) Indirect method of generation of "FM" is Via "PM".
- iv) A 100V carrier is made to vary between 160V and 40V by the signal. The modulation factor is 0.5.
- v) Diode detector in an "AM" radio receiver is usually found after the several R.F. Stages.

Section - B

Answer any Five questions of the following

(5×5=25)

- 4. State and explain Poynting theorem
- 5. With an appropriate diagram explain "TE" Dominant mode
- 6. What are the primary requirement of TV - receiving antenna
- 7. A carrier wave of frequency 10 MHz and Peak value 10V is amplitude modulated by a 5KHz sine wave of amplitude 6V.

Determine

- a) Modulation factor
 - b) Side band frequencies
 - c) Amplitude of side band components
- 8. With an appropriate circuit diagram. Explain briefly emitter - modulator method of generation of "AM" wave
 - 9. What is the significance of "AGC"? Explain.
 - 10. Compare an "AM" Transmitter with "FM" Transmitter.

Section - C

Answer any Four questions of the following

(4×10=40)

- 11. a) What is the significance of "Poynting Vector"? Explain.
- b) Write a note on rectangular wave guide.

(5+5)

12. a) Describe the structure of a "Yagi antenna."
b) Draw the radiation pattern of "Yagi antenna" and explain. (6+4)
13. a) Obtain an expression for amplitude modulated wave.
b) Describe briefly frequency spectrum of "AM" wave. (7+3)
14. a) Draw the block diagram of "FM" transmitter. Explain the function of each block
b) What are the limitations of the "FM" transmitter. (8+2)
15. a) With an appropriate circuit diagram. Explain balanced slope detector for the detection of "FM" signal.
b) What are the limitations of Balanced slope detector (8+2)
16. a) Draw the block diagram of superheterodyne "AM" receivers. Explain the function of Each block
b) Compare an "AM" receiver with "FM" receiver. (7+3)
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