

C.U.SHAH UNIVERSITY

Winter Examination-2018

Subject Name: Microwave & Radar Engineering

Subject Code: 4TE07MRE1

Branch: B.Tech (EC)

Semester: 7

Date: 04/12/2018

Time: 10:30 To 01:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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- Q-1 Define the following terms: (14)**
- a) VSWR
 - b) Return loss
 - c) Characteristic impedance
 - d) Standing wave
 - e) Micro Strip line
 - f) Microwave
 - g) Waveguide
 - h) Guide Wavelength
 - i) Group Velocity
 - j) Phase Velocity
 - k) Wave Impedance
 - l) Dominant Mode
 - m) Blind Speed
 - n) PRF

Attempt any four questions from Q-2 to Q-8

- Q-2 Attempt all questions (14)**
- (a) How are waveguide different from normal two wire transmission line discuss the similarity & De-similarity.
 - (b) Explain propagation of wave in rectangular waveguide.
- Q-3 Attempt all questions (14)**
- (a) Write a note on TE & TM Wave Modes.
 - (b) Derive the equation of cut-off frequency of a waveguide.
- Q-4 Attempt all questions (14)**
- (a) Write a note on: Micro strip lines.
 - (b) Explain the Cavity wave meter technique of measuring frequency.
- Q-5 Attempt all questions (14)**
- (a) Explain the construction and working of Magnetron tube. What are its applications?



- (b) Explain the amplification process for a helix type travelling wave tube. What are its different applications? (14)
- Q-6** **Attempt all questions**
- (a) Explain the Tunnel diode characteristics with the aid of Energy band diagram.
- (b) Explain working principle of PIN diode.
- Q-7** **Attempt all questions** (14)
- (a) What is Faraday's rotation principle? Explain the working of Faraday's rotation Isolator. What are its applications?
- (b) Explain the operation of Magic TEE with its s-parameter. Also list some applications of magic TEE.
- Q-8** **Attempt all questions** (14)
- (a) What is Doppler Effect? With block diagram explain Doppler radar.
- (b) What is a Pulsed radar? Explain the pulsed radar with its block diagram.

