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| **Course Name:** | **Basic Electronic Circuits** | **Semester:** | **III** |
| **Date of Performance:** | **19-10-2020** | **Batch No:** | **B2** |
| **Faculty Name:** | **BPK** | **Roll No:** | **1912052** |
| **Faculty Sign & Date:** |  | **Grade/Marks:** | **/25** |

**Experiment No: 9**

**Title: Study of JFET CS amplifier**

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| **Aim and Objective of the Experiment:** |
| To Study JFET CS amplifier as an amplifier |

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| **COs to be achieved:** |
| CO3 |

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| **Theory:** |
| Field Effect Transistor amplifier provides an excellent voltage gain with the advantage of a high input impedance. There are three basic FET circuit configurations viz. common source, common drain and common gate similar in case of BJT where we have common emitter, common collector and common base configuration circuits respectively. The only difference is that BJT controls a large output (collector) current by means of a relatively small input (base) current whereas FET controls an output (drain) current by means of small input (gate) voltage. It is important to take note that in  both the cases the output current is the controlled variable. Here we are using a self-bias  circuit in which drop across Rs provides necessary reverse bias between gate and source and depending on our VDD,VDSQ and IDQ are decided to get a Q point.The input signal is applied at the input of the amplifier which is in mV. This signal rides over the D.C. voltage VGSQ and hence change the voltage at gate which changes the output current ID. The output is taken across the drain and hence it is nothing but IDRD. Though the change in ID is small, it is multiplied with RD to get output voltage, which give amplified voltage. Hence, the output is an amplified version of input with a phase shift of 180. |

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| **Circuit Diagram/ Block Diagram:** |
| **BYPASSED**    **UNBYPASSED** |

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| **Stepwise-Procedure:** |
| 1. Open a new Schematic. 2. Draw the Circuit As Shown. 3. Note down the parameters as per the observation table. |

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| **Observation Table:** |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Vin (peak) | Vout (peak)  (bypassed ) | Vout  (unbypassed ) | Av  (bypassed ) | | Av  (unbypassed ) | | |  |  |  | Cal | Obs | Cal | Obs | | 10mv | -63.610803mV | -18.059044mV | -6.5141 | -6.502 | -1.8066 | -1.8059 | |

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| **Calculation:** |
| Av (bypassed) and Av(un-bypassed) using ac analysis. |

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| **Waveform** |
| Input and output waveforms  BYPASSED    UNBYPASSED |

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| **Post Lab Subjective/Objective type Questions: (hand written)** |
| 1. Voltage gain of common drain is slightly less than   1. 1 2. 2 3. 0.5 4. Infinity   2. FET amplifiers provide \_\_\_\_\_\_\_\_\_   1. Very high gain 2. Very high input impedance 3. Low bandwidth 4. None of the above |

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| **Conclusion: (to be written in own words)** |
| We studied JFet amplifier |

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| **Signature of faculty in-charge with Date:** |