



GIET UNIVERSITY, GUNUPUR - 765022
M. Sc. (Third Semester) Regular Examinations, December - 2023
22PHPE302 - Electronics
(Physics)

Time: 3 hrs

Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A**(2 x 10 = 20 Marks)**Q.1. Answer **ALL** questions

- a. Draw the frequency response curve of RC coupled amplifier and Transformer coupled amplifier.
- b. Define pinch off voltage in FET.
- c. What is cascading amplifier
- d. Distinguish between positive and negative feedback
- e. Draw a CB amplifier & its hybrid equivalent circuit?
- f. For the non-inverting amplifier given that input voltage is 5V and $R_1=1K\Omega$ and $R_f = 5K\Omega$. Calculate the output voltage.

CO # Blooms
Level

CO1 K1

CO1 K2

CO2 K1

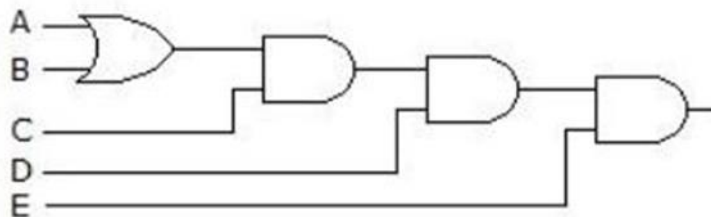
CO2 K2

CO2 K2

CO3 K2

- g. Derive the Boolean expression for the logic circuit shown below:

CO3 K2



- h. Define common-mode rejection ratio (CMRR) and explain the significance of a relatively large value of CMRR.

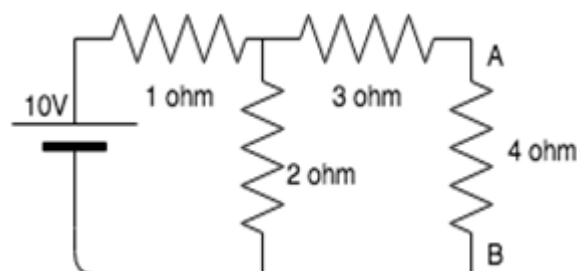
CO2 K2

- i. Write the Truth table of JK flip flop. Write the condition When
- $J=1$
- and
- $K=1$
- in j-k flip flop .

CO2 K1

- j. Calculate the Thevenin resistance across the terminal AB for the following circuit

CO3 K2



PART – B

(10 x 5 = 50 Marks)

Answer ANY FIVE questions

	Marks	CO #	Blooms Level
2. a. With the neat diagram explain the working principle of two-stage transformer-coupled amplifier and find voltage gain of transformed coupled amplifier at low frequency range	5	CO1	K2
b. Explain construction and working principle of FET.	5	CO1	K1
3.a. Derive the frequency of oscillation for a phase shift oscillator using CE Transistor	7	CO1	K2
b. What is phase shift oscillator? Write its condition .	3	CO2	K1
4. a. Explain the characteristic of negative feedback and effect of negative feedback on input impedance and output impedance	5	CO2	K2
b. Draw the neat-labelled diagram for dual input, balanced output.	5	CO3	K1
5.a. Derive the frequency of oscillation for a Wein Bridge oscillator using CE Transistor	7	CO3	K2
b. Explain Feedback amplifier and its principle .	3	CO1	K1
6. a. With the neat circuit diagram explain DC signal analysis.	5		K1
b. Explain the operation of an op-amp as (i) adder (ii) subtractor	5	CO2	K1
7.a. Explain TTL,RTL and DTL using OR gate.	5	CO3	K1
b. What is an Analog-to-Digital Converter? Explain the main components of an ADC.	5	CO3	K2
8. a. Simplify the following expression and draw the logic circuit I. $Y = [A\bar{B}(C + BD) + A\bar{B}]C$ II. $Y = (A + B)(\bar{A} + C)(B + C)$	5	CO3	K2
b. State and explain Thevenins theorem. Obtain thevenin's equivalent circuit with respect to the terminals of AB of the network shown in the circuit .	5	CO3	K2

