





- iv) For an ideal differential amplifier, the C.M.R.R. is \_\_\_\_\_  
a) zero                      b) low                      c) infinity                      d) high
- v) Output signal of a power amplifier is shown below. The type of distortion involved is \_\_\_\_\_  
a) Crossover distortion  
b) Amplitude distortion  
c) Frequency distortion  
d) Harmonic distortion
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- vi) Bandwidth of an amplifier with negative feedback \_\_\_\_\_  
a) increases                      b) decreases  
c) remains constant                      d) becomes infinity
- vii) A stable Multivibrator has  
a) two stable states                      b) single stable state  
c) no stable state                      d) none of the above
- viii) The only drawback of negative feedback amplifiers is \_\_\_\_\_  
a) decreased gain                      b) decreased distortion in the signal  
c) stabilised gain                      d) increased bandwidth
- ix) \_\_\_\_\_ produces highly stable frequency of oscillations.  
a) Crystal Oscillator                      b) Colpitt's Oscillator  
c) Hartley Oscillator                      d) None of the above
- x) Tunnel diode is basically \_\_\_\_\_  
a) a very heavily doped PN junction diode  
b) a very lightly doped PN junction diode  
c) a moderately doped PN junction diode  
d) none of the above
- xi) In the construction of UJT, Emitter contact is always  
a) Nearer to Base 1  
b) Nearer to Base 2  
c) Exactly in the middle of the channel  
d) Always attached to Base 1



- xii) In a seven segment LED display if a, b, c, d, e, f segments are activated, the decimal number displayed is \_\_\_\_\_  
a) Zero                      b) Five                      c) Eight                      d) Nine
- xiii) A device that exhibits a negative resistance region is  
a) pn diode                      b) tunnel diode                      c) varactor diode                      d) solar cell
- xiv) Following is the circuit symbol for  
a) Schottky diode  
b) Varactor diode  
c) Photo diode  
d) None of the diode
- xv) TRIAC is a device which conducts during  
a) positive half cycles of the input signal  
b) negative half cycles of the input signal  
c) both positive and negative half cycles of the input signal  
d) alternate positive half cycles of the input signal



PART – B

Answer **any five** questions. (5x7 = 35)

- 2. a) Classify the amplifiers based on any four different criteria.  
b) Draw the circuit of a CC amplifier and write its any two applications. (4+3)
- 3. a) Draw the circuit diagram of two stage RC Coupled amplifier. Draw its frequency response curve. Mention its advantages.  
b) Draw the circuit diagram of a swamped amplifier. (5+2)
- 4. a) Compare voltage and power amplifiers.  
b) Draw the circuit of a Class B Push Pull power amplifier and explain its working. (3+4)
- 5. Draw the circuit of a differential amplifier with current mirror. What is the effect of current mirror on differential gain, common mode gain and C.M.R.R. ? 7
- 6. a) Draw the block diagrams Voltage series and Current shunt negative feedback connections.  
b) Explain the operation of a transistor Astable multi vibrator. (2+5)
- 7. a) What are damped and undamped oscillations ?  
b) Explain with circuit diagram, the working of a Colpitt's oscillator. Write the expression for frequency of oscillations. (2+5)



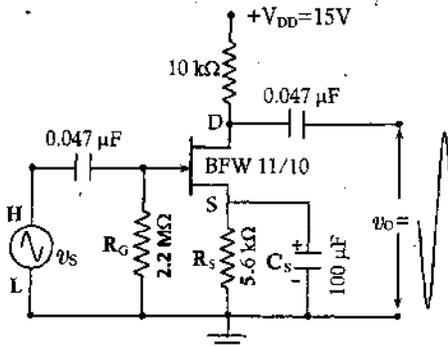
8. a) Explain the working of Silicon Controlled Rectifier with a necessary diagram. Draw its VI characteristic curve.  
b) Draw the characteristics curves of a Photo transistor. (5+2)
9. Explain the Working of N channel enhancement type MOSFET and draw its characteristic curves. 7

## PART - C

Answer any four questions.

(4×5 = 20)

10. A common emitter amplifier has an input resistance  $R_i = 2.5 \text{ k}\Omega$  and a voltage gain of 200 if the input signal voltage 5 m V, find a) the base current b) the collector current c) power gain and d) dB power gain. Take  $\beta = 50$ .
11. For common source amplifier shown, calculate the voltage gain. Given,  $g_m = 1 \text{ mS}$  and  $r_d = 5 \text{ k}\Omega$ . What will be the voltage gain if the drain resistance is increased from  $10 \text{ k}\Omega$  to  $12 \text{ k}\Omega$  ?



12. In a dual input balanced output differential amplifier,  $I_E = 3 \text{ mA}$ ,  $R_C = 3 \text{ k}\Omega$ ,  $R_E = 10 \text{ k}\Omega$  and  $\beta = 200$ . Calculate i) Differential gain ii) Common mode gain iii) Input impedance iv) CMRR
13. In a negative feedback amplifier  $A = 100$   $\beta = 0.04$  and  $V_i = 50 \text{ mV}$ . Find  
a) gain with feedback b) output voltage c) feedback voltage
14. In a transistor Hartley oscillator,  $L_1 = 30 \mu\text{H}$  and  $L_2 = 1 \times 10^{-8} \text{ H}$ . The capacitance used in the tank circuit is  $100 \text{ pF}$ . Calculate the frequency of oscillations. Also calculate  $\beta$ .
15. A UJT has  $R_{B1} = 6.8 \text{ k}\Omega$  and  $R_{B2} = 3.2 \text{ k}\Omega$ . Find  
i) intrinsic stand-off ratio, ii) the Peak point voltage, if  $V_{BB} = 12 \text{ V}$  and  $V_D = 0.65 \text{ V}$ .