Dr. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE-402103

Department of Electronics and Telecommunication Engineering

Supplementary Examination (MAY 2019)

Subject: Electronic Devices and Circuits (BTEXC303) **Class: B. Tech** **Semester: III**
Date: 30/ 05 /2019 **Time: 3 h** **Max. Marks: 60**

Instructions to the candidates:

1. Question 1 is compulsory, attempt any five from question 2 to question 7
2. Neat diagrams and waveforms must be drawn wherever necessary.
3. Sub question from each main question must be solved together
4. Use of nonprogrammable calculator is allowed.
5. Assume suitable data if necessary.

Q 1. Answer the following (2 Marks each) 10 M

a. Given I_{DSS} = 12 mA and V_P = -4 V, sketch the transfer characteristics for the JFET resistor.

b. Define Transconductance g_m

c. For a JFET, the typical values of amplification factor & transconductance are given as 40 & 100 µS respectively. The dynamic drain resistance of JFET will be?

d. Draw the pin diagram of IC 555.

e. Define barkhausen criterion.

Q 2. a. Draw and explain drain characteristics of n channel JFET 5 M

b. Compare Common source, common drain, and common gate configuration of JFET 5 M

Q 3. a. Datasheet for n channel EMOSFET specifies following parameter, V_{GS}=10V, $I_{D(on)}$=500mA, if $V_{GS(th)}$ for MOSFET is 1 V, determine the drain current for V_{GS}=4V? 5 M

b. Draw and explain CMOS invertor characteristics 5 M

Q 4. a. Compare class A, class B, class AB, class C and class D amplifier 5 M

b. Compare different types of feedback topology based on voltage gain, bandwidth, input resistance & output resistance. 5 M

Q 5.	a.	With neat diagram explain hartley oscillator and derive an expression for frequency of oscillation.	5 M
	b.	An FET phase-shift oscillator having g_m = 6000 mS, r_d = 36 kΩ, and feedback resistor R = 12 kΩ is to operate at 2.5 kHz. Select C for specified oscillator operation.	5 M
Q 6.	a.	Draw and explain internal block diagram of IC 555.	5 M
	b.	With a neat diagram, explain bistable multivibrator using IC 555	5 M
Q 7.	a.	Differentiate SMPS with linear regulated power supply.	4M
	b.	Find the % load regulation of a power supply providing 100V unloaded and 95V at full load.	3 M
	c.	Explain the need of regulated power supply.	3 M

*******BEST OF LUCK*******