GANPAT UNIVERSITY
M.TECH. SEM. II ELECTRONICS AND COMMINICATION ENGINEERING
REGULAR EXAMINATION MAY-JUNE 2012
3 EC 205 -(RF CIRCUITS)

Max. Time: 3 Hrs.] **[Max. Marks: 70**

Instructions:

1. Attempt all questions.
2. Answers to the two sections must be written in separate answer books.
3. Figures to the right indicate full marks.
4. Assume suitable data, if necessary.

SECTION-I

1	(A)	Explain with suitable equations derivation about Low Noise Amplifier design procedure.	6
	(B)	Write short note on various atmospheric and ground effects in generic microwave link during microwave propagation conditions.	6
		OR	
1	(A)	What do you mean by Microwave Field Effect Transistor? Discuss the same with suitable diagrams and equations if necessary.	6
	(B)	Discuss about various applications of microwave communication systems. Also discuss in brief about Biological effects and its related safety issues.	6
2	(A)	List out all various microwave communication systems and derive FRISS formula for generic microwave link.	6
	(B)	Define the usability of various antennas in the design of microwave (communication based) systems.	5
		OR	
2	(A)	Discuss about working of non linear device as diode rectifier and frequency mixer circuit at RF and microwave frequency.	5
	(B)	Define only Conditional and Unconditional stabilities. Derive the required equations for output stability circles for a conditionally stable device.	6
3	(A)	An X- band amplifier has a gain of 20dB and a 1GHz bandwidth. Its equivalent noise temperature is to be measured via the Y-factor method. The following data is obtained. For T_1=290 K, N_1= -62dBm and for T_2=77 K, N_2 = - 64.7dBm. Determine the equivalent noise temperature of the amplifier. If the amplifier is used with a source having an equivalent noise temperature of Ts = 450 K, what is the output noise power in dBm?	3
	(B)	Explain about GUNN diode with reference to its various modes of operation and equivalent circuit.	5
	(C)	Discuss about various practical considerations for desiging the microwave oscillators.	4

SECTION-II

4	(A)	What is gain compression? Also discuss about third intercept point of a cascaded system.	6
	(B)	Discuss in brief about one port negative resistance microwave oscillator circuits.	6
		OR	
4	(A)	Discuss briefly about ferrite isolators and ferrite phase shifter circuits.	6
	(B)	What is Passive Inter modulation concept? Also discuss in brief about Noise figure.	6
5	(A)	Write a short note on Ferrite circulator circuits.	6
	(B)	Discuss the working of microwave transistor as Single stage amplifier with reference to its design- as unilateral case.	5
		OR	
5	(A)	Explain Power amplifiers with their characteristics and their classes.	5
	(B)	What is the significance of stability circles in the design of microwave amplifier? Also define various two port power gains.	6
6	(A)	Write short note on Inter modulation distortion.	6
	(B)	Discuss about Y factor method for measurement of noise temperature.	6

End of Paper