

MANIPAL INSTITUTE OF TECHNOLOGY MANIPAL tion of Manipal University

THIRD SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.) END SEMESTER EXAMINATIONS, DEC 2016/JAN 2017

SUBJECT: ANALOG ELECTRONIC CIRCUITS [ICE 2014]

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

✤ Answer ALL the questions.

✤ Missing data may be suitably assumed.

1A.	Plot and explain the transfer characteristics of JFET.	4
1B.	Discuss the construction and working of p – channel enhancement type MOSFET.	4
1C.	List the advantages of FET over BJT.	2
2A.	For the circuit shown in Fig. Q2A compute the biasing parameters $I_{\text{DQ}},V_{\text{GSQ}}$ $V_{\text{DS}},V_{\text{D}}.$	4
2B.	Derive the biasing conditions for a common gate biased circuit.	3
2C.	For the fixed bias circuit derive the expression for input impedance, output impedance, and gain considering the effect of signal and load resistance.	3
3A.	For the circuit shown in Fig. Q3A compute the input impedance, output impedance, and gain.	5
3B.	For the circuit shown in Fig. Q3B determine the input impedance, output impedance, and output voltage, given $V_{GSQ} = -0.95V$, $V_i = 20mV$.	3
3C.	Compare voltage shunt and current shunt feedback amplifiers.	2
4A.	Compute f_{LG} , f_{LS} and f_{LC} for the given network shown in Fig. Q4A. Also plot the frequency response.	4
4B.	Analyze the high frequency characteristics of the common drain biasing circuit.	3
4C.	Derive the expressions for input impedance, output impedance, and gain for a voltage series feedback amplifier.	3
5A.	Design a Hartley oscillator for the oscillating frequency of 150kHz.	3
5B.	Give the working principle of Crystal oscillator.	2
5C.	Compare Class A and Class B power amplifiers.	2
5D.	Discuss the working principle of cascade amplifier.	3





