ELECTRONIC DEVICES AND CIRCUITS (16PHP102) MULTIPLE CHOICE QUESTIONS					
	CHOICE1	**CHOICE2**	**CHOICE3**	**CHOICE4**	**ANSWER**
UNIT I					
1. A transistor has how many pn junctions?	1	2	3	4	2
2. In an npn transistor, the majority carriers in the emitter are	free electrons	holes	neither	both	free electrons
3. The barrier potential across each silicon depletion layer is	0V	0.3V	0.7V	1V	0.7V
4. The base of an npn transistor is thin and	Heavily doped	Lightly doped	Metallic	Doped by a pentavalent material	Lightly doped
5. The emitter of a transistor is generally doped the heaviest because it	has to dissipate maximum power	has to supply the charge carriers	is the first region of the transistor	must possess low resistance	has to dissipate maximum power
6. When a transistor is fully switched ON, it is said to be	shorted	saturated	open	cut-off	saturated
7. A FET consists of a	source	drain	gate	all the above	all the above
8. The extremely high input impedance of a MOSFET is primarily due to the	absence of its channel	negative gate-source voltage	depletion of current carriers	extremely small leakage current of its gate capacitor	extremely small leakage current of its gate capacitor
9. When a transistor is used as a switch, it is stable in which two distinct regions?	saturation and active	active and cutoff	saturation and cutoff	none of the above	saturation and cutoff
10. The term BJT is short for	base junction transistor	binary junction transistor	both junction transistor	bipolar junction transistor	bipolar junction transistor
11. What are the two types of bipolar junction transistors?	npn and pnp	pnn and nnp	ppn and nnp	pts and stp	npn and pnp
12. The magnitude of dark current in a phototransistor usually falls in what range?	mA	mA	nA	pA	nA
13. Junction Field Effect Transistors (JFET) contain how many diodes?	4	3	2	1	1
14. When not in use, MOSFET pins are kept at the same potential through the use of:	shipping foil	nonconductive foam	conductive foam	a wrist strap	conductive foam
15. A MOSFET has how many terminals?	2 or 3	3	4	3 or 4	3 or 4
16. A very simple bias for a D-MOSFET is called:	self biasing	gate biasing	zero biasing	voltage-divider biasing	zero biasing
17. Hybrid means	mixed	single	biunique	none of the above	mixed

18. There are _____ h- parameters of a transistor.	two	four	three	none of the above	four
19. The h- parameter approach gives correct results for	large signals only	small signals only	both small and large signals	none of the above	small signals only
20. If the operating point changes, the h-parameters of transistor	also change	do not change	may or may not change	none of above	also change
21. The dc load line on a family of collector characteristic curves of a transistor shows the	saturation region.	cutoff region.	active region.	all of the above	all of the above
22. A transistor data sheet usually identifies β_{DC} as	h_{re}.	h_{fe}.	I_C.	V_{CE}.	h_{fe}
23. When a transistor is used as a switch, it is stable in which two distinct regions?	saturation and active	active and cutoff	saturation and cutoff	none of the above	saturation and cutoff
24. For a silicon transistor, when a base-emitter junction is forward-biased, it has a nominal voltage drop of	0.7 V.	0.3 V.	0.2 V.	V_{CC}.	0.7 V
25. The value of β_{DC}	is fixed for any particular transistor.	varies with temperature.	varies with I_C.	varies with temperature and I_C.	varies with temperature and I_C.
26. The term BJT is short for	base junction transistor.	binary junction transistor.	both junction transistor.	bipolar junction transistor.	bipolar junction transistor
27. A BJT has an I_B of 50 μA and a βDC of 75; I_C is:	375 mA	37.5 mA	3.75 mA	0.375 mA	3.75 mA
28. A certain transistor has I_C = 15 mA and I_B = 167 μA; β_{DC} is:	15	167	0.011	90	90
29. For normal operation of a pnp BJT, the base must be _____ with respect to the emitter and _____ with respect to the collector.	positive, negative	positive, positive	negative, positive	negative, negative	negative, positive
30. A transistor amplifier has a voltage gain of 100. If the input voltage is 75 mV, the output voltage is:	1.33 V	7.5 V	13.3 V	15 V	7.5 V
31. A 35 mV signal is applied to the base of a properly biased transistor with an r'_e = 8 Ω and R_C = 1 kΩ. The output signal voltage at the collector is:	3.5 V	28.57 V	4.375 V	4.375 mV	4.375 V
32. What is the order of doping, from heavily to lightly doped, for each region?	base, collector, emitter	emitter, collector, base	emitter, base, collector	collector, emitter, base	emitter, collector, base
33. What are the two types of bipolar junction transistors?	npn and pnp	pnn and nnp	ppn and nnp	pts and stp	npn and pnp
34. Which of the following is true for an npn or pnp transistor?	$I_E = I_B + I_C$	$I_B = I_C + I_E$	$I_C = I_B + I_E$	none of the above	$I_E = I_B + I_C$
35. What is the ratio of I_C to I_B?	β_{DC}	h_{FE}	α_{DC}	either β_{DC} or h_{FE}, but not α_{DC}	either β_{DC} or h_{FE}, but not α_{DC}
36. What is the ratio of I_C to I_E?	β_{DC}	$\beta_{DC} / (\beta_{DC} + 1)$	α_{DC}	either β_{DC} /	either $\beta_{DC} / (\beta_{DC} + 1)$ or

				(β_{DC} + 1) or α_{DC}, but not β_{DC}	α_{DC}, but not β_{DC}
37. In what range of voltages is the transistor in the linear region of its operation?	$0 < V_{CE}$	$0.7 < V_{CE} < V_{CE(max)}$	$V_{CE(max)} > V_{CE}$	none of the above	$0.7 < V_{CE} < V_{CE(max)}$
38. What does DC vary with?	I_C	ºC	both I_C and ºC	$I_{C'}$, but not ºC	both I_C and ºC
39. What is (are) common fault(s) in a BJT-based circuit?	pens or shorts internal to the transistor	open bias resistor(s)	external opens and shorts on the circuit board	all of the above	all of the above
40. What is (are) general-purpose/small-signal transistors case type(s)?	TO-18	TO-92	TO-39	all of the above	all of the above
41. The magnitude of dark current in a phototransistor usually falls in what range?	mA	µA	nA	pA	nA
42. On the drain characteristic curve of a JFET for $V_{GS} = 0$, the pinch-off voltage is	below the ohmic area.	between the ohmic area and the constant current area.	between the constant current area and the breakdown region.	above the breakdown region.	between the ohmic area and the constant current area
43. For a JFET, the value of V_{DS} at which I_D becomes essentially constant is the	pinch-off voltage.	cutoff voltage.	breakdown voltage.	Ohmic voltage.	pinch-off voltage
44. The value of V_{GS} that makes I_D approximately zero is the	pinch-off voltage.	cutoff voltage.	breakdown voltage.	Ohmic voltage.	cutoff voltage
45. For a JFET, the change in drain current for a given change in gate-to-source voltage, with the drain-to-source voltage constant, is	breakdown.	reverse transconductance.	forward transconductance.	self-biasing.	forward transconductance
46. High input resistance for a JFET is due to	a metal oxide layer.	a large input resistor to the device.	an intrinsic layer.	the gate-source junction being reverse-biased.	the gate-source junction being reverse-biased
47. A dual-gated MOSFET is	a depletion MOSFET.	an enhancement MOSFET.	a VMOSFET.	either a depletion or an enhancement MOSFET.	either a depletion or an enhancement MOSFET
48. Which of the following devices has the highest input resistance?	diode	JFET	MOSFET	bipolar junction transistor	MOSFET
49. A self-biased n-channel JFET has a $V_D = 6$ V. $V_{GS} = -3$ V. Find the value of V_{DS}.	–3 V	–6 V	3 V	6 V	–6 V

50. A JFET data sheet specifies $V_{GS(off)} = -6$ V and $I_{DSS} = 8$ mA. Find the value of I_D when $V_{GS} = -3$ V.	2 mA	4 mA	8 mA	none of the above	2 mA
51. A JFET data sheet specifies $V_{GS(off)} = -10$ V and $I_{DSS} = 8$ mA. Find the value of I_D when $V_{GS} = -3$ V.	2 mA	1.4 mA	4.8 mA	3.92 mA	3.92 mA
52. The JFET is always operated with the gate-source pn junction _____ -biased.	forward	reverse	all of the above	none of the above	reverse
53. What three areas are the drain characteristics of a JFET ($V_{GS} = 0$) divided into?	ohmic, constant-current, breakdown	pinch-off, constant-current, avalanche	ohmic, constant-voltage, breakdown	none of the above	ohmic, constant-current, breakdown
54. What type(s) of gate-to-source voltage(s) can a depletion MOSFET (D-MOSFET) operate with?	zero	positive	negative	any of the above	any of the above
55. The _____ has a physical channel between the drain and source.	D-MOSFET	E-MOSFET	V-MOSFET	none of the above	D-MOSFET
56. All MOSFETs are subject to damage from electrostatic discharge (ESD).	TRUE	FALSE			TRUE
57. Midpoint bias for a D-MOSFET is I_D = _____, obtained by setting $V_{GS} = 0$.	I_{DSS} / 2	I_{DSS} / 3.4	I_{DSS}		I_{DSS}
58. If V_D is less than expected (normal) for a self-biased JFET circuit, then it could be caused by a(n)	open R_G.	open gate lead.	FET internally open at gate.	all of the above	all of the above
59. The resistance of a JFET biased in the ohmic region is controlled by	V_D.	V_{GS}.	V_S.	V_{DS}.	
UNIT-II					
60. A coupling capacitor is	A dc short	An ac open	A dc open and an ac short	A dc short and an ac open	A dc open and an ac short
61. In a bypass circuit, the top of a capacitor is	An open	A short	An ac ground	A mechanical ground	An ac ground
62. The capacitor that produces an ac ground is called a	Bypass capacitor	Coupling capacitor	DC open	AC open	Bypass capacitor
63. The output voltage of a CE amplifier is	Amplified	Inverted	180° out of phase with the input	All of the above	All of the above
64. A common-gate amplifier is similar in configuration to which BJT amplifier?	common-emitter	common-collector	common-base	emitter-follower	common-base
65. A common-source amplifier is similar in configuration to which BJT amplifier?	common-base	common-collector	common-emitter	emitter-follower	common-emitter
66. An emitter-follower is also known as a	common-emitter amplifier	common-base amplifier	common-collector	Darlington pair	common-collector amplifier

			amplifier		
67. When transistors are used in digital circuits they usually operate in the	active region	breakdown region	saturation and cutoff regions	linear region	saturation and cutoff regions
68. Which of the following elements are important in determining the gain of the system in the high-frequency region?	Interelectrode capacitances	Wiring capacitances	Miller effect capacitance	All of the above	All of the above
69. For audio systems, the reference level is generally accepted as _____.	1 mW	1 W	10 mW	100 mW	1 mW
70. What is the normalized gain expressed in dB for the cutoff frequencies?	–3 dB	+3 dB	–6 dB	–20 dB	–3 dB
71. Which of the following configurations does not involve the Miller effect capacitance?	Common-emitter	Common-base	Common-collector	All of the above	Common-base
72. When transistors are used in digital circuits they usually operate in the	Active region	Saturation and cutoff regions	Breakdown region	Linear region	Saturation and cutoff regions
73. A current ratio of IC/IE is usually less than one and is called	Omega	Beta	Theta	Alpha	Alpha
74. A transistor may be used as a switching device or as a:	Tuning device	Rectifier	Fixed resistor	Variable resistor	Variable resistor
75. Most of the electrons in the base of an NPN transistor flow:	Into the collector	Into the emitter	Out of the base lead	Into the base supply	Into the collector
76. The BJT is a _____ device. The FET is a _____ device.	Bipolar, bipolar	Bipolar, unipolar	Unipolar, bipolar	Unipolar, unipolar	Bipolar, unipolar
77. The Bode plot is applicable to	All phase network	Minimum phase network	Maximum phase network	Lag lead network	Minimum phase network
78. For any inverting amplifier, the impedance capacitance will be _____ by a Miller effect capacitance sensitive to the gain of the amplifier and the interelectrode capacitance.	Unaffected	Increased	Decreased	None of the above	Decreased
79. Which of the following configurations does not involve the Miller effect capacitance?	Common-emitter	Common-base	Common-collector	All of the above	Common-base
80. For the common-emitter amplifier ac equivalent circuit, all capacitors are	effectively shorts.	effectively open circuits.	not connected to ground.	connected to ground.	effectively shorts
81. For a common-emitter amplifier, the purpose of the emitter bypass capacitor is	no purpose, since it is shorted out by R_E.	to reduce noise.	to despike the supply voltage.	to maximize amplifier gain.	to maximize amplifier gain
82. For a common-emitter amplifier, the purpose of swamping is	to minimize gain.	to reduce the effects of r'_e	to maximize gain.	no purpose.	to reduce the effects of r'_e
83. An emitter-follower is also known as a	common-emitter amplifier.	common-base amplifier.	common-collector amplifier.	Darlington pair.	common-collector amplifier
84. In a common-base amplifier, the input signal is connected to the	base.	collector.	emitter.	output.	emitter

85. The differential amplifier produces outputs that are	common mode.	in-phase with the input voltages.	the sum of the two input voltages.	the difference of the two input voltages.	the difference of the two input voltages
86. The differential amplifier has	one input and one output.	two inputs and two outputs.	two inputs and one output.	one input and two outputs.	two inputs and two outputs
87. The dc emitter current of a transistor is 8 mA. What is the value of r_e?	320 Ω	13.3 kΩ	3.125 Ω	5.75 Ω	3.125 Ω
88. An emitter-follower amplifier has an input impedance of 107 kΩ. The input signal is 12 mV. The approximate output voltage is (common-collector)	8.92 V	112 mV	12 mV	8.9 mV	12 mV
89. A Darlington pair amplifier has	high input impedance and high voltage gain.	low input impedance and low voltage gain.	a voltage gain of about 1 and a low input impedance.	a low voltage gain and a high input impedance.	a low voltage gain and a high input impedance
90. You have a need to apply an amplifier with a very high power gain. Which of the following would you choose?	common-collector	common-base	common-emitter	emitter-follower	common-emitter
91. What is the most important r parameter for amplifier analysis?	r_b'	r_c'	r_e'	none of the above	r_e'
92. A common-emitter amplifier has _____ voltage gain, _____ current gain, _____ power gain, and _____ input impedance.	high, low, high, low	high, high, high, low	high, high, high, high	low, low, low, high	high, high, high, low
93. To analyze the common-emitter amplifier, what must be done to determine the dc equivalent circuit?	leave circuit unchanged	replace coupling and bypass capacitors with opens	replace coupling and bypass capacitors with shorts	replace V_{CC} with ground	replace coupling and bypass capacitors with opens
94. What is r_e equal to in terms of *h* parameters?	h_{re} / h_{oe}	$(h_{re} + 1) / h_{oe}$	$h_{ie} - (h_{re} / h_{oe})(1 + h_{fe})$	h_{fe}	h_{re} / h_{oe}
95. The advantage that a Sziklai pair has over a Darlington pair is	higher current gain.	less input voltage is needed to turn it on.	higher input impedance.	higher voltage gain.	less input voltage is needed to turn it on.
96. What is the device in a transistor oscillator?	LC tank circuit	Biasing circuit	Transistor	Feedback circuit	Transistor
97. When the collector supply is 5V, then collector cut off voltage under dc condition is	20 V	10 V	2.5 V	5 V	5 V
98. The common base (CB) amplifier has a _____ compared to CE and CC amplifier.	Lower input resistance	Larger current gain	Larger voltage gain	Higher input resistance	Lower input resistance
99. When a FET with a lower transconductance is substituted into a FET amplifier circuit, what happens?	The current gain does not change	The voltage gain decreases	The circuit disamplifies	The input resistance decreases	The voltage gain decreases

100. At zero signal condition, a transistor sees_____ load.	dc	ac	both dc and ac	resistive	dc
101. What is the gain of an amplifier with negative feedback if the feedback factor is 0.01?	10	1,000	100	500	100
102. The current gain of an emitter follower is	Equal to 1	Greater than 1	Less than 1	Zero	Less than 1
103. The current in any branch of a transistor amplifier that is operating is	ac only	the sum of ac and dc	the difference of ac and dc	dc only	the sum of ac and dc
104. An ideal differential amplifiers common mode rejection ratio is	Infinite	Zero	Unity	Undetermined	Infinite
105. An open fuse circuit has a resistance equal to	Zero	Unity	At least 100Ω at standard	Infinity	Infinity
106. What is the purpose of dc conditions in a transistor?	To reverse bias the emitter	To forward bias the emitter	To set up operating point	To turn on the transistor	To set up operating point
107. The ac variations at the output side of power supply circuits are called _____.	Ripples	Pulses	Waves	Filters	Ripples
108. What is the purpose of the emitter capacitor?	To forward bias the emitter	To reduce noise in the amplifier	To avoid drop in gain	To stabilize emitter voltage	To avoid drop in gain
109. A common emitter circuit is also called _____ circuit.	Grounded emitter	Grounded collector	Grounded base	Emitter follower	Grounded emitter
110. The output signal of a common-collector amplifier is always	Larger than the input signal	In phase with the input signal	Out of phase with the input signal	Exactly equal to the input signal	In phase with the input signal
111. Calculate the ripples of the filter output if a dc and ac voltmeter is used and measures the output signal from a filter circuit of 25 VDC and 1.5 V_{rms}	5%	10%	50%	6%	6%
112. What is the ideal maximum voltage gain of a common collector amplifier?	Unity	Infinite	Indeterminate	Zero	Unity
113. The output power of a transistor amplifier is more than the input power due to additional power supplied by	Transistor	Collector supply	Emitter supply	Base supply	Collector supply
114. When a transistor amplifier feeds a load of low resistance, its voltage gain will be	Low	Very high	High	Moderate	Low
115. The capacitors are considered _____ in the ac equivalent circuit of a transistor amplifier.	Open	Partially open	Short	Partially short	Short
116. For highest power gain, what configuration is used?	CC	CB	CE	CS	CE
117. What is the most important characteristic of a common collector amplifier?	High input voltage	High input resistance	High output resistance	Its being an amplifier circuit	High input resistance
118. Which of the item below does not describe a common emitter amplifier?	High voltage gain	High current gain	Very high power gain	High input resistance	High input resistance

119. CC configuration is used for impedance matching because its	Input impedance is very high	Input impedance is very low	Output impedance is very low	Output impedance is zero	Input impedance is very high
120. Which of the following is the other name of the output stage in an amplifier?	Load stage	Audio stage	Power stage	RF stage	Power stage
121. When amplifiers are cascaded	The gain of each amplifier is increased	A lower supply voltage is required	The overall gain is increased	Each amplifier has to work less	The overall gain is increased
122. Ina common emitter amplifier, the capacitor from emitter to ground is called the	Coupling capacitor	Bypass capacitor	Decoupling capacitor	Tuning capacitor	Bypass capacitor
123. A class A power amplifier uses _____ transistor(s).	Two	One	Three	Four	One
124. What is the maximum collector efficiency of a resistance loaded class A power amplifier?	50%	78.50%	25%	30%	25%
125. What is the maximum collector efficiency of a transformer coupled class A power amplifier?	30%	80%	45%	50%	50%
126. Class C amplifiers are used as	AF amplifiers	Small signal amplifiers	RF amplifiers	IF amplifiers	RF amplifiers
127. Find the voltage drop developed across a D' Arsonval meter movement having an internal resistance of 1 kΩ and a full deflection current of 150uA.	150 µV	150 mV	150 V	200 mV	150 mV
128. If the capacitor from emitter to ground in a common emitter amplifier is removed, the voltage gain	Increases	Decreases	Becomes erratic	Remains the same	Decreases
129. Comparatively, power amplifier has _____ β.	Large	Very large	Small	Very small	Small
130. The driver stage usually employs _____ amplifier.	Class A power	Class C	Push-pull	Class AB	Class A power
131. The push-pull circuit must use _____ operation.	Class A	Class B	Class C	Class AB	Class B
132. A complementary-symmetry amplifier has	One PNP and one NPN transistor	Two PNP transistors	Two NPN transistors	Two PNP and two NPN transistors	One PNP and one NPN transistor
133. Power amplifiers generally use transformer coupling because transformer coupling provides	Cooling of the circuit	Distortionless output	Impedance matching	Good frequency response	Impedance matching
134. The output transformer used in a power amplifier is a/an _____ transformer	1:1 ratio	Step-down	Step-up	Isolation	Step-down
UNIT III					
135. An emitter follower has a voltage gain that is	Much less than one	Approximately equal to one	Greater than one	Zero	Approximately equal to one

136. The input impedance of the base of an emitter follower is usually	Low	High	Shorted to ground	Open	High
137. The ac base voltage of an emitter follower is across the	Emitter diode	DC emitter resistor	Load resistor	Emitter diode and external ac emitter resistance	Emitter diode and external ac emitter resistance
138. The output voltage of an emitter follower is across the	Emitter diode	DC collector resistor	Load resistor	Emitter diode and external ac emitter resistance	Load resistor
139. The differential amplifier has	one input and one output	two inputs and two outputs	two inputs and one output	one input and two outputs	two inputs and one output
140. The differential amplifier produces outputs that are	common mode	in-phase with the input voltages	the sum of the two input voltages	the difference of the two input voltages	the difference of the two input voltages
141. Which factor does not affect CMOS loading?	Charging time associated with the output resistance of the driving gate	Discharging time associated with the output resistance of the driving gate	Output capacitance of the load gates	Input capacitance of the load gates	Output capacitance of the load gates
142. Which transistor element is used in CMOS logic?	FET	MOSFET	Bipolar	Unijunction	MOSFET
143. A Darlington pair is used for	low distortion	high frequency range	high power gain	high current gain	high current gain
144. What is the effect of cascading amplifier stages?	increase in the voltage gain and increase in the bandwidth	increase in the voltage gain and reduction in the bandwidth	decrease in the voltage gain and increase in the bandwidth	increase in the voltage gain and reduction in the bandwidth	increase in the voltage gain and reduction in the bandwidth
145. An open-drain gate is the CMOS counterpart of _____.	an open-collector TTL gate	a tristate TTL gate	a bipolar junction transistor	an emitter-coupled logic gate	an open-collector TTL gate
146. Which factor does not affect CMOS loading?	Charging time associated with the output resistance of the driving gate	Discharging time associated with the output resistance of the driving gate	Output capacitance of the load gates	Input capacitance of the load gates	Output capacitance of the load gates
147. The decibel gain of a cascaded amplifier equals to	product of individual gains	sum of individual gains	ration of stage gains	product of voltage and current gains	sum of individual gains

148. The most desirable feature of transformer coupling is its	higher voltage gain	wide frequency range	ability to provide impedance matching between stages	ability to eliminate hum from the output	ability to provide impedance matching between stages
149. A transformer coupled amplifier would give	maximum voltage gain	impedance matching	maximum current gain	larger bandwidth	impedance matching
150. One of the advantages of a Darlington pair is that it has enormous _____ transformation capacity.	Voltage	current	impedance	power	impedance
151. Bootstrapping is used in emitter follower configurations to	stabilize the voltage gain against process variations	increase current gain	reduce the output resistance	increase the input resistance	increase the input resistance
152. Cascading amplifier stages to obtain a high gain is best done with	common emitter stages	common base stages	common collector stages	a combination of successive common base and common emitter stages	
153. Which of the following is a concern when using CMOS type devices?	mechanical shock	electrostatic discharge	fan out	under voltage	
154. The original CMOS line of circuits is the	5400 series	4000 series	74C00 series	74HCOO series	
155. Which of the following is a concern when using CMOS type devices?	mechanical shock	electrostatic discharge	fan out	under voltage	electrostatic discharge
156. Which of the following is not a solution to interface problems between CMOS and TTL?	pull-up resistor	pull-down resistor	level-shifter	buffer	pull-down resistor
157. Which of the following is not a common logic family used today?	RTL	ECL	TTL	CMOS	RTL
158. The output current for a LOW output is called a(n)	exit current.	sink current.	ground current.	fan-out.	sink current.
159. Which of the following are not characteristics of TTL logic gates?	Totem-pole output	Bipolar transistors	CMOS transistors	Multiemitter transistors	CMOS transistors
160. A family of logic devices designed for extremely high speed applications is called	NMOS.	ECL.	PMOS.	TTL.	ECL.
161. Unused inputs on TTL, AND, and NAND gates	degrade the gate's noise immunity.	if left open will have the same effect as HIGH inputs.	should be tied HIGH.	All of the above are correct.	All of the above are correct.
162. The lower transistor of a totem-pole output is OFF when the gate output is	HIGH.	malfunctioning.	LOW.	over driven.	HIGH.
163. The input transistor on a TTL circuit is unusual in that it has	multiple bases.	no collector.	no base.	multiple emitters.	multiple emitters.
164. The difference between VOH and VIH voltages is known as	input margin.	noise margin.	output differential.	input level.	noise margin.
165. Te maximum output voltage recognized as a LOW by a TTL gate is	2.0 V.	0.8 V.	2.4 V.		

166. The upper transistor of a totem-pole output is OFF when the gate output is	logic 1.	malfunctioning.	HIGH.	LOW.	LOW.
167. The major advantage of TTL logic circuits over CMOS is	lower propagation delay.	the ability to output higher voltages.	more modern design.	very low power consumption	lower propagation delay.
168. The maximum current for a HIGH output on a standard TTL gate is	-10 µA.	-400 µA.	-1 µA.	-10 mA.	-400 µA.
169. The maximum current for a LOW output on a standard TTL gate is	16 µA.	40 mA.	100 µA.	16 mA.	16 mA.
170. The major advantage of CMOS logic circuits over TTL is	very low power consumption.	the ability to produce several output voltage levels.	lower propagation delay.	much higher propagation delay.	very low power consumption.
171. The abbreviated designation for input current with a LOW input is	VIH.	IIH.	IIL.	IOL.	IIL.
172. Fan-out for a typical TTL gate is _____.	10	4	54	100	10
173. In order to interface an FPGA with an external device, you must set the value of the	sink current.	external power supply.	source current.	all of the above	all of the above
174. The abbreviated designator for a LOW output voltage is	VOH.	VIL.	VOL.	VIH.	VOL.
175. The lower transistor of a totem-pole output is saturated when the gate output is	HIGH.	LOW.	malfunctioning.	over driven.	LOW.
176. The abbreviation TTL means	transistor-transceiver latch.	three-transistor logic.	two-transistor logic.	transistor-transistor logic.	transistor-transistor logic.
177. Typical TTL HIGH level output voltage is	0.3 V.	5.0 V.	3.4 V.	4.8 V.	3.4 V.
178. The standard 74XX TTL IC family was originally developed in the	1970s.	1960s.	1950s.	1940s.	1960s.
179. The minimum output voltage recognized as a HIGH by a TTL gate is	0.8 V.	2.4 V.	5.0 V.	2.0 V.	2.4 V.
180. An open-collector TTL gate	can sink current but cannot source current.	can source current but cannot sink current.	cannot source or sink current.	can sink more current than a standard TTL gate.	can sink current but cannot source current.
181. The minimum input voltage recognized as a HIGH by a TTL gate is	0.8 V.	2.4 V.	2.0 V.	5.0 V	2.0 V.
182. Which of the following digital IC logic families is most susceptible to static discharge?	RTL	ECL	MOS	TTL	MOS
183. Each input on a TTL gate is connected to the transistor's	base	collector	gate	emitter	emitter
184. The time it takes for an input signal to pass through internal circuitry and generate the appropriate output effect is known as	propagation delay	rise time	fan-out	fall time	propagation delay
185. In a common emitter, unbypassed resister provides	voltage shunt feedback	current series feedback	Negative voltage	positive current feedback	voltage shunt feedback

			feedback		
186. The bandwidth of an RF tuned amplifier is dependent on		Q –factor of the tuned i/p circuit	Quiescent operating point	Q-factor of the o/p and i/p circuits as well as quiescent operating point	Q –factor of the tuned o/p circuit
187. Negative feedback in an amplifier	Reduces gain	Increase frequency &phase distortion	Reduces bandwidth	Increases noise	Reduces gain
188. An amplifier without feedback has a voltage gain of 50, input resistance is 1 KΩ & Output resistance of 2.5KΩ.The input resistance of the current-shunt negative feedback amplifier using the above amplifier with a feedback factor of 0.2 is	1/11KΩ	1/5KΩ	5KΩ	11KΩ	1/5KΩ
189. The fan out of a MOS logic gate is higher than that of TTL gates because of its	Low input impedance	high output impedance	Low output impedance	High input impedance	High input impedance
190. Transformer coupling can be used in _____ amplifiers	Only power	Only voltage	Either power or voltage	Neither power nor voltage	Either power or voltage
191. When negative current feedback is applied to an amplifier, its output impedance	increases	remains unchanged	decreases	becomes zero	increases
192. The quiescent current of a FET amplifier is	IDS	id	ID	Id	ID
193. The total decibel voltage gain of two cascaded voltage amplifier where individual voltage gains are 10 and 100 is	20	60	800	1000	60
194. The frequency response of the combined amplifier can be compared with	An OR gate	A negative feedback amplifier	A positive filter	An AND gate	An AND gate
195. Minimum interference with frequency response can be given by	Direct coupling	RC coupling	Transformer coupling	Instrumentation and control	Direct coupling
196. The impedance of a load must match the impedance of the amplifier so that	Minimum power is transferred to the load	The efficiency can be maintained at low level	The signal-to-noise ratio is maximized	Maximum power is transferred to the load	Maximum power is transferred to the load
197. The ratio output rms power in watts to the input dc power in watts in the different amplifier class is called _____.	Gain	Amplification factor	Efficiency	Phase power	Efficiency
198. Consider a zener diode with a slope resistance of 10 Ω in series with a 90 Ω resistor fed from a dc supply containing a ripple voltage of 20mV peak-to-peak. Compute for the ripple voltage in load	1 mV p-p	2 mV p-p	1 V p-p	6mV p-p	2 mV p-p
199. The _____ of a common collector configuration is unity	Voltage gain	Current gain	Power gain	Input impedance	Voltage gain

200. Transmit time is the time taken by the electrons on holes to pass from	Emitter to collector	Collector to emitter	Base to emitter	Base to collector	Emitter to collector
201. For BJT power transistors, the collector terminal is always connected to the transistor's case	for easy circuit connection.	to prevent shorts.	because the collector terminal is the critical terminal for heat dissipation.	because the collector terminal is located nearest the case.	because the collector terminal is the critical terminal for heat dissipation
202. Quiescent power is the power dissipation of a transistor	with no signal input.	with no load.	under full load.	along the dc load line.	with no signal input
203. A class B amplifier operates in the linear region for	slightly more than 180° of the input cycle.	360° of the input cycle.	slightly less than 180° of the input cycle.	much less than 180° of the input cycle.	slightly less than 180° of the input cycle
204. In a class AB amplifier, if the V_{BE} drops are not matched to the diode drops or if the diodes are not in thermal equilibrium with the transistors, this can result in	a current mirror.	diode separation.	crossover distortion.	thermal runaway.	thermal runaway
205. Which amplifier is commonly used as a frequency multiplier?	class A	class B	class C	all of the above	class C
206. The least efficient amplifier among all classes is	class B.	class A.	class AB.	class C.	class B
207. A class A amplifier has a voltage gain of 30 and a current gain of 25. What is the power gain?	30	25	1.2	750	750
208. You have an application for a power amplifier to operate on FM radio frequencies. The most likely choice would be a _____ amplifier.	class A	class B	class C	class AB	class C
209. A class A amplifier with $R_C = 3.3\ k\Omega$ and $R_E = 1.2\ k\Omega$ has a $V_{CC} = 20$ V. Find $I_{C(sat)}$.	4.4 mA	6.1 mA	16.7 mA	20 mA	4.4 mA
210. A class C amplifier has a tank circuit in the output. The amplifier is conducting only 28°. The output voltage is	0 V.	a dc value equal to V_{CC}.	a sine wave.	a square wave with a frequency determined by the tank.	a sine wave.
211. In practice, the efficiency of a capacitively coupled class A amplifier is about _____%.	25	40	70	10	10
212. The Q-point is at cutoff for class _____ operation.	A	B	C	AB	B
213. Class _____ amplifiers are normally operated in a push-pull configuration in order to produce an output that is a replica of the input.	A	B	C	AB	AB
214. The maximum efficiency of a class B amplifier is _____ percent.	50	25	70	79	79
215. A class _____ amplifier is biased slightly above cutoff and operates in the linear region for slightly more than 180º of the input cycle.	A	B	C	AB	AB

216. Which class of amplifier operates in the linear region for only a small part of the input cycle?	A	B	C	AB	C
217. The principal advantage(s) of MOSFETs over BJTs is (are)	their biasing networks are simpler.	their drive requirements are simpler.	they can be connected in parallel for added drive capability.	all of the above	all of the above
218. The principal advantage(s) of BJTs over MOSFETs is (are) that	voltage drop across the transistor is important.	they are not as prone to ESD.	both of the above	none of the above	both of the above
219. The class _____ amplifier is biased below cutoff.	A	AB	B	C	B
UNIT IV					
220. For Class-B operation, the collector current flows for	The whole cycle	Half the cycle	Less than half a cycle	Less than a quarter of a cycle	Half the cycle
221. Transformer coupling is an example of	Direct coupling	AC coupling	DC coupling	Impedance coupling	AC coupling
222. Class-C amplifiers are almost always	Transformer-coupled between stages	Operated at audio frequencies	Tuned RF amplifiers	Wideband	Tuned RF amplifiers
223. Heat sinks reduce the	Transistor power	Ambient temperature	Junction temperature	Collector current	Junction temperature
224. Which type of power amplifier is biased for operation at less than 180º of the cycle?	Class A	Class B or AB	Class C	Class D	Class C
225. What is the maximum efficiency of a class A circuit with a direct or series-fed load connection?	90%	78.50%	50%	25%	25%
226. The Q-point is at cutoff for class _____ operation.	A	B	C	AB	B
227. Which of the following is (are) power amplifiers?	Class A	Class B or AB	Class C or D	All of the above	All of the above
228. The output of a class-B amplifier	is distortion free	consists of positive half cycle only	is like the output of a full wave rectifier	comprises short duration current pulses	consists of positive half cycle only
229. Crossover distortion occurs in _____ amplifiers.	push-pull	class A	class B	class AB	push-pull
230. The main use of a class C amplifier is	as an RF amplifier	as stereo amplifier	in communication sound equipment	as distortion generator	as an RF amplifier
231. The decibel is a measure of	power	voltage	current	sound level	sound level

232. The output stage of a multistage amplifier is also called	Mixer stage	Power stage	Detector stage	F stage	Power stage
233. _____ coupling is generally employed in power amplifiers	Transformer	RC	direct	Impedance	Transformer
234. The maximum efficiency of resistance loaded class A power amplifier is	5%	50%	30%	25%	25%
235. Class _____ power amplifier has the highest collector efficiency	C	A	B	AB	B
236. Power amplifiers handle _____ signals compare to voltage amplifiers.	Small	Very small	Large	None of the above	Large
237. In class B operation, at what fraction of VCC should the level of VL(p) be to achieve the maximum power dissipated by the output transistor?	0.5	0.636	0.707	1	0.636
238. In class A operation, the operating point is generally located _____ of the d.c. load line.	At cut off point	At the middle	At saturation point	None of the above	At the middle
239. The output transformer used in a power amplifier is a _____ transformer.	1:1 ratio	Step-up	Step-down	None of the above	Step-down
240. For BJT power transistors, the collector terminal is always connected to the transistor's case	for easy circuit connection.	to prevent shorts.	because the collector terminal is the critical terminal for heat dissipation.	because the collector terminal is located nearest the case.	because the collector terminal is the critical terminal for heat dissipation
241. Quiescent power is the power dissipation of a transistor	with no signal input.	with no load.	under full load.	along the dc load line.	with no signal input
242. A class B amplifier operates in the linear region for	slightly more than 180° of the input cycle.	360° of the input cycle.	slightly less than 180° of the input cycle.	much less than 180° of the input cycle.	slightly less than 180° of the input cycle
243. In a class AB amplifier, if the V_{BE} drops are not matched to the diode drops or if the diodes are not in thermal equilibrium with the transistors, this can result in	a current mirror.	diode separation.	crossover distortion.	thermal runaway.	thermal runaway
244. Which amplifier is commonly used as a frequency multiplier?	class A	class B	class C	all of the above	class C
245. The least efficient amplifier among all classes is	class B.	class A.	class AB.	class C.	class B
246. A class A amplifier has a voltage gain of 30 and a current gain of 25. What is the power gain?	30	25	1.2	750	750
247. You have an application for a power amplifier to operate on FM radio frequencies. The most likely choice would be a _____ amplifier.	class A	class B	class C	class AB	class C
248. A class A amplifier with R_C = 3.3 kΩ and R_E = 1.2 kΩ has a V_{CC} = 20 V. Find $I_{C(sat)}$.	4.4 mA	6.1 mA	16.7 mA	20 mA	4.4 mA

249. A class C amplifier has a tank circuit in the output. The amplifier is conducting only 28°. The output voltage is	0 V.	a dc value equal to V_{CC}.	a sine wave.	a square wave with a frequency determined by the tank.	a sine wave.
250. In practice, the efficiency of a capacitively coupled class A amplifier is about _____%.	25	40	70	10	10
251. The Q-point is at cutoff for class _____ operation.	A	B	C	AB	B
252. Class _____ amplifiers are normally operated in a push-pull configuration in order to produce an output that is a replica of the input.	A	B	C	AB	AB
253. The maximum efficiency of a class B amplifier is _____ percent.	50	25	70	79	79
254. A class _____ amplifier is biased slightly above cutoff and operates in the linear region for slightly more than 180º of the input cycle.	A	B	C	AB	AB
255. Which class of amplifier operates in the linear region for only a small part of the input cycle?	A	B	C	AB	C
256. The principal advantage(s) of MOSFETs over BJTs is (are)	their biasing networks are simpler.	their drive requirements are simpler.	they can be connected in parallel for added drive capability.	all of the above	all of the above
257. The principal advantage(s) of BJTs over MOSFETs is (are) that	voltage drop across the transistor is important.	they are not as prone to ESD.	both of the above	none of the above	both of the above
258. The class _____ amplifier is biased below cutoff.	A	AB	B	C	B
259. Power amplifiers primarily provide sufficient power to an output load, typically from _____ to _____.	a few kW, tens of kW	500 W, 1 kW	100 W, 500 W	a few W, tens of W	a few W, tens of W
260. The main feature(s) of a large-signal amplifier is (are) the _____.	circuit's power efficiency	maximum amount of power that the circuit is capable of handling	impedance matching to the output	All of the above	All of the above
261. In _____ power amplifiers, the output signal varies for a full 360º of the cycle.	class A	class B or AB	class C	class D	class A
262. In class B power amplifiers, the output signal varies for _____ of the cycle.	360º	180º	between 180º and 360º	less than 180º	180º
263. _____ amplifiers have the highest overall efficiency.	Class A	Class B or AB	Class C	Class D	Class D
264. Class D operation can achieve power efficiency of over _____.	90%	78.50%	50%	25%	90%

265. The beta of a power transistor is generally _____.	more than 200	100 to 200	less than 100	0	less than 100
266. A form of class A amplifier having maximum efficiency of _____ uses a transformer to couple the output signal to the load.	90%	78.50%	50%	25%	50%
267. The reflected impedance seen from one side of the transformer to the other side is _____.	N_1/N_2	$(N_1/N_2)^2$	$(N_1/N_2)^{1/3}$	$N_1 \times N_2$	$(N_1/N_2)^2$
268. In a class A transformer-coupled power amplifier, _____ winding resistance of the transformer determine(s) the dc load line for the circuit.	the ac	the dc	both the ac and dc	neither the ac nor dc	the dc
269. The slope of the ac load line in the class A transformer-coupled transistor is _____.	$-1/R_L$ (load resistor)	$1/(a^2R_L)$	$-1/(a^2R_L)$	$1/R_L$	$-1/(a^2R_L)$
270. The amount of power dissipated by the transistor is the _____ of that drawn from the dc supply (set by the bias point) and the amount delivered to the ac load.	product	difference	average		difference
271. A class A amplifier dissipates _____ power when the load is drawing maximum power from the circuit.	the least	about the same	the most	None of the above	the least
272. In a class A transformer-coupled amplifier, the _____ the value of V_{CEmax} and the _____ the value of V_{CEmin}, the _____ the efficiency to (from) the theoretical limit of 50%.	larger, smaller, farther	larger, smaller, closer	smaller, larger, closer	None of the above	larger, smaller, closer
273. In class B operation, the current drawn from a single power supply has the form of _____ rectified signal.	a full-wave	a half-wave	both a full-wave and a half-wave	None of the above	a full-wave
274. The highest efficiency is obtained in class B operation when the level of $V_L(p)$ is equal to _____.	$0.25V_{CC}$	$0.50V_{CC}$	V_{CC}	$2V_{CC}$	V_{CC}
275. _____ transistors can be used to build a class B amplifier.	npn and pnp	nMOS and pMOS	Both npn and pnp or nMOS and pMOS	None of the above	Both npn and pnp or nMOS and pMOS
276. The complementary Darlington-connected transistor for a class B amplifier provides _____ output current and _____ output resistance.	higher, higher	higher, lower	lower, lower	lower, higher	higher, lower
277. The fundamental component is typically _____ any harmonic component.	larger than	the same as	smaller than	None of the above	larger than
278. In Fourier technique, any periodic distorted waveform can be represented by _____ the fundamental and all harmonic components.	multiplying	subtracting	dividing	adding	adding
279. Improvement in production techniques of power transistors have _____.	produced higher power ratings in small-sized packaging cases	increased the maximum transistor breakdown voltage	provided faster-switching power transistors	All of the above	All of the above
280. The greater the power handled by the power transistor, _____ the	the higher	the lower	there is no	None of the above	the higher

case temperature.			change in		
281. The _____ has the hottest temperature in a power transistor.	heat sink	case	junction	None of the above	junction
282. A heat sink provides _____ thermal resistance between case and air.	a high	a low	the same	None of the above	a low
283. A _____ power amplifier is limited to use at one fixed frequency.	class A	class B or AB	class C	class D	class C
284. Which of the following is (are) power amplifiers?	Class A	Class B or AB	Class C or D	All of the above	All of the above
285. By how much does the output signal vary for a class AB power amplifier?	360º	180º	Between 180º and 360º	Less than 180º	Between 180º and 360º
286. Which type of power amplifier is biased for operation at less than 180º of the cycle?	Class A	Class B or AB	Class C	Class D	Class C
287. Which type of amplifier uses pulse (digital) signals in its operation?	Class A	Class B or AB	Class C	Class D	Class D
288. Which of the power amplifiers has the lowest overall efficiency?	Class A	Class B or AB	Class C	Class D	Class A
289. Which of the following describe(s) a power amplifier?	It can handle large power.	It can handle large current.	It does not provide much voltage gain.	All of the above	All of the above
290. _____ amplifiers primarily provide sufficient power to an output load to drive a speaker from a few watts to tens of watts.	Small-signal	Power	None of the above	All of the above	Power
291. The main features of a large-signal amplifier is the circuit's _____.	power efficiency	maximum power limitations	impedance matching to the output device	All of the above	All of the above
292. Class AB operation is _____ operation.	similar to class A	similar to class B	similar to class C	d. None of the above	None of the above
293. Which operation class is generally used in radio or communications?	A	B	AB	C	Class C
294. Categorize the power efficiency of each class of amplifier, from worst to best.	A, B, AB, D	A, AB, D, B	A, AB, B, D		A, AB, B, D
295. What is the maximum efficiency of a class A circuit with a direct or series-fed load connection?	90%	78.50%	50%	25%	25%
296. What is the ratio of the secondary voltage to the primary voltage with the turn ratio in the winding	N_2/N_1	$(N_1/N_2)2$	$(N_1/N_2)1/3$	$N_1 \times N_2$	N_2/N_1
297. Calculate the effective resistance seen looking into the primary of a 20:1 transformer connected to an 8- Ω load.	3.2 kΩ	3.0 kΩ	2.8 kΩ	1.8 kΩ	3.2 kΩ
298. What transformer turns ratio is required to match an 8-speaker load so that the effective load resistance seen at the primary is 12.8 k?	20:01	40:01:00	50:01:00	60:01:00	40:01:00
299. Calculate the efficiency of a transformer-coupled class A amplifier for a supply of 15 V and an output of V(p) = 10 V.	25%	33.30%	50%	78.50%	33.30%

300. The maximum efficiency of a transformer-coupled class A amplifier is _____.	25%	50%	78.5%	63.6%	50%
301. What is the maximum efficiency of a class B circuit?	90%	78.5%	50%	25%	78.50%
302. How many transistors must be used in a class B power amplifier to obtain the output for the full cycle of the signal?	0	1	2	3	2
303. In class B operation, at what fraction of V_{CC} should the level of $V_L(p)$ be to achieve the maximum power dissipated by the output transistor?	0.5	0.636	0.707	1	0.636
304. Class B operation is provided when the dc bias leaves the transistor biased just off, the transistor turning on when the ac signal is applied.	TRUE	FALSE			TRUE
305. Calculate the efficiency of a class B amplifier for a supply voltage of V_{CC} = 20 V with peak output voltage of $V_L(p)$ = 18 V. Assume R_L = 16 Ω.	78.54%	75%	70.69%	50%	70.69%
306. Which of the following is (are) the disadvantage(s) of a class B complementary-symmetry circuit?	It needs two separate voltage sources.	There is crossover distortion in the output signal.	It does not provide exact switching of one transistor off and the other on at the zero-voltage condition.	All of the above	All of the above
307. Which of the push-pull amplifiers is presently the most popular form of the class B power amplifier?	Quasi-complementary	Transformer-coupled	Complementary -symmetry	None of the above	Quasi-complementary
308. nMOS and pMOS transistors can be used for class B.	TRUE	FALSE			TRUE
309. Calculate the harmonic distortion component for an output signal having fundamental amplitude of 3 V and a second harmonic amplitude of 0.25 V.	3.83%	38.3%	83.3%	8.33%	8.33%
310. Which of the following instruments displays the harmonics of a distorted signal?	Digital multimeter	Spectrum analyzer	Oscilloscope	Wave analyzer	Spectrum analyzer
311. Which of the following instruments allows more precise measurement of the harmonic components of a distorted signal?	Digital multimeter	Spectrum analyzer	Oscilloscope	Wave analyzer	Wave analyzer
312. What is the maximum temperature rating for silicon power transistors?	50º to 80º	100º to 110º	150º to 200º	250º to 300º	150º to 200º
313. Which of the power amplifiers is not intended primarily for large-signal or power amplification?	Class A	Class B or AB	Class C	Class D	Class C
314. Determine what maximum dissipation will be allowed for a 70-W silicon transistor (rated at 25ºC) if derating is required above 25ºC by a derating factor of 0.6 W/ºC at a case temperature of 100º.	25 W	30 W	35 W	40 W	25 W

315. A silicon power transistor is operated with a heat sink (θ_{SA} = 1.5ºC/W). The transistor, rated at 150 W (25ºC), has θ_{JC} = 0.5º C/W, and the mounting insulation has θ_{CS} = 0.6 ºC/W. What is the maximum power that can be dissipated if the ambient temperature is 50ºC and T_{Jmax} = 200 ºC?	61.5 W	60.0 W	57.7 W	55.5 W	57.7 W
316. Which of the following transistors has been quite popular as the driver device for class D amplification?	BJT	FET	UJT	MOSFET	MOSFET
UNIT V					
317. Kirchhoff's Voltage Law states that the total voltage around a closed loop must be	0	½	1	2	0
318. The algebraic sum of _____ in a network of conductors meeting at a point is zero.	Voltages	currents	Resistances	Inductances	currents
319. Maximum power transfer theorem is also known as	Jacobi's law	Thompson's law	Phillips law	Jackson's law	Jacobi's law
320. The _____ theorem is a way to determine the currents and voltages present in a circuit that has multiple sources.	Norton	Super position	Thevenin	Maximum power transfer	Super position
321. The concept on which Superposition theorem is based is	reciprocity	duality	non-linearity	linearity	linearity
322. Kirchhoff s law is applicable to	passive networks only	a.c. circuits only	d.c. circuits only	both a.c. as well d.c. circuits	both a.c. as well d.c. circuits
323. For maximum transfer of power, internal resistance of the source should be	equal to load resistance	less than the load resistance	greater than the load resistance	none of the above	equal to load resistance
324. Kirchhoff's current law is applicable to only	junction in a network	closed loops in a network	electric circuits	electronic circuits	junction in a network
325. Kirchhoff's voltage law is related to	junction currents	battery emfs	IR drops	both b & c	both b & c
326. Superposition theorem can be applied only to circuits having	resistive elements	passive elements	non-linear elements	linear bilateral elements	linear bilateral elements
327. The concept on which superposition theorem is based on	reciprocity	duality	non-linearity	linearity	linearity
328. Which of the following is non-linear circuit parameter?	Inductance	condenser	wire wound resistor	transistor	Inductance
329. Node analysis can be applied for	planar networks	Non-planar networks	Both a & b	electric networks	Both a & b
330. Mesh analysis is applicable for	planar networks	Non-planar networks	Both a & b	electric networks	planar networks
331. The superposition theorem is applicable to	voltage only	current only	current and voltage	current, voltage and power	current, voltage and power
332. Kirchhoff's current law is applicable only to	junction in a network	closed loops in a network	electric circuits	electronic circuits	junction in a network

333. Maximum power output is obtained from a network when the load resistance is equal to the output resistance of the network as seen from the terminals of the load". The above statement is associated with	Mill man's theorem	Thevenin's theorem	Superposition theorem	Maximum power transfer theorem	Maximum power transfer theorem
334. Kirchhoff's current law is applicable to only	junction in a network	closed loops in a network	electric circuits	electronic circuits	junction in a network
335. Superposition theorem is based on	Reciprocity	duality	non-linearity	Linearity	Linearity
336. The Norton current is sometimes called the	shorted-load current	open-load current	Thevenin current	Thevenin voltage	shorted-load current
337. Kirchhoff s current law states that	net current flow at the junction is positive	Hebraic sum of the currents meeting at the junction is zero	no current can leave the junction without some current entering it.	total sum of currents meeting at the junction is zero	Hebraic sum of the currents meeting at the junction is zero
338. According to Kirchhoffs voltage law, the algebraic sum of all IR drops and e.m.fs. in any closed loop of a network is always	negative	positive	determined by battery e.m.fs.	zero	zero
339. Kirchhoffs current law is applicable to only	junction in a network	closed loops in a network	electric circuits	electronic circuits	junction in a network
340. Kirchhoffs voltage law is related to	junction currents	battery e.m.fs.	IR drops	both (b) and (c)	both (b) and (c)
341. Superposition theorem can be applied only to circuits having	resistive elements	passive elements	non-linear elements	linear bilateral elements	linear bilateral elements
342. The concept on which Superposition theorem is based is	reciprocity	duality	non-linearity	linearity	linearity
343. Thevenin resistance Rth is found	by removing voltage sources along with their internal resistances	by short-circuiting the given two terminals	between any two 'open' terminals	between same open terminals as for Etk	between same open terminals as for Etk
344. An ideal voltage source should have	large value of e.m.f.	small value of e.m.f.	zero source resistance	infinite source resistance	zero source resistance
345. For a voltage source	terminal voltage is always lower than source e.m.f.	terminal voltage cannot be higher than source e.m.f.	the source e.m.f. and terminal voltage are equal		terminal voltage cannot be higher than source e.m.f.
346. To determine the polarity of the voltage drop across a resistor, it is necessary to know	value of current through the resistor	direction of current through the resistor	value of resistor	e.m.fs. in the circuit	direction of current through the resistor
347. "Maximum power output is obtained from a network when the load resistance is equal to the output resistance of the network as seen from the terminals of the load". The above statement is associated with	Mill man's theorem	Thevenin's theorem	Superposition theorem	Maximum power transfer theorem	Maximum power transfer theorem

348. "Any number of current sources in parallel may be replaced by a single current source whose current is the algebraic sum of individual source currents and source resistance is the parallel combination of individual source resistances". The above statement is associated with	Thevenin's theorem	Mill man's theorem	Maximum power transfer theorem	None of the above	Mill man's theorem
349. "In any linear bilateral network, if a source of e.m.f. E in any branch produces a current I in any other branch, then same e.m.f. acting in the second branch would produce the same current / in the first branch". The above statement is associated with	compensation theorem	superposition theorem	reciprocity theorem	none of the above	reciprocity theorem
350. Which of the following is non-linear circuit parameter?	Inductance	Condenser	Wire wound resistor	Transistor	Inductance
351. A capacitor is generally a	bilateral and active component	active, passive, linear and nonlinear component	linear and bilateral component	non-linear and active component	linear and bilateral component
352. "In any network containing more than one sources of e.m.f. the current in any branch is the algebraic sum of a number of individual fictitious currents (the number being equal to the number of sources of e.m.f.), each of which is due to separate action of each source of e.m.f., taken in order, when the remaining sources of e.m.f. are replaced by conductors, the resistances of which are equal to the internal resistances of the respective sources". The above statement is associated with	Thevenin's theorem	Norton's theorem	Superposition theorem	None of the above	Superposition theorem
353. Kirchhoff s law is applicable to	passive networks only	a.c. circuits only	d.c. circuits only	both a.c. as well d.c. circuits	both a.c. as well d.c. circuits
354. Kirchhoff s law is not applicable to circuits with	lumped parameters	passive elements	distributed parameters	non-linear resistances	distributed parameters
355. Kirchhoff s voltage law applies to circuits with	nonlinear elements only	linear elements only	linear, non-linear, active and passive elements	linear, non-linear, active, passive, time varying as wells as time-in-variant elements	linear, non-linear, active, passive, time varying as wells as time-in-variant elements
356. The resistance LM will be	6.66 Q	12 Q	18Q	20Q	6.66 Q
357. For high efficiency of transfer of power, internal resistance of the source should be	equal to the load resistance	less than the load resistance	more than the load resistance	none of the above	less than the load resistance
358. Efficiency of power transfer when maximum transfer of power c	100%	80%	75%	50%	50%

xurs is					
359. If resistance across LM in Fig. 2.30 is 15 ohms, the value of R is	10 Q	20 Q	30 Q	40 Q	30 Q
360. For maximum transfer of power, internal resistance of the source should be	equal to load resistance	less than the load resistance	greater than the load resistance	none of the above	equal to load resistance
361. If the energy is supplied from a source, whose resistance is 1 ohm, to a load of 100 ohms the source will be	a voltage source	a current source	both of above	none of the above	a voltage source
362. The circuit whose properties are same in either direction is known as	unilateral circuit	bilateral circuit	irreversible circuit	reversible circuit	bilateral circuit
363. In a series parallel circuit, any two resistances in the same current path must be in	series with each other	parallel with each other	series with the voltage source.'	parallel with the voltage source	series with each other
364. The circuit has resistors, capacitors and semi-conductor diodes. The circuit will be known as	non-linear circuit	linear circuit	bilateral circuit	none of the above	non-linear circuit
365. A non-linear network does not satisfy	superposition condition	homogeneity condition	both homogeneity as well as superposition condition	homogeneity, superposition and associative condition	both homogeneity as well as superposition condition
366. An ideal voltage source has	zero internal resistance	open circuit voltage equal to the voltage on full load	terminal voltage in proportion to current	terminal voltage in proportion to load	zero internal resistance
367. A network which contains one or more than one source of e.m.f. is known as	linear network	non-linear network	passive network	active network	passive network
368. The superposition theorem is applicable to	linear, non-linear and time variant responses	linear and non-linear resistors only	linear responses only	none of the above	linear responses only
369. Which of the following is not a nonlinear element?	Gas diode	Heater coil	Tunnel diode	Electric arc	
370. Application of Norton's theorem to a circuit yields	equivalent current source and impedance in series	equivalent current source and impedance in parallel	equivalent impedance	equivalent current source	equivalent current source and impedance in series
371. Mill man’s theorem yields	equivalent resistance	equivalent impedance	equivalent voltage source	equivalent voltage or current source	equivalent voltage or current source
372. The superposition theorem is applicable to	voltage only	current "only	both current and voltage	current voltage and power	current voltage and power
373. Between the branch voltages of a loop the Kirchhoff s voltage law imposes	non-linear constraints	linear constraints	no constraints	none of the above	linear constraints

374. A passive network is one which contains	only variable resistances	only some sources of e.m.f. in it	only two sources of e.m.f. in it	no source of e.m.f. in it	no source of e.m.f. in it
375. A terminal where three on more branches meet is known as	node	terminus	combination	anode	node
376. Which of the following is the passive element ?	Capacitance	Ideal current source	Ideal voltage source	All of the above	Capacitance
377. Which of the following is a bilateral element ?	Constant current source	Constant voltage source	Capacitance	None of the above	Capacitance
378. A closed path made by several branches of the network is known as	branch	loop	circuit	junction	loop
379. A linear resistor having 0 < R < °o is a	current controlled resistor	voltage controlled resistor	both current controlled and voltage controlled resistor	none of the above	both current controlled and voltage controlled resistor
380. A star circuit has element of resistance R/2. The equivalent delta elements will be	R/6	fi?	2R	4R	fi?
381. A delta circuit has each element of value R/2. The equivalent elements of star circuit with be	RIG	R/3	2R	3R	RIG
382. In Thevenin's theorem, to find Z	all independent current sources are short circuited and independent voltage sources are open circuited	all independent voltage sources are open circuited and all independent current sources are short circuited	all independent voltage and current sources are short circuited	all independent voltage sources are short circuited and all independent current sources are open circuited	all independent voltage sources are short circuited and all independent current sources are open circuited
383. While calculating Rth in Thevenin's theorem and Norton equivalent	all independent sources are made dead	only current sources are made dead	only voltage sources are made dead	all voltage and current sources are made dead	all independent sources are made dead
384. The number of independent equations to solve a network is equal to	the number of chords	the number of branches	sum of the number of branches and chords	sum of number of branches, chords and nodes	the number of chords
385. The superposition theorem requires as many circuits to be solved as there are	sources, nodes and meshes	sources and nodes	sources	nodes	sources