A picture containing text

Description automatically generated

Department Of electrical and computer Engineering

ENEE2103 CIRCUITS AND ELECTRONICS LABORATORY

Experiment No.6 Prelab

Insructer: Dr. Alhareth Zyoud

Made By: Islam Jihad

ID: 1191375

TA: MR. Ismail Abualia

Date: 11/Oct/2021

***I. CHARACTERESTICS OF AN N-CHANNEL JFET.***

IDS as function of VDS

Timeline

Description automatically generated with low confidence

The graph of it simulating from 0-20 volts



1. From your graph, above which values of VDS is ID almost unaffected by VDS when VGS=0?

Almost from 2 volts and up

1. For a given value of VDS, (say 10 V), do equal changes of VGS cause equal changes of ID?

No

1. Can you measure IG or is it too small?

It’s almost zero

1. From your graph, estimate the change in ID for 0.5 change in VGS when VDS =10 V, and VGS -1.0 V, then find the transconductance of the transistor(gm).

when VDS =10 V 🡪 Id = 4 mA , gm= ∆Id/ ∆Vds = (2.4754- 655.738m /3.7018m 2.0172m)=1.08

***II. COMMON DRAIN AMPLIFIER.***

Diagram

Description automatically generated with medium confidence

A picture containing background pattern

Description automatically generated

Diagram

Description automatically generated



A picture containing diagram

Description automatically generated



voltage gain= Vo/Vi =0.2/8.18=40.9V

from the graph the phase shift =0 as seen

Zin =33

Zout = 50M ohm

By putting V test and I test from the output side and by the formula theoretically

***III. CONSTANT CURRENT SOURCE.***

Diagram

Description automatically generated

|  |  |  |
| --- | --- | --- |
| **RL(KΩ)** | **VL(V)** | **ID(mA)** |
| **0.1** | **1.2** | **12** |
| **0.22** | **2.63** | **11.97** |
| **0.33** | **3.85** | **11.93** |
| **0.47** | **5.6** | **11.89** |
| **0.56** | **6.7** | **11.86** |
| **1** | **11.8** | **11.73** |
| **1.5** | **13.6** | **8.96** |
| **2** | **14** | **6.951** |
| **3** | **14.1** | **4.767** |

Table 8.2