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GIET UNIVERSITY, GUNUPUR – 765022
M. Sc. (Third Semester) Examinations, December – 2022
20PHPE302 – Electronics
(Physics)

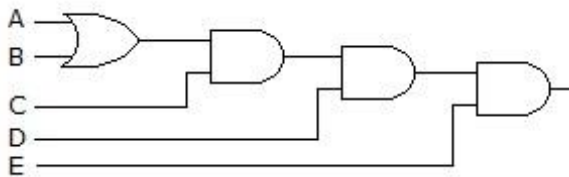
Time: 3 hrs

Maximum: 70 Marks

(The figures in the right hand margin marks.)

PART – A**(2 x 10 = 20 Marks)**

- | Q1. Answer ALL questions | CO# | Blooms Level |
|---|-----|----------------|
| a. Write dimension of h_{11} , h_{12} , h_{21} and h_{22} | 1 | K ₁ |
| b. Write the difference between positive feedback and negative feedback | 1 | K ₁ |
| c. Determine the trans conductance of a JFET if its amplification factor is 96 and drain resistance is 32 K Ω . | 1 | K ₁ |
| d. How is Thevenins theorem different from Norton's theorem | 1 | K ₁ |
| e. Explain ohmic region, pinchoff region and avalanche region of JFET | 2 | K ₁ |
| f. What is cascading amplifier | 2 | K ₂ |
| g. 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. | 2 | K ₁ |
| h. Define common-mode rejection ratio (CMRR) and explain the significance of a relatively large value of CMRR. | 3 | K ₂ |
| i. Derive the Boolean expression for the logic circuit shown below: | 3 | K ₁ |

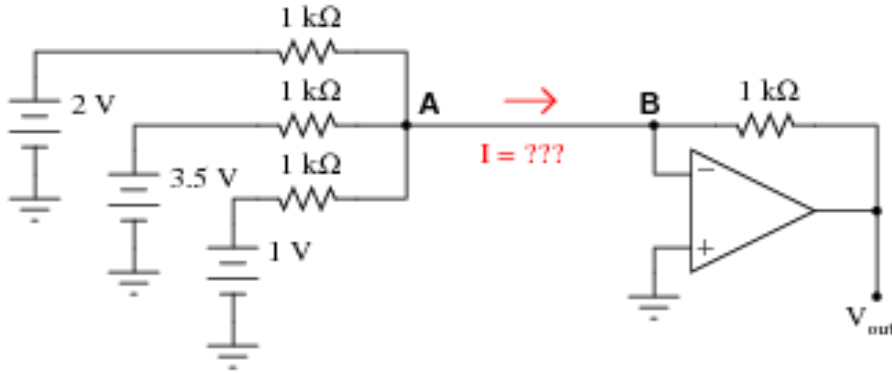


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|--|---|----------------|
| j. Write the truth table of jk-Flip flop | 3 | K ₁ |
|--|---|----------------|

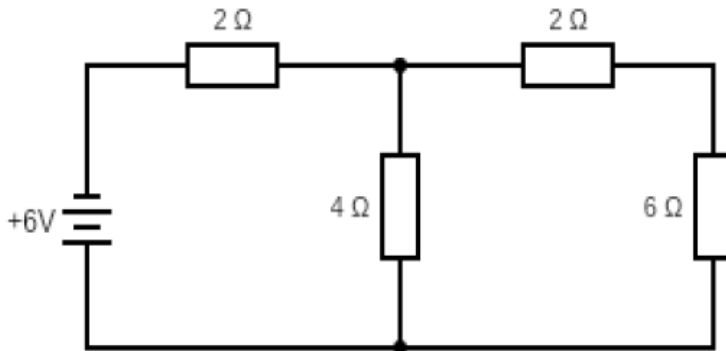
PART – B**(10 x 5 = 50 Marks)**Answer ANY FIVE questions

- | | Marks | CO# | Blooms Level |
|--|-------|-----|----------------|
| 2. a. Explain frequency response of RC coupled amplifier at low frequency range | 5 | 1 | K ₁ |
| b. Explain H Parameters in CB, CE and CC Hybrid model of Transistor | 5 | 1 | K ₁ |
| 3.a. Explain Depletion Mode of MOSFET, Write I-V characteristic of MOSFET. | 5 | 2 | K ₁ |
| b. Explain construction and working principle of FET? | 5 | 2 | K ₂ |
| 4. a. With the neat circuit diagram explain the working of Wien bridge oscillator. | 5 | 2 | K ₁ |
| b. Explain the characteristic of negative feedback and effect of negative feedback on input impedance and output impedance | 5 | 2 | K ₂ |
| 5.a. Draw the neat-labeled diagram for dual input, balanced output. | 5 | 3 | K ₁ |
| b. With the neat circuit diagram explain AC signal analysis | 5 | 2 | K ₂ |
| 6. a. Explain the operation of an op-amp as i) adder ii) subtractor | 5 | 3 | K ₁ |

- b. Determine the amount of current from point **A** to point **B** in this circuit, and also the output voltage of the operational amplifier: 5 3 K₂



- 7.a. State and explain Thevenins theorem 5 2 K₁
 b. Calculate the current through the resistor of resistance $6\ \Omega$ using Thevenins theorem. 5 3 K₂



8. a. Construct All Gates with the help of NOR Gate 5 3 K₁
 b. Explain TTL,RTL and DTL 5 3 K₁

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