



# Daffodil International University

Faculty of Science & Information Technology  
Department of Computer Science & Engineering

Final Examination, Fall 2025

Course Code: CSE215

Course Title: Electronic Devices and Circuits

Level: 2

Term: 1

Batch: 67

Time: 02:00 Hrs

Marks: 40

## Answer ALL Questions

*[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]*

|    |    |                                                                                                                                                                                                                                                                         |   |     |
|----|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|
| 1. | a) | Define the term Decibel gain.                                                                                                                                                                                                                                           | 1 | CO1 |
|    | b) | Recall the functions of bypass capacitor in the transistor amplifier.                                                                                                                                                                                                   | 1 |     |
|    | c) | List the characteristics of an ideal op-amp.                                                                                                                                                                                                                            | 1 |     |
|    | d) | Recall the block diagrams of positive and negative feedback.                                                                                                                                                                                                            | 1 |     |
|    | e) | Name the conditions must be satisfied to achieve faithful amplification.                                                                                                                                                                                                | 1 |     |
| 2. | a) | Illustrate the transfer characteristic graph for n-channel D-MOSFET and explain its characteristics.                                                                                                                                                                    | 5 | CO2 |
|    | b) | Explain the impact of negative feedback on the gain of an amplifier with derivation.                                                                                                                                                                                    | 5 |     |
|    | c) | Demonstrate the circuit operation of the Hartley Oscillator with the proper circuit diagram and explain how the total phase shift in closed loop is 360 degrees.                                                                                                        | 5 |     |
| 3. | a) | The gain of an amplifier without feedback is 100 whereas with negative voltage feedback, it falls to 50. If due to ageing, the amplifier gain falls to 80, Solve for the percentage reduction in stage gain<br>(i) Without feedback and<br>(ii) With negative feedback. | 5 | CO3 |
|    | b) | An amplifier rated at 40W output is connected to a 10Ω speaker. Solve for the value of<br>(i) The input power required for full power output if the power gain is 25 db.<br>(ii) The input voltage for rated output if the amplifier voltage gain is 40 db.             | 5 |     |



c)

For the JFET in Fig. 1,  $V_P = 4V$  and  $I_{DSS} = 12\text{ mA}$ . Solve for the value of  
 (i) Drain Current,  $I_D$  and  
 (ii) Drain-Source voltage,  $V_{DS}$

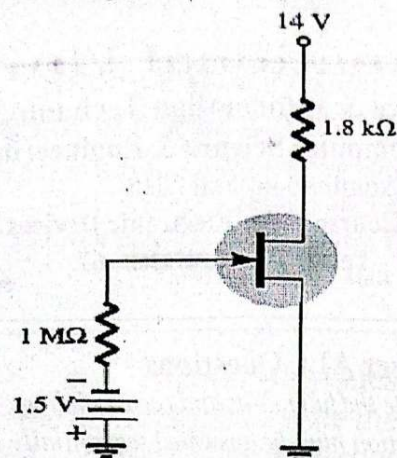


Fig. 1

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d)

Applying base resistor biasing method for a CE amplifier such that the operating point is  $V_{CE} = 8V$  and  $I_C = 2\text{ mA}$  with a fixed 15V d.c. supply and a silicon transistor with  $\beta = 100$ . Here base-emitter voltage  $V_{BE} = 0.6V$ . Solve the biasing circuit for

- The value of  $R_B$  and  $R_C$  that would be employed in the circuit.
- Draw d.c. load line.

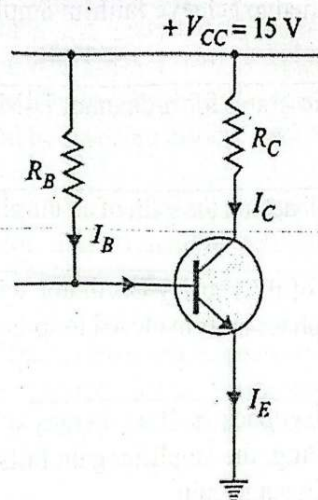


Fig. 2

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Good Luck!!!