



K.D.K. COLLEGE OF ENGINEERING NANDANVAN, NAGPUR-09

DEPARTMENT OF ELECTRONICS ENGINEERING

B.E. 6th Semester (Even Semester)

SESSION 2017-18



Sub: -Microwave Engineering

Assignment No-I

Sem.:- VI Sem.

Last Date: - 22.01.18

Bloom's Taxonomy Levels – 1. Remember 2. Understand 3. Apply 4. Analyze 5. Evaluate 6. Create

Question no 1, 2, 3 are based on CO601.1 - Understand the working of microwave active devices like Klystron and limitation of Conventional low frequency devices.

Question no 4, 5, 6 are based on CO601.2- Understand the working of magnetron (M type active device) used as an oscillator.

Que. No	Question	BTL level
Q.1	What do you mean by reentrant cavity? Discuss various types of reentrant cavities.	L1
Q.2	Derive an expression for electronics admittance of reflex klystron. Draw admittance spiral and show Oscillation region on it.	L3
Q.3	What do you understand by strapping in magnetron? Explain different strapping techniques. Determine how the mode jumping can be avoided using Strapping.	L2
Q.4	A Reflex klystron operates at peak of $n=1$ mode, The dc input power is 60 mw $V1/V0= 0.275$ Find: i)Efficiency of reflex klystron. ii)Output power in mw.iii)If 30% of power delivered by electron beam is dissipated in cavity walls find power delivered to load.	L3
Q.5	Draw the neat diagram of BWO and explain how BWO is used as an oscillator and also calculate the condition of oscillation.	L2
Q.6	Explain the Rising-Sun Magnetron and determine how it is used to avoid the mode jumping problem without using extra hardware.	L2

Mrs. J. S. Gawai

Subject Teacher



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SESSION 2017-18



Sub: -Microwave Engineering

Assignment No-II

Sem.:- VI Sem.

Last Date: - 26.02.18

Bloom's Taxonomy Levels – 1. Remember 2. Understand 3. Apply 4. Analyze 5. Evaluate 6. Create

Question no 1, 2, 3 are based on CO601.3 - Describe the various parameters of microwave components and design impedance matching network for any transmission line using smith chart.

Question no 4, 5, 6 are based on CO601.4- Analyze the microwave networks and passive components with the help of scattering matrix.

Que. No	Question	BTL level
Q.1	Draw a neat diagram of precision rotary attenuator and explain its working.	L1
Q.2	Explain the working of Directional coupler and derive its scattering matrix	L3
Q.3	Draw a neat diagram of circulation using magic tee and explain its working.	L2
Q.4	State and prove Carlin's Theorem as applied to three port circulator.	L3
Q.5	Prove the Phase shift property of Two port network.	L3
Q.6	A rectangular cavity resonator excited by TE ₁₀₁ mode at 20 GHz has the dimensions $a = 2\text{cm}$, $b = 1\text{cm}$. Calculate the length of the cavity.	L3

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DEPARTMENT OF ELECTRONICS ENGINEERING

B.E. 6th Semester (Even Semester)

SESSION 2017-18



Sub: -Microwave Engineering

Assignment No-III

Sem.:- VI Sem.

Last Date: - 24.03.18

Bloom's Taxonomy Levels – 1. Remember 2. Understand 3. Apply 4. Analyze 5. Evaluate 6. Create

Question no 1, 2, 3 are based on CO601.5 - Acquire knowledge about the measurements to be done at microwaves.

Question no 4, 5, 6 are based on CO601.6- Demonstrate the various solid state devices and its applications.

Que. No	Question	BTL level
Q.1	Draw a waveguide setup for the measurement SWR using double minima method.	L2
Q.2	Write the fabrication process for MMIC. Explain the application of MMIC.	L2
Q.3	Explain the principle of Gyrator. Describe the construction and working of gyrator.	L1
Q.4	Explain the calorimeter -wattmeter's method of microwave power measurement.	L1
Q.5	State Manley-Rowe relations as applied to parametric amplifiers. What are the conditions for parametric up converter and down converter?	L2
Q.6	Calculate the SWR of transmission system operating at 10 GHz. Assume 10TE wave transmission inside a waveguide of dimensions $a = 4\text{cm}$, $b = 2.5\text{ cm}$. The distance measured between twice minimum power points = 1mm on a slotted line.	L3

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