TEC-601 **1040**

Even Semester Examination 2018-19

B. TECH. (ECE) (SEMESTER-VI)

MICROWAVE TECHNIQUES

Time: 03:00 Hours **Max Marks : 100**

Note : **All** questions are **compulsory**. Draw diagrams wherever necessary. **All** questions carry **equal** marks.

1. Attempt **any four** parts of the following : [5X4=20]

   (A) What is meant by cutoff frequency and cutoff wavelength in waveguide?

   (B) What is meant by modes? What does m and n indicates in TM_{mn} mode?

   (C) What is the reason that TEM waves cannot be propagated in waveguide?

   (D) Arrange phase velocity, group velocity and c in increasing order and state the relation between them?

   (E) What is meant by dominant mode and degenerate mode in a waveguide?

   (F) Draw the pattern of TE_{11}, TE_{10} and TE_{31} mode pattern?

2. Attempt **any four** parts of the following : [5X4=20]

   (A) What is meant by Directivity and coupling in Directional coupler? Explain them with mathematical relation?

   (B) What is meant by circulator? What is the order of its scattering matrix? Write its four application?.

   (C) What is meant by H-plane Tee and E-plane Tee? Explain it with diagrams?

   (D) What is meant by Magic Tee? Explain it with diagram?.

(E) What is attenuation? What are different types of attenuators used in Microwave?

(F) Explain the operation of Two hole Directional coupler?

3. Attempt **any two** parts of the following [10X2=20]

(A) What is meant by phase shifters?

(B) Explain the method of Microwave power, frequency and VSWR measurement?

(C) Write a short note on scattering matrix?

4. Attempt **any two** parts of the following : [10X2=20]

(A) What is meant by waveguide discontinuities? Explain in detail?

(B) Write a short note on planar and quasi-planar transmission line?

(C) What are Different types of Filters used in Microwave communication?

5. Attempt **any two** parts of the following : [10X2=20]

(A) Explain the working of Reflex klystron?

(B) Explain the working of two cavity klystron? What is meant by velocity modulation?

(C) Explain the operation of magnetron? What is the application of magnetron

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