Exp.10: **characteristics of FET**

1-*Objectives:*

- Output characteristics field with V_{GS} as parameter.
- Input characteristic with V_{DS} as parameter.

2-*Circuit elements:*

- Resistor 1 kΩ
- Potentiometer 1 kΩ
- FET transistor BF244
- Multimeter
- Power supply unit
- Set of connecting leads

3-*Circuit Diagram:*

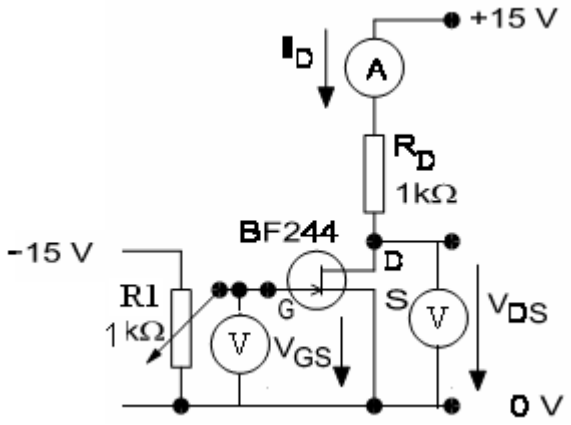

Fig.1

4-***Procedure:***

1. Connect the circuit as shown in Fig.1.
2. Using R1, apply a gate voltage of V_{GS} = - 1.3 and measure the drain currents I_D corresponding to the drain voltages V_{DS} in Table 1. Enter the values in the first column of the table.

V_{GS} / V_{DS} V	-1.3 V I_D mA	-1.0 V I_D mA	-0.6 V I_D mA	-0.3 V I_D mA	0.0 V I_D mA
0.2					
0.5					
1.0					
2.0					
3.0					
5.0					
7.0					
10.0					
12.0					

Table :1

3. Sketch the graphs of this relationship in the coordinate system .Table 1 contains several columns for various gate voltages.
4. Measure the drain current values for the corresponding drain voltages and plot the graphs in the same coordinate system.

5. The relationship between I_D and V_{GS} can be taken from the individual rows, i.e. for each pair of values (V_{GS}/I_D) there is a specific drain voltage V_{DS}.
6. Draw an input characteristic for the values in the row V_{DS} = 3 V in Table 1.

5-***Questions:***

1 Describe the construction of a JFET?
2 What are the advantages of JFET over BJT?
3 Explain the mechanism of its operation?