

College Code: 09

Rajeev Gandhi Memorial College of Engineering & Technology

Autonomous

NANDYAL-518501

III B.Tech II-Semester- Mid-I Examinations

**MICROWAVE ENGINEERING AND OPTICAL
COMMUNICATION**

(ECE)

Max. Marks: 20

Date:24-03-2023

Time: 2 Hours

Note: 1. Answer the FIRST question compulsorily. (5 x 1= 05 Marks)**2. Answer Any THREE from 2 to 5 questions. (3 x 5 = 15 Marks)**

Q.No	Marks	CO	Blooms Level
Q.1 a) Write short note on circulator.	1M	CO2	BL1
b) Compare Two cavity Klystron amplifier and Reflex Klystron oscillator.	1M	CO3	BL2
c) Mention the properties of S - Matrix.	1M	CO2	BL1
d) Define TE wave.	1M	CO1	BL1
e) Define guided and cutoff wavelengths of a rectangular waveguide.	1M	CO3	BL1
Q.2 a) Define and derive the expression for phase velocity	3M	CO1	BL3
b) Derive the expression for Group velocity.	2M	CO1	BL3
Q.3 a) Explain the construction and working of reflex klystron oscillator.	3M	CO3	BL2
b) Derive the expression for output power and efficiency of reflex klystron oscillator.	2M	CO3	BL1
Q.4 a) Derive the S-matrix for Magic Tee junction	3M	CO2	BL3
b) Write short note on ferrite materials.	2M	CO2	BL1
Q.5 a) Explain the construction and working of isolator.	3M	CO3	BL2
b) A rectangular wave guide has dimensions of a=8cm, b=4cm for the modes TE ₁₀ , TM ₁₁ , TM ₂₁ . Mention the modes which are propagate through a wave guide if the free space wave length is 10 cm	2M	CO1	BL3