

Total No. of Printed Pages: 3

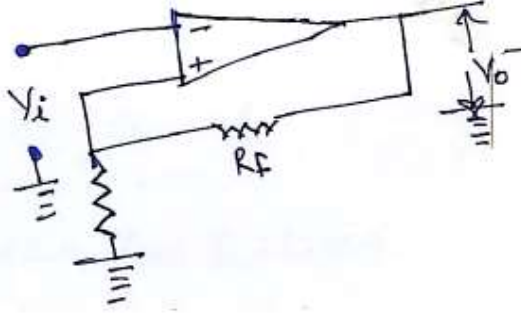
SUBJECT CODE NO:- B-2033
FACULTY OF SCIENCE & TECHNOLOGY
B.Sc. S.Y. (Sem- IV)
Examination November/December- 2022
Physics Paper-XI
(General Electronics)

[Time: 1:30 Hours]

[Max. Marks:50]

Please check whether you have got the right question paper.

- N.B
1. Attempt all questions.
 2. Use of logarithmic table & electronic pocket calculator is allowed.
- Q.1
- a) Explain the internal structure & action of a JFET. How will you obtain its characteristics? 10
 - b) Draw the circuit diagram & C.E Amplifier. Explain its working & derive an expression for its voltage gain. 10
- OR
- a) Discuss the working of monostable multivibrator using transistors. Draw the necessary waveforms. 10
 - b) Define modulation. Drive an expression for amplitude modulated wave. 10
- Q.2
- a) Write short note on D-MOSFET 05
 - b) A JFET has the drain current of 5mA. If $I_{DSS} = 10\text{mA}$, $V_{GS(\text{off})} = -6\text{V}$ Find the value of V_{GS} & V_P . 05
 - c) Discuss the basic principle of oscillator. 05
 - d) Determine the frequency of oscillation for stable multivibrator if $R = 10\text{K } \Omega$ $C = 0.01\mu\text{F}$ 05
- OR
- a) Describe the frequency response of RC coupled amplifier. 05
 - b) Calculate the output of non-inverting amplifier for values of $V_i = 4\text{V}$, $R_F = 10\text{K } \Omega$ & $R_1 = 50\text{K } \Omega$ 05



- c) Write short note on phase modulation. 05
- d) What is the modulation index of FM carrier having a carrier swing of 80 KHZ and modulating signal of 4 KHZ? 05

Q.3 Multiple choice questions (Attempt all questions) 10

- 1) In a transistor, collector current is controlled by
 - A. Base current
 - B. Collector voltage
 - C. Collector resistance
 - D. None of the above
- 2) A zener diode is always _____ connected
 - A. Reverse
 - B. Forward
 - C. Either reverse or forward
 - D. None of the above
- 3) A certain transistor has $I_c = 15\text{mA}$ & $I_B = 167\mu\text{A}$; β for it is

A. 0.015 B. 16 C. 90 D. 170
- 4) Which is higher gain provided by CE configuration
 - A. Voltage
 - B. Current
 - C. Power
 - D. Resistance
- 5) The value of negative feedback fraction is always _____
 - A. Less than one
 - B. More than one
 - C. Equal of one
 - D. None of the above

- 6) The best frequency response is of _____ coupling
- A. RC
 - B. Transformer
 - C. Direct
 - D. None of the above
- 7) The frequency of oscillation for Hartely oscillator is given by
- A. $f_o = \frac{1}{2\pi\sqrt{LC}}$
 - B. $f_o = \frac{1}{2\pi\sqrt{RC}}$
 - C. $f_o = \frac{1}{2\pi R\sqrt{C}}$
 - D. $f_o = \frac{1}{\sqrt{2\pi RC}}$
- 8) In a phase shif oscillator, we use _____ RC sections
- A. Two
 - B. Three
 - C. Four
 - D. None of the above
- 9) Modulation is done in _____
- A. Transmitter
 - B. Radio receiver
 - C. Between transmitted radio receiver
 - D. Oscillator
- 10) A carrier wave of 100V is made to vary between 150V and 50V by the signal. The percentage modulation is
- A. 100%
 - B. 50%
 - C. 60%
 - D. 40%