Course Code: 1930401 Roll No: **MLRS- R19**

MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

II B.Tech I Sem Regular End Examination, March 2021

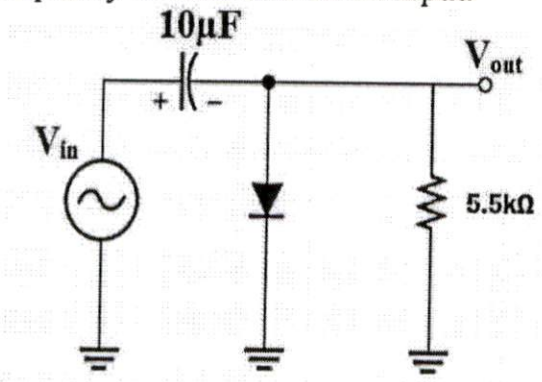
ANALOG ELECTRONICS

(EEE)

Time: 3 Hours. **Max. Marks: 70**

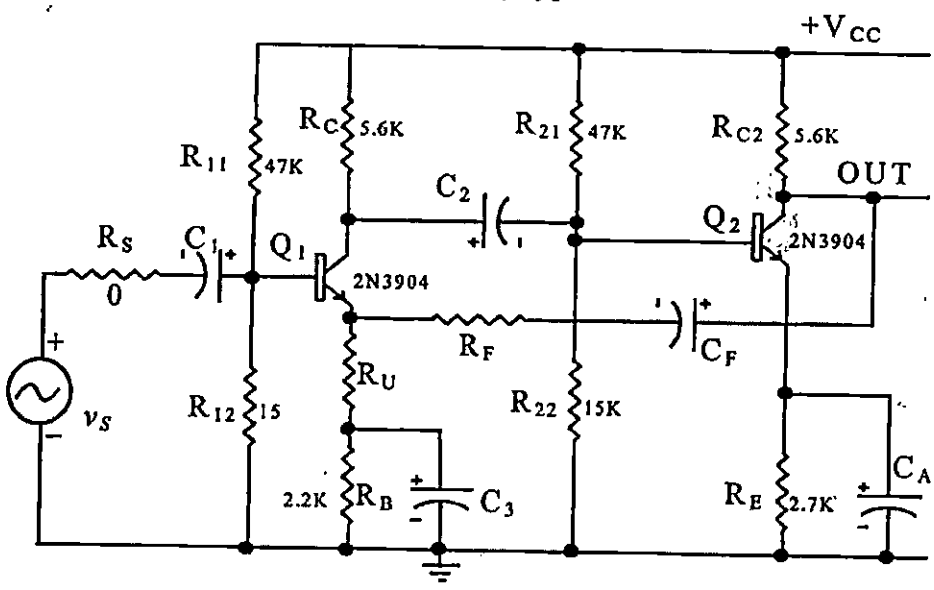
Note: 1. Answer any FIVE questions.
2. Each question carries 14 marks and may have a, b as sub questions.

1	a)	Determine the output waveform by applying 10 V_{p-p} with a frequency of 1KHz sinusoidal input.	7M	CO1	BL2



	b)	Draw the fixed bias circuit diagram and derive its operating point coordinates.	7M	CO2	BL1
2		Draw the circuit diagram of CE amplifier and obtain its I/P – O/P characteristics and derive the equations for small signal from its equivalent circuit.	14M	CO3	BL1
3	a)	How MOSFET works as a switch? Define all switching time parameters.	7M	CO2	BL2
	b)	Show that for small values of V_{GS} compared with V_P, the drain current is given approximately by $I_D \approx I_{DSS} + g_{m0}V_{GS}$	7M	CO1	BL2
4		It is desired that the voltage gain of an RC coupled amplifier at any desired low frequency f=f_i should not decrease by more than x percent from its mid band value. (a) Find an expression for the minimum value of the coupling capacitance C_b? (b) If it is desired that the gain of the amplifier at f=f_i=50Hz should not decrease by more than 10 percent, show that the coupling capacitance must be at least equal to 6.6/R', where R'=R_0'+r_i' is expressed in kilo-ohms.	14M	CO3	BL3

5	a)	A JFET with a drain circuit Resistance R_d=4.7K is used as a common source amplifier in the audio frequency range. The JFET has the following parameters: g_m=2mA/V, rd=500k, Cgs=7pF and Cgd=4pF. Find the input capacitance of the circuit?	7M	CO3	BL2
	b)	Draw the circuit diagram of Class B power amplifier and derive the equation for its power efficiency.	7M	CO3	BL1
6		Find feedback factor, voltage gain, input and output resistances for the following circuit and also identify type of feedback.	14M	CO3	BL3



7	a)	Draw the circuit diagram of a transistor Colpitts oscillator and derive the equation for frequency of oscillations.	7M	CO4	BL1
	b)	How the operational amplifier is used as an inverting amplifier and derive the equation for gain.	7M	CO5	BL1
8		Define the following terms with respect to op-amp: (i) Input and output offset voltages (ii) Input and output offset currents (iii) CMRR (iv) Slew rate (v) gain band width product	14M	CO5	BL1

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