

## JNTU ONLINE EXAMINATIONS [Mid 1 - LICA]

1. A typical high gain IC differential amplifier Has three differential amplifier stages with an open loop gain around 20,000
2. Difference mode gain  $A_d$  of a symmetrical emitter coupled differential amplifier is given by  $A_d = 12h_{fe}R_cR_s + h_{ie}$
3. In a difference amplifier, a large  $R_e$  leads to increase in Common-mode gain
4. The error voltage of an ideal Op amp is 0
5. One of the Op amp is Norton or current differencing Op amp LM3900
6. The output resistance of a 741C Op amp is about 75  $\Omega$
7. Open loop bandwidth of an Op amp is 5 MHz
8. Current cannot flow to ground through A virtual ground
9. Typical output offset voltage and input offset current of an Op amp are 1 mV, 10 nA
10. Slew rate of an ideal Op amp is Infinity
11. The common mode input is the value of the two inputs Average
12. In Op amp compensation techniques are used to To obtain wider frequency range of operation and avoid instability
13. Inverting amplifier is also known as Voltage hunt FB amplifier
14. For a square wave input, the output of a differentiator will be. Positive & negative spikes
15. In analog computation we use Integrator alone but no differentiators
16. A stable multivibrator has Two quasistate
17. The current follower It is an ideal ammeter, Range is limited by the bias current and output current
18. In a Monostable multivibrator, if  $V_{sat} \gg V_D$  and  $R_1 = R_2$  calculate the time period ( $R = 2k$  &  $C = .002F$ ) 2.76
19. Schmitt Trigger is basically A bistable multivibrator
20. A peak detector is a electronic circuit It tracks the input signal faithfully until it detects a peak and holds until next larger peak value
21. The gain of a differential amplifier generally falls at the rate of integral multiple of 6 dB per octave
22. In a differential amplifier, use of a constant current CE amplifier stage in place of emitter circuit resistor  $R_e$  causes CMRR To increase
23. Which of the following statements is not for a cascade level shifter It can step up the input voltage
24. An Operational amplifier is a High gain direct coupled amplifier
25. A typical medium gain IC Op amp Has open loop gain of about 2500
26. The output stage of an Op amp circuit provides Low output impedance
27. Under ideal conditions, for Non inverting amplifier  $R_0 = 0$
28. In open loop configuration, the op-amp works in Linear region
29. The algebraic difference between the currents into the inverting and non inverting terminals is known as Input offset current
30. PSRR of a good quality Op amp is of the order of 100 dB
31. 1. An Op amp's slew rate limits its output swing at high frequency 2. The bode plot for standard Op amp shows the gain decreasing at 20 dB per decade beyond the break frequency 1 True, 2 True
32. An example of internally compensated Op amp is 741
33. In an Op amp inverting amplifier configuration with an input resistance ( $R_1$ ) and a feedback resistance ( $R_2$ ), it is normal practice to connect a resistance ( $R$ ) equal to parallel combination of ( $R_1$ ) & ( $R_2$ ) from the non inverting input to ground. This is done to Compensate for the effects of input bias currents
34. The input to an active integrator is 0V. Due to the offset voltage, the output of the integrator will be Ramp voltage
35. In all practical Op amp integrators, it is preferable to use the configuration as shown in the Figure 15. In what way does the additional resistance  $R_1$  help Figure 15  $R_1 \gg R$
36. The width of the output pulse of a monostable multivibrator is given by  $0.69 RC$
37. One of the following statements in reference to voltage follower configuration using Op amp is incorrect Its input impedance is very high almost approaching its open loop input impedance magnitude
38. In a Stable Multivibrator if  $R_1 = R_2$  then the total time period  $T =$   $2RC$

## JNTU ONLINE EXAMINATIONS [Mid 1 - LICA]

39. Calculate the Hysteresis voltage for a Schmitt Trigger.  $R_1 = 2\text{ k}$ ,  $R_2 = 1\text{ k}$  and  $V_{sat} = 15\text{ V}$  **10**
40. In an active peak detector, the discharging time constant is **>> time period of the input**
41. A typical high gain IC differential amplifier **Has power dissipation of about 100 microwatts**
42. Differential transconductance  $g_m$  of differential amplifier equals (Where  $I_o$  is the collector current of the CE stage in the emitter circuit of the differential amplifier) **102 VT**
43. A cascade amplifier uses **Two stages of CE amplifier**
44. Indicate the false statement with reference to Op amp **The differential gain is 0 dB at unity gain crossover frequency**
45. Op amp is also known as current differencing Op amp **Isolation Op amp**
46. The output resistance of a 741 C Op amp is about **200  $\Omega$**
47. Open loop bandwidth of an Op amp is **5 GHz**
48. The loop gain  $\beta A$  **May not equal to 1**
49. The input bias current of 741 C Op amp is about **500 nA**
50. The slew rate of an Op amp is given by  **$\Delta V / \Delta T$  MAX**
51. The CMRR is a problem for **Both inverting & non inverting configuration**
52. For an ideal op-amp the bandwidth is **Zero**
53. In an inverting amplifier,  $R_1 = 5\text{ K}$ ;  $R_f = 50\text{ K}$  &  $V_i = 2\text{ V}$ , calculate the  $V_o$ . **-15 V**
54. What will be the output in case of integrator **-t, 0 vidt**
55. The number of op-amps required to perform addition & subtraction simultaneously **1**
56. What is the basic element in instrumentation amplifier? **Transistor**
57. The Op amp circuit shown below in Figure 17 is a Figure 17 **Voltage follower**
58. In case of a stable circuit, if  $R_1 = 1.16 R_2$  the expression for time period will be **T = 3RC**
59. Calculate the Hysteresis voltage for a Schmitt Trigger.  $R_1 = 2\text{ k}$ ,  $R_2 = 1\text{ k}$  and  $V_{sat} = 15\text{ V}$  **14**
60. In case of log amplifier circuit the temperature compensation is provided by using element **Transistor**
61. Most of the linear ICs are based on the two transistor differential amplifier because of its **High CMRR**
62. The differential gain of the an Op amp should be **Very large**
63. Which of the following specifications is not specified for a difference amplifier? **Common-mode current range**
64. In basic comparator consists of **Op amp used in open loop**
65. is the important parameter of the Op amp, when used in sample and hold circuit and digital to analogue converter **Settling time**
66. The following property of Op amp permits voltage gain down to zero frequency **High open loop gain**
67. In the ideal transfer curve of Op amp the output voltage is proportional to the difference of the input voltages until it reaches saturation and thereafter the output **Directly, remains constant**
68. The virtual ground **Acts like short for voltage and does not drive any current to the ground**
69. The input bias current of 741 C Op amp is about **500 nA**
70. The slew rate of an Op amp is given by  **$\Delta V / \Delta T$  MAX**
71. An Op amp has gain of 50 and bandwidth of 100 KHz. Its unity gain frequency is **5 MHz**
72. For an ideal op-amp the bandwidth is **Infinity**
73. In an inverting Op amp  $Z_i = 22\text{ K}\Omega$ ,  $Z_f = 68\text{ K}\Omega$  and  $V_i = +0.5\text{ V}$  P-P. The output voltage will be approximately **-1.5 V** P-P
74. The Op amp differentiator **Is inherently unstable and can be stabilized by connecting a resistor in series with the capacitor**
75. What is the voltage gain of circuit shown in Figure 15 Figure 15 **Vb-Va**
76. In a multivibrator, **When one transistor is on, the other is off**
77. One of the following statements in reference to voltage follower configuration using Op amp

## JNTU ONLINE EXAMINATIONS [Mid 1 - LICA]

- pis incorrect **Its input impedance is very high almost approaching its open loop input impedance magnitude**
78. Circuit used for production of delay is **A monostable multivibrator**
79. Schmitt trigger circuit employs feedback method. **Positive**
80. The Peak Detector circuit stores the following values **higher new value**
81. Most of the linear ICs are based on the two transistor differential amplifier because of its **High CMRR**
82. The differential gain of the an Op amp should be **Very large**
83. The level translator stage is used for **To shift the output dc level down to zero**
84. In basic comparator consists of **Op amp used in open loop**
85. A typical medium gain IC Op amp **Has open loop gain of about 25 00**
86. The output stage of an Op amp circuit provides **Low output impedance**
87. An ideal Op amp is used to make an inverting amplifier. The two input terminals of the Op amp are at the same potential because **CMRR is infinity, open loop gain of the op-amp is infinity**
88. One of the inputs of an Op amp is open. The output voltage will be **0**
89. The input offset current of 741 CO p amp has maximum value of about **200 nA**
90. PSRR is expressed as  **$\mu V/V$**
91.  $X$  is the gain bandwidth product of the inverting amplifier and  $Z$  is the gain bandwidth product of the non inverting amplifier. Then  **$X = ZR_2R_1 + R_2$**
92. The drift is minimized by **Offset trimming**
93. A non inverting Op amp has  $Z_i = 10 K\Omega$ , feedback resistor  $R_f = 120 K\Omega$  and  $V_i = +0.6V$  - P. The output voltage **+7.8VP - P**
94. The integrator will have a DC gain **Equal to open loop gain**
95. In case of non inverting summing amplifier to get  $V_0 = V_1 + V_2 + V_3$  the condition is **All resistances must be half the  $R_f$**
96. The Op amp below has  $A_v = 20,000$  and  $Z_0 = 20\Omega$ . The approximate output voltage  $V_0$  is given by Figure 16 Figure 16 **2V**
97. Will it be true to say that the input impedance of an Op amp voltage follower would always decrease with increase in frequency **Yes, it is true dependent on current**
98. In a Astable Multivibrator if  $R_1 = R_2$  then the total time period  $T =$   **$2RC$**
99. Calculate the Hysteresis voltage for a Schmitt Trigger.  $R_1 = 2k$ ,  $R_2 = 1k$  and  $V_{sat} = 15v$  **10**
100. The Op amp in an active half wave rectifier has a gain of 20,000. The closed loop sine voltage is  **$3.5\mu V$**
101. Most of the linear ICs are based on the two transistor differential amplifier because of its **High CMRR**
102. In a differential amplifier, use of a constant current CE amplifier stage in place of emitter circuit resistor  $R_e$  causes CMRR **To increase**
103. The level translator stage is used for **To shift the output dc level down to zero**
104. The error voltage of an ideal Op amp is **0**
105. An is an Op amp with a very high input impedance, very large CMRR and extremely low values of offset and offset drifts **Norton Op amp**
106. A good quality Op amp has **high selectivity**
107. An ideal Op amp is used to make an inverting amplifier. The two input terminals of the Op amp are at the same potential because **The open loop gain of the op-amp is infinity**
108. A practical Op amp has **Finite gain and infinite input resistance**
109. While making measurement with an Op amp, it was observed that the current is flowing to a

## JNTU ONLINE EXAMINATIONS [Mid 1 - LICA]

- rd s inverting and non inverting inputs were  $4\mu A$  and  $2\mu A$  respectively. The input offset current in the case would be  **$4\mu A$**
110. The Slew rate calculation depends on only. **Input**
111. An Op amp has a gain of 50 and a bandwidth of 100 KHz. Its unity gain frequency is **5 MHz**
112. The drift is minimized by **Offset leveling**
113. A non inverting Op amp has  $Z_i = 10 K\Omega$ , feedback resistor  $R_f = 120 K\Omega$  and  $V_i = +0.6 V$  P-P. The output voltage **-7.8 VP-P**
114. The input signal will be differentiated properly if the time period T of the input signal is  **$T \leq R/FC$**
115. In case of non inverting summing amplifier to get  $V_0 = V_1 + V_2 + V_3$  the condition is **All resistances are same**
116. The Op amp circuit given below Figure 16 behaves as Figure 16 **Scale changer**
117. Will it be true to say that the input impedance of an Op amp voltage follower would always decrease with increase in frequency **Input impedance of a voltage follower is dependent on current**
118. In a Astable Multivibrator if  $R_1 = R_2$  then the total time period  $T =$   **$3C$**
119. Calculate the Hysteresis voltage for a Schmitt Trigger.  $R_1 = 2k$ ,  $R_2 = 1k$  and  $V_{sat} = 15v$  **12**
120. The Op amp in a active half wave rectifier has a gain of 200,000. The closed loop gain is  **$3.5\mu V$**
121. A typical high gain IC differential amplifier **Has three differential amplifier stages with an open loop gain around 20,000**
122. In a differential amplifier the differential input resistance  $R_{id}$  equals  **$2h_{ie}$**
123. A differential amplifier consists of **Two input terminals and two output terminals**
124. A differential amplifier having an open loop gain of 80 dB was fed with 2 mV DC at non inverting input and 1.9 mV DC at inverting input. The output will be **1VDC**
125. is the important parameter of the Op amp, when used in sample and hold circuit and digital to analogue converter **Settling time**
126. An Op amp having an open loop differential gain of 110 dB and a CMRR rating of 100 dB will have an open loop common mode gain of **10 dB**
127. The CMRR of a good quality Op amp of the order of **120 dB**
128. The loop gain  $\beta A$  **May not equal to 1**
129. The input offset current of 741 COp amp has maximum value of about **200 nA**
130. Slew rate of typical Op amp is of the order of **20V/ $\mu s$**
131. Full power bandwidth of an Op amp **Is the maximum frequency upto which full output voltage swing can be obtained**
132. For an ideal op-amp the bandwidth is **Infinity**
133. Inverting amplifier is also known as **Voltage shunt FB amplifier**
134. The variation of the output of an Op amp integrator with time due to offset is given by  $dV_0/dt =$   **$dV_{io}/RC + dI_b C$**
135. In case of inverting summing amplifier if  $R_1 = R_2 = R_3 = 3R_f$  then  $V_0$  is  **$V_0 = -(V_1 + V_2 + V_3)/3$**
136. The frequency of oscillation in case of an astable multivibrator depends mainly on **(a) RC values of the circuit**
137. The Op amp circuit shown below in Figure 17 is a Figure 17 **Voltage follower**
138. A comparator **Compares the voltage levels of two signals**
139. Calculate the Hysteresis voltage for a Schmitt Trigger.  $R_1 = 2k$ ,  $R_2 = 1k$  and  $V_{sat} = 15v$  **10**

## JNTU ONLINE EXAMINATIONS [Mid 1 - LICA]

140. Log amplifiers are used in **Analog data compression, computation and transducer linearization**
141. The differential amplifier gain and the input resistance of a dual input balanced output differential is given by  **$R_c / r_e, 2\beta a c r e$**
142. The differential gain of the an Op amp should be **Very large**
143. Topologically, a difference amplifier corresponds to a TTL **OR gate**
144. In basic comparator consists of **Op amp used in open loop**
145. Op amp is also known as current differencing Op amp **Norton Op amp**
146. An op-amp is **VCVS**
147. The ideal value of CMRR  **$\infty$**
148. Current cannot flow to ground through **A virtual ground**
149. Which characteristic is not belonging to D.C characteristics? **Slew rate**
150. PSRR of a good quality Op amp is of the order of **100 dB**
151. X is the gain bandwidth product of the inverting amplifier and Z is the gain bandwidth product of the non inverting amplifier. Then  **$X = Z R_2 R_1 + R_2$**
152. At the crossing frequency of unity, the voltage gain is  **$R C r e$**
153. In an Op amp inverting amplifier configuration with an input resistance ( $R_1$ ) and a feedback resistance ( $R_2$ ), it is normal practice to connect a resistance ( $R$ ) equal to parallel combination of ( $R_1$ ) & ( $R_2$ ) from the non inverting input to ground. This is done to **Compensate for the effects of input bias currents**
154. The variation of the output of an Op amp integrator with time due to offsets is given by  $d v 0$   
 $d t =$   **$d v i o R C + d I b C$**
155. In the circuit shown in the Figure 15 expression for  $I_0 / I_i =$  Figure 15  **$1 + (R_f / R)$**
156. The Op amp shown in Figure 16 has  $Z_i = 10 M \Omega$ ,  $Z_o = 20 \Omega$ ,  $A_v = 20,000$  output voltage is given by Figure 16 **20V**
157. Will it be true to say that the input impedance of an Op amp voltage follower would always decrease with increase in frequency **Yes, it is true**
158. In a Monostable multivibrator, if  $V_{sat} > V_D$  and  $R_1 = R_2$  calculate the time period ( $R = 2 k \& C = .002 F$ ) **2.76**
159. Calculate the Hysteresis voltage for a Schmitt Trigger.  $R_1 = 2 k$ ,  $R_2 = 1 k$  and  $V_{sat} = 15 v$  **10**
160. The circuit shown below in Figure 20 can be used as a Figure 20 **Logarithmic amplifier**
161. Most of the linear ICs are based on the two transistor differential amplifier because of its **Input voltage dependent linear transfer characteristics**
162. The ability of differential amplifier to reject a common mode signal is called **Common mode rejection ratio**
163. In a differential amplifier, use of a constant current CE amplifier stage in place of emitter circuit resistor results in very high value of **CMRR**
164. An Operational amplifier is a **High gain CE amplifier**
165. Which out of the following IC Op amp has the best tolerance and minimum cost **709 C**
166. With reference to the power supply of an Op amp **Current always flows into the  $V_+$  terminal and flows out of the  $V_-$  terminal uses dual power supply**
167. Open loop bandwidth of an Op amp is **5 KHz**
168. Current cannot flow to ground through **A mechanical ground**
169. Currents that flow in the input leads of an Op-amp **Are required to support the collector current and are known as bias currents**
170. A general purpose Op amp has a PSRR rating of 100 dB. This implies that a 1V change in the p

## JNTU ONLINE EXAMINATIONS [Mid 1 - LICA]

- owers supply will produce an input offset voltage change of  $10\mu V$
171. Let the magnitude of the gain in the inverting Op amp circuit shown in the Figure 11 be  $X$  with switch  $S_1$  open when  $S_1$  is closed the magnitude of gain becomes Figure 11  $-X$
172. At the crossing frequency of unity, the voltage gain is  $0$
173. In an Op amp inverting amplifier configuration with an input resistance ( $R_1$ ) and a feedback resistance ( $R_2$ ), it is normal practice to connect a resistance ( $R$ ) equal to parallel combination of ( $R_1$ ) & ( $R_2$ ) from the non-inverting input to ground. This is done to **Compensate for the effects of input offset voltage**
174. The Op amp differentiator **Is inherently unstable**
175. In case of inverting summing amplifier if  $R_1 = R_2 = R_3 = R$  then  $V_0$  is  $V_0 = -[V_1 + V_2 + V_3]$
176. The width of the output pulse of a monostable multivibrator is given by  $0.69 RC$
177. The current follower **Range is limited by the output current capability at high end**
178. A comparator **Compares the voltage levels of two signals**
179. Schmitt Trigger is basically **An astable multivibrator**
180. The circuit shown below in Figure 20 can be used as a Figure 20 **Logarithmic amplifier**
181. The frequency in which differential gain in Op amp is zero is known as **Unity gain cross over frequency**
182. The tail of a differential amplifier acts like a **Battery**
183. Which of the following specifications is not specified for a difference amplifier?  
**Common-mode current range**
184. A differential amplifier having a non-inverting gain of 80 dB was fed with 2 mV DC at non-inverting input and 1.9 mV DC at inverting input. The output will be  $1VDC$
185. Op amp is also known as current differencing Op amp **Norton Op amp**
186. With reference to the power supply of an Op amp **Current always flows into the  $V^+$  terminal and flows out of the  $V^-$  terminal uses dual power supply**
187. The gain of an Op amp is nearly  $10^5$
188. The loop gain  $\beta A$  **May not be equal to 1**
189. The input offset current of 741 Op amp has a maximum value of about  $200 nA$
190. For defining the slew rate type of input signal is used. **Square wave**
191. The gain-bandwidth product of 741 Op amp is about  $1 MHz$
192. In dominant pole compensation, the modified loop gain drops to 0 dB **With a slope of  $-20 dB/decade$  at the first break frequency of the uncompensated amplifier**
193. A non-inverting Op amp has  $Z_i = 10 K\Omega$ , feedback resistor  $R_f = 120 K\Omega$  and  $V_i = +0.6 VP-P$ . The output voltage  $+7.8 VP-P$
194. The input signal will be differentiated properly if the time period  $T$  of the input signal is  $T \geq RfC_1$
195. The given Figure 15 Op amp has voltage gain of 200,000. The input Miller Capacitance is  $F$  figure 15  $1 + (Rf/R)$
196. The functionality of Resistive Transducer used in case of Instrumentation amplifier is the resistance changes with **Temperature**
197. The input impedance of a current follower is **Ideally zero**
198. In case of a Comparator, the op-amp output will be operated in region. **Saturation**
199. In a Schmitt Trigger the Upper Threshold Voltage is given by  $[R_1 / (R_1 + R_2)] (+V_{sat})$
200. Log amplifiers are used in **Analog data compression, computation and transducer linearization**