Department of Electrical Engineering
Sessional Assignment
Date: 04/05/2020

Course Details

Course Title:	Electronic Circuit Design	**Module:**	04
Instructor:	Sir Mujtaba Ihsan	**Total Marks:**	20

Student Details

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Q1.	**Explain** the trans conductance curve for n-channel JFET given below	Marks 04
		CLO 1

$$I_{DS} = I_{DSS}\left(1 - \frac{V_{GS}}{V_P}\right)^2$$

i_D (mA)

I_{DSS} 18

$V_{GS\,(off)} = V_P$

8

2

v_{GS} (V)

-3   -2   -1

Q1:-

$$I_{DS} = I_{DSS}\left(1 - \frac{V_{GS}}{V_P}\right)^2 \quad I_{DSS} \; 18$$

I_D (mA)

8

$V_{GS}(off) = V_P$

2

-3   -2   -1 V_{GS} (V)

Graph of N-channel JFET

This graph shows the transfer characteristic of N-channel JFET

Curve is Plotted between Voltage Gate & Source V_{GS} to the drain current I_D

This graph shows that Drain to source current decreases with the increase in negative gate-source bias.

Drain current, $I_D = I_{DSS}$ when $V_{GS} = 0$

Drain current $I_D = 0$ when $V_{GS} = V_P$

Q2.		**State** the characteristics of a practical operational amplifier.	Marks 04
			CLO 1

Q2:-   characteristic   of   Practical
                              Op-amp :-

(i) The   open   loop   voltage   gain A_0
is   maximum   &   finite .

(ii) The   input   impedance z_i is   maximum
and   is   finite.

(iii) The   output   impedance z_0 is   minimum
not   zero.

(iv) The   CMRR   is   maximum and   finite

(v) Bandwidth   is   maximum   and   finite

(vi) Generation   of   noise .

Q3.		**Calculate** output voltage for summing amplifier if V_1 = 0.2V, V_2 = 0.5V and V_3 = 2V and $R_1=R_2=R_3=R_f$ = 6kΩ	Marks 05
			CLO 2

Q3.   Calculate output voltage
for summing amplifier
$V_1 = 0.2v$, $V_2 = 0.5V$ & $V_3 = 2V$ &
$R_1 = R_2 = R_3 = R_f = 6k\Omega$
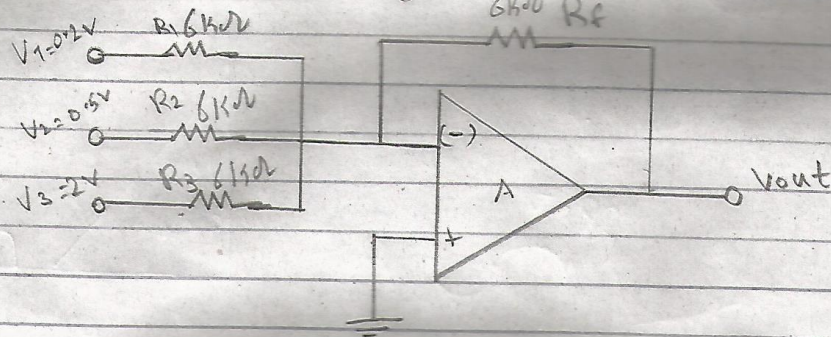
first   we   can   substitute   values
of   resistors

$$A_1 = \frac{6k\Omega}{6k\Omega} = 1$$

$$A_2 = \frac{6k\Omega}{6k\Omega} = 1$$
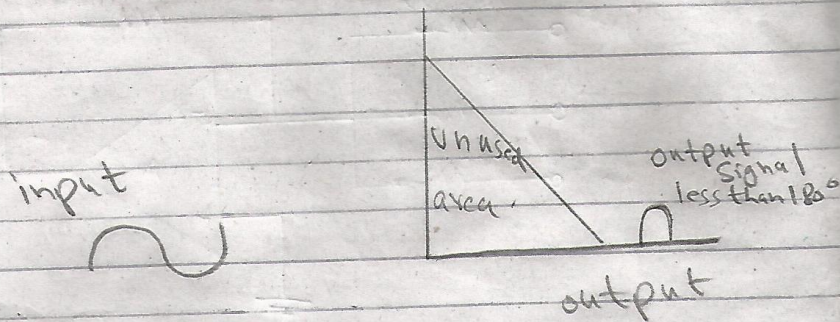
$$A_3 = \frac{6k\Omega}{6k\Omega} = 1$$

$$V_{out} = (A_1 \times V_1) + (A_2 \times V_2) + (A_3 \times V_3)$$
$$= (1 \times 0.2) + (1 \times 0.5) + (1 \times 2)$$

$$V_{out} = 2.7 V$$

| Q4. | (a) | You are working on an audio circuit in the lab. Which class of power amplifier will you not consider for your work?
Justify your answer with reason. | Marks
04
CLO 2 |

Q4:-

(a)   Class C amplifier will not consider for our work because

input

unused area

output Signal less than 180°

output

It has greatest efficiency but Poorest linearity.

It is heavily biased so that the output current is zero for more than one half of input signal

there fore class C amplifier is not Suitable for audio circuit.

	(b)	**Outline** the differences between an amplifier and a rectifier.	Marks
			03
			CLO 2

Q4:- b)

Amplifier:-

It is a type of Circuit which can increase the Power of weak signal.
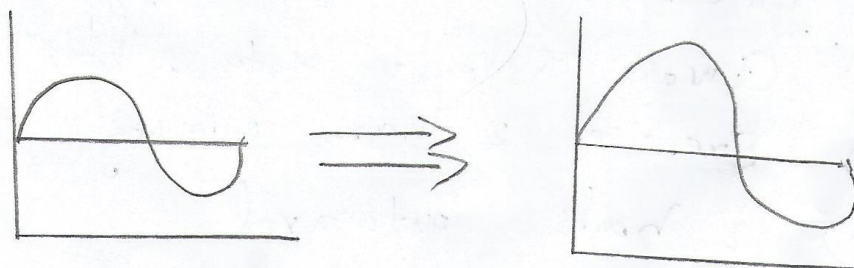
Rectifier:-

It is a type of Circuit which can convert an Ac Signal to D.C , Just by the use of single Diode.