

NADAR SARASWATHI COLLEGE OF ENGINEERING AND TECHNOLOGY, THENI.

Course/Branch : B.E/ECE	Year / Semester : IV/ VII	Format No.	NAC/TLP-07a.13
Subject Code : EC8701	Subject Name : Antennas and Microwave Engineering	Rev. No.	02
Unit No : 5	Unit Name : Microwave Design Principle	Date	30.09.2020

OBJECTIVE TYPE QUESTION BANK

S. No.	Objective Questions (MCQ /True or False / Fill up with Choices)	BTL
1	The mask in a hybrid microwave circuit is made of: a) rubylith b) silicon c) quartz d) arsenic	L2
2	The metalized substrate is coated with _____ covered with the mast and exposed to light source. a) photoresist b) GaAs c) germanium liquid d) none of the mentioned	L2
3	_____ is a micromachining technique where suspended structures are formed on silicon substrates. a) MMIC b) HIC c) RF MEMS d) none of the mentioned	L4
4	In hybrid microwave integrated circuits, the various components of the circuit are etched in the substrate. a) true b) false	L5
5	_____ is defined as the ratio of power available from the two port network to the power available from the source. a) Transducer power gain b) Available power gain c) Power gain d) None of the mentioned	L1
6	Transducer power gain of a two port network is dependent on : a) Z_S and Z_L b) Z_S c) Z_L d) Independent of both the impedances	L1
7	For a two port network the voltage reflection coefficient seen looking towards the load, s is: a) $(Z_S - Z_0) / (Z_S + Z_0)$ b) $(Z_S + Z_0) / (Z_0 - Z_0)$ c) $Z_S / (Z_S - Z_0)$ d) $Z_0 / (Z_S - Z_0)$	L2
8	In a two port network, the source impedance was measured to be 25 _____ and the characteristic	L1

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		impedance of the transmission line was measured to be 50 . Then the reflection coefficient at the source end is: a) -0.33333 b) -0.1111 c) 0.678 d) 0.2345	
9		Gain of an amplifier is independent of the operating frequency. a) True b) False	L1
10		Gain of a conjugate matched FET amplifier is given by the relation: a) $R_{ds} (f_T)^2 / 4R_i (f)^2$ b) $4R_i (f)^2 / R_{ds} (f_T)^2$ c) R_{ds} / R_i d) None of the mentioned	L3
11		When both input and output of an amplifier are matched to zero reflection (in contrast to conjugate matching), the transducer power gain is: a) S_{21}^2 b) S_{22}^2 c) S_{12}^2 d) $ S_{11} ^2$	L2
12		If the load impedance of a two port network is 40 and the characteristic impedance is 50 , then the reflection coefficient of the two port network at the load end is: a) -0.111 b) -0.333 c) -0.987 d) None of the mentioned	L3
13		High gain is not achievable at microwave frequencies using BJT amplifiers because: a) device construction b) complex architecture c) ports are not matched at high frequencies d) none of the mentioned	L1
14		To flatten the gain response of a transistor: a) biasing current has to be increased b) input signal level has to increased c) increase the operational bandwidth d) give negative feedback to the amplifier	L1
15		In conventional amplifiers, a flat gain response is achieved at the cost of reduced gain. But this drawback can be overcome by using: a) balanced amplifiers b) distributed amplifiers c) differential amplifiers d) none of the mentioned	L2

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16	<p>Coupler that is mostly used in balanced amplifiers to achieve the required performance is:</p> <p>a) branch line coupler b) wilkinson coupler c) lange coupler d) waveguide coupler</p>	L3
17	<p>_____ uses balanced input and output, meaning that there are 2 signal lines, with opposite polarity at each port.</p> <p>a) differential amplifier b) distributed amplifier c) balanced amplifier d) none of the mentioned</p>	L1
18	<p>A major advantage of differential amplifiers is:</p> <p>a) high gain b) low input impedance c) higher output voltage swing d) none of the mentioned</p>	L5
19	<p>_____ are used in the final stages of radar and radio transmitters to increase the radiated power level.</p> <p>a) Power amplifiers b) Oscillators c) Transistors d) Attenuators</p>	L1
20	<p>Important factors to be considered for power amplifier design are:</p> <p>a) Efficiency b) Gain c) Thermal effect d) All of the mentioned</p>	L1
21	<p>Gain of power amplifiers _____ with increase in operating frequency.</p> <p>a) Increases b) Decreases c) Increases exponentially d) Decreases exponentially</p>	L2
22	<p>_____ amplifiers are linear circuits, where the transistor is biased to conduct over the entire range of the input signal cycle.</p> <p>a) Class A amplifiers b) Class B amplifiers c) Class C amplifiers d) None of the mentioned</p>	L1
23	<p>Power amplifiers in the increasing order of efficiency is:</p> <p>a) Class A, B, C</p>	L1

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	b) Class C, A, B c) Class B, A, C d) Efficiency of all the 3 amplifiers is the same	
24	If the output power of an amplifier is 10 W, and the input power supplied to the amplifier is 0.229 W given that the DC voltage used is 38.5 V, efficiency of the power amplifier is: a) 25% b) 50% c) 75% d) 35%	L3
25	If a power amplifier has an output power of 10 W, and an amplifier gain of 16.4 dB, then the input drive power is: a) 400 mW b) 225 mW c) 229 mW d) 240 mW	L2
26	Any device with negative impedance as its characteristic property can be called: a) Energy source b) Energy sink c) Oscillator d) None of the mentioned	L2
27	For achieving steady state oscillation, the condition to be satisfied in terms of reflection coefficients is: a) $\Gamma_{in} = \Gamma_L$ b) $\Gamma_{in} = -\Gamma_L$ c) $\Gamma_{in} = 1/\Gamma_L$ d) None of the mentioned	L5
28	A one port oscillator uses a negative resistance diode having $\Gamma_{in} = 0.9575 + j0.8034$ ($Z_0 = 50 \Omega$) at its desired frequency point. Then the input impedance of the diode is: a) $-44 + j123$ b) $50 + j100$ c) $-44 + j145$ d) None of the mentioned	L2
29	If the input impedance of a diode used in the microwave oscillator is $45 - j23 \Omega$, then the load impedance is to achieve stable oscillation is: a) $45 - j23$ b) $-45 + j23$ c) 50 d) $23 - j45$	L1

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30	<p>In a transistor amplifier, if the input impedance is $-84-j1.9$, then the terminating impedance required to create enough instability is:</p> <p>a) $-84-j1.9$ b) $28+j1.9$ c) $-(28+j1.9)$ d) None of the mentioned</p>	L1
31	<p>The phase variation for an oscillator or synthesizer is given by:</p> <p>a) $f \sin \pi t / f_m$ b) f / f_m c) $\sin \pi t / f_m$ d) None of the mentioned</p>	L2
32	<p>The expression for phase noise in an oscillator is given by:</p> <p>a) $\frac{r_{rms}^2}{2}$ b) $\frac{r_{rms}^2}{2}$ c) $\frac{r_{rms}^2}{2}$ d) $\frac{r_{rms}^2}{3}$</p>	L4
33	<p>A GSM cellular telephone standard requires a minimum of 9 dB rejection of interfering signal levels of -23 dBm at 3 MHz from the carrier, -33 dBm at 1.6 MHz from the carrier, and -43 dBm at 0.6 MHz from the carrier, for a carrier level of -99 dBm. Determine the required local oscillator phase noise at 3 MHz carrier frequency offset.</p> <p>a) -138 dBc/Hz b) -128 dBc/Hz c) -118 dBc/Hz d) None of the mentioned</p>	L1
34	<p>At higher frequencies of operation of an oscillator, induced noise is mostly:</p> <p>a) Thermal noise b) White noise c) Shot noise d) Flicker noise</p>	L2
35	<p>Phase noise at the output of an oscillator is given by:</p> <p>a) $kBFGT_0$ b) kT_0F/P_c c) kT_0F/P_c d) None of the mentioned</p>	L3