

Roll No. \_\_\_\_\_

[Total No. of Pages : 4

**SVS 322 B-16**  
**B.Sc. Vth Semester Degree Examination**  
**Electronics**  
**(Communication Electronics-I)**  
**Paper - 5.1**

Time : 3 Hours

Maximum Marks :80

**Instructions to Candidates:**

- 1) Answer **all** the questions from Section - A
- 2) Answer any **five** questions from Section - B
- 3) Answer any **four** questions from section -C.

**Section - A**

1 Choose the correct answers. (1×5=5)

- i) As electromagnetic waves propagate through free space, they can under go only one of the following changes.
  - a) Attenuation
  - b) Absorption.
  - c) Refraction.
  - d) Reflection.
- ii) Indicate which one of the following terms does not apply to the yagi-Uda array
  - a) Good band width.
  - b) Folded dipole.
  - c) High gain
  - d) Parasitic elements.

iii) In FM, the modulation index is proportional to

- a)  $\omega m$
- b)  $1/\omega m$
- c)  $\omega^2 m$
- d)  $1/\omega^2 m$

iv) In linear diode detector using capacitor filter, as the modulation index increases, the maximum permissible value of time constant RC of the load circuit.

- a) Increases
- b) Decreases
- c) Remains unaltered.
- d) None of these.

v) Selectivity of superheterodyne receiver is governed by

- a) Both RF and IF sections
- b) Only RF section
- c) Only audio section.
- d) Only IF section.

2. Fill in the blanks.

(1×5=5)

- i) According to Faraday's law  $\nabla \times E =$  \_\_\_\_\_
- ii) Radiation resistance of half Wave dipole is \_\_\_\_\_.
- iii) In AM, carrier \_\_\_\_\_ remains constant.
- iv) Varactor diode can be used as \_\_\_\_\_ modulator.
- v) In FM, super heterodyne receiver IF is \_\_\_\_\_ MHz.

3. State whether the following statements are TRUE or FALSE. (1×5=5)
- In TE mode there is no component of electric field in the direction of propagation
  - The size of the antenna becomes large when the frequency is increased.
  - Linear diode detector is superior to square Law detector.
  - AM receiver uses FM detector.
  - modulation index is unit less.

**Section - B**

(5×5=25)

- Write Maxwell's equations in integral form.
- Explain radiation patterns of resonant antenna.
- Briefly explain rectangular wave guides.
- Derive the relation between the carrier power and total power of the AM wave.
- Draw the circuit and explain the working of a frequency modulator using a varactor diode.
- Give the basic principle of AM and FM detector.
- Compare AM and FM receiver.

**Section - C**

(4×10=40)

- State and explain Poynting theorem.
- What are antenna parameters? Explain in brief TV receiving antenna requirements.
- Draw the block diagram and explain the various stages of FM transmitter.
- Draw the circuit of square law diode detector & describe how detection takes place.
- Draw a block diagram of a super heterodyne receiver and explain the function of each stage.

16. Write a note on.

(5+5)

- a) Base modulator for AM Generation
  - b) Need for AGC.
-