



Seat No. \_\_\_\_\_

[40]  
Etc

SARDAR PATEL UNIVERSITY  
B.Sc.SEM-3 EXAMINATION-2021

No. of Printed Pages: 04

Marks : 70

Subject : Physics Course Code: US03CPHY 22

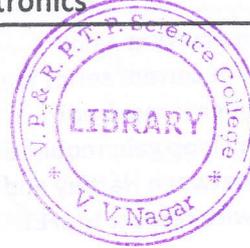
Date: 2-12-2021

Solid state electronics

Time: 3:00 PM - 5:00 PM

Instructions:

1. Attempt all questions.
2. The symbols have their usual meaning.
3. Figures to the right indicate full marks.



Q.1 Multiple Choice Questions.

(10)

1. A basic building block of an amplifier is \_\_\_\_\_  
a. Transister                      b. Resistor                      c. Diode                      d. Inductor
2. The transistor parameters are \_\_\_\_\_ dependent.  
a. pressure                      b. temperature                      c. clipping                      d. resistance
3. An amplifier circuit of voltage gain 20 has input 1 volt the value of output voltage is  
a. 1.0 volt                      b. 10.0 volt                      c. 20.0 volt                      d. 2.0 volt
4. There are \_\_\_\_\_ hybrid(h) parameters I transistor.  
a. 10                      b. 8                      c. 4                      d. 6
5. Identify the circuit that generate square wave form.  
a. amplifier                      b. astable m.v.                      c. rectifier                      d. regulator
6. The negative feedback amplifier circuit reduces  
a. power                      b. current                      c. voltage                      d. gain
7. \_\_\_\_\_ generates frequency.  
a. transistor                      b. oscillator                      c. diode                      d. amplifier
8. The gain of an emitter follower amplifier is \_\_\_\_\_  
a. <1                      b. >1                      c. =1                      d. infinite
9. JFET is often called \_\_\_\_\_  
a. linear device                      b. square law device                      c. oscillator                      d. resistor
10. An input resistance of JFET is \_\_\_\_\_  
a. zero                      b. high                      c. one                      d. infinite

Q.2 (a) Fill the blank

(4)

1. \_\_\_\_\_ h-parameters gives forward current ratio of a CE transistor
2. No clipping can be observed if the Q-point is \_\_\_\_\_
3. In negative feedback amplifier the output impedance is \_\_\_\_\_
4. The unit of hybrid parameter  $h_{fe}$  is \_\_\_\_\_

(b) True or False

(4)

1. Colpitts oscillator circuit generates high frequency signal.
2. If the power gain is A and its voltage gain is B then current gain is A/B.
3. Negative feedback is required to generate oscillations.
4. Collector to base bias circuit is known as emitter bias circuit.

P.T.O.

Q.3 Give answer in short(Any Ten)

(20)

1. What is thermal runaway of a transistor? Explain in brief.
2. Why fixed bias circuit is seldom used?
3. Define small signal amplifier
4. Why dB is used?
5. Define voltage gain and current gain.
6. Draw a block diagram of current series feedback amplifier.
7. Why multistage amplifier is required?
8. In oscillator circuit why loop gain required greater than one?
9. Give two differences between Hartley and Phase shift oscillators
10. Explain multiplexing with respect to JFET
11. Write on CMOS
12. Give brief classification of oscillator.

Q.4 Long Questions (any four)

(32)

1. Explain simple biasing using proper circuit diagram.
2. What is operating point? Explain selection of a proper operating point using NPN transistor.
3. Explain graphical method for calculating current gain and voltage gain using CE-NPN transistor.
4. What are the h parameter? Draw and explain h-parameter equivalent circuit Of a transistor.
5. Derive equation for a voltage gain of a negative feedback amplifier.
6. Prove that input impedance of voltage series feedback amplifier increases.
7. Explain biasing of JFET in ohmic region and active region.
8. Write a note on enhancement mode of MOSFET.

