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GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA, GUNUPUR
(GIET UNIVERSITY)

M. Sc. (Third Semester) Regular Examinations, December– 2024

22PHPE302– Electronics

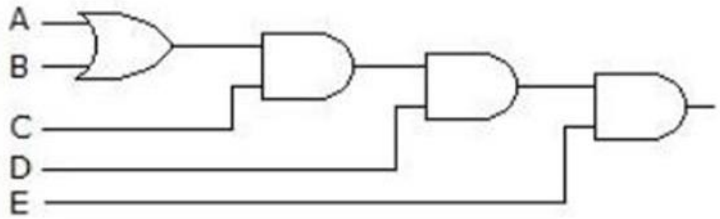
(M.Sc. Physics)

Time: 3 hrs | Maximum: 60 Marks

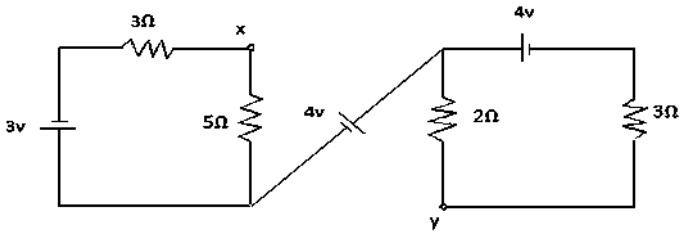
(The figures in the right hand margin indicate marks.)

PART – A **(2 x 10 = 20 Marks)**

Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a. Determine the trans conductance of a JFET if its amplification factor is 96 and drain resistance is 32 kΩ.	CO1	K1
b. Define pinch off voltage in FET.	CO1	K1
c. Define cascading amplifier.	CO1	K1
d. Draw the graph of gain verses frequency	CO1	K2
e. What is the characteristic of Ideal OPAMP	CO1	K2
f. For the non-inverting amplifier given that input voltage is 5V and R_1=1kΩ and R_f = 5kΩ. Calculate the output voltage.	CO2	K2
g. Derive the Boolean expression for the logic circuit shown below:	CO3	K2

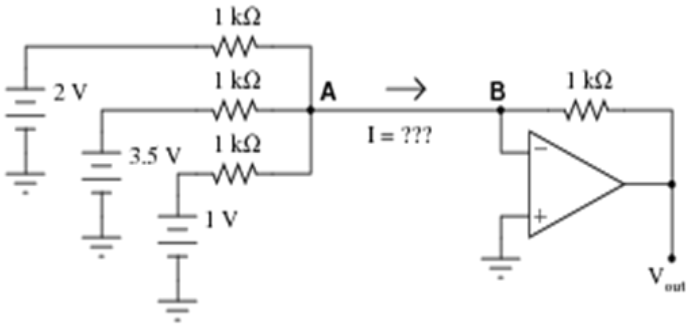
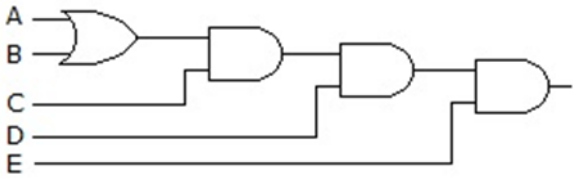
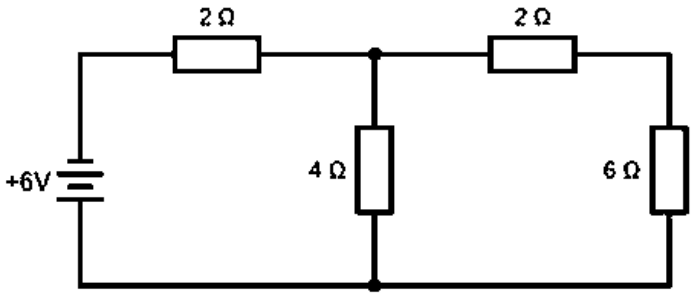


h. Explain the frequency response of two-stage RC coupled amplifier.	CO2	K2
i. Write the truth table of JK-Flip Flop.	CO2	K1
j. Calculate potential difference between x and y	CO3	K2



PART – B **(10 x 5 = 50 Marks)**

Answer ***ANY FIVE*** questions	Marks	CO #	Blooms Level
2. a. Explain H Parameters in CB, CE and CC Hybrid model of Transistor.	5	CO1	K1
b. Explain construction and working principle of FET.	5	CO1	K1
3.a. With the neat diagram explain the working principle of two-stage transformer-coupled amplifier	7	CO1	K2

b.	Explain Depletion Mode of MOSFET. Write I-V characteristic of MOSFET.	3	CO2	K1
4. a.	Explain the Wein Bridge Oscillator in detail.	5	CO1	K1
b.	With the neat circuit diagram explain the working of phase shift oscillator	5	CO1	K2
5.a.	Determine the amount of current from point A to point B in this circuit, and also the output voltage of the operational amplifier: 	7	CO3	K2
b.	Derive the Boolean expression for the logic circuit shown below: 	3	CO2	K2
6. a.	Explain the action of TTL NOT gate.	5	CO1	K2
b.	With a label diagram explain AC analysis.	5	CO2	K1
7.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.	Construct All Gates with the help of NOR Gate	5	CO2	K2
8. a.	State and Explain Thevenins theorem	5	CO1	K1
b.	Calculate the current through the resistor of resistance 6 Ω using Thevenins theorem. 	5	CO3	K2