Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

THIRD SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)

END SEMESTER EXAMINATIONS, NOV - 2017

SUBJECT: ANALOG ELECTRONICS CIRCUIT [ICE 2104]

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Use neat diagrams where ever needed.

1A.	With a neat diagram describe the characteristics of p-type depletion MOSFET	**3**
1B.	For the circuit in Fig. Q1B, compute biasing parameters V_{GSQ}, I_{DQ}, V_{DS}, and V_D, having $V_{GS(Th)}$ =4V; $I_{D(on)}$ =2.4mA; $V_{GS(on)}$ =10V.	**4**
1C.	From the FET characteristics shown in Fig. Q1C find trans-conductance, amplification factor, and gate cutoff current.	**3**
2A.	Derive the expression for biasing parameters in a common gate D-MoSFET circuit.	**3**
2B.	Determine the amplifier parameters (input impedance, output impedance, gain and output voltage) for the circuit shown in Fig. Q2B having I_{DSS}= 7mA; V_p = 6V; V_{GSQ} = 2.4V; $r_D = \infty$**.** Represent the model of the same.	**4**
2C.	Discuss the working of cascode amplifier, also indicating its importance.	**3**
3A.	For the circuit shown in Fig. 3QA determine input impedance, output impedance, and gain, having I_{DSS}= 6mA; V_p = -4V; V_{GSQ} = -1.8V; r_D = 20kΩ	**5**
3B.	Plot the low frequency response characteristics of the circuit shown in Fig. 3QB having I_{DSS}= 8mA; V_p = -5V; V_{GSQ} = -2.1V; r_D = 10kΩ	**3**
3C.	List the advantages of feedback for an amplifier	**2**
4A.	Derive the expression for input impedance, output impedance, and gain of voltage shunt feedback amplifier.	**4**
4B.	Obtain the expression for voltage gain of voltage series feedback amplifier in fixed bias.	**3**
4C.	Design a wein-bridge oscillator with self-bias configuration for a frequency of 50kHz	**3**
5A.	Compare the design and working of Hartley and Colpitt's oscillator's	**4**
5B.	Classify power amplifiers on efficiency.	**3**
5C.	Explain the working of Class AB power amplifier.	**3**

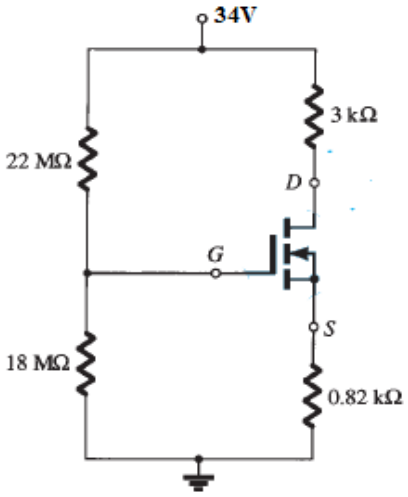

Fig. Q1B

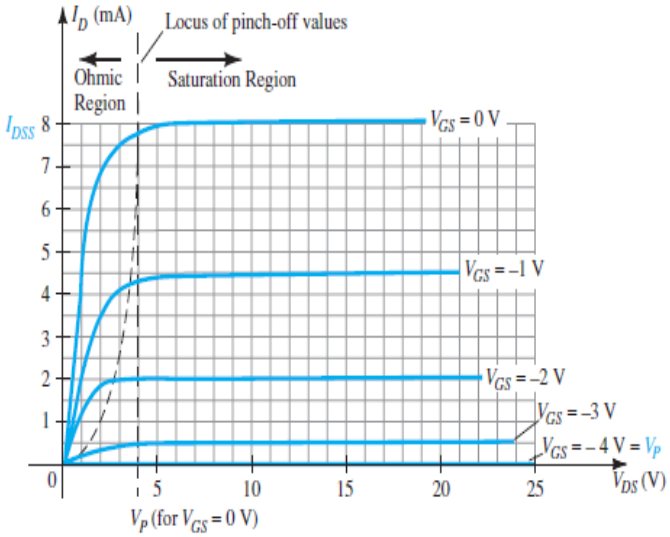

Fig. Q1C

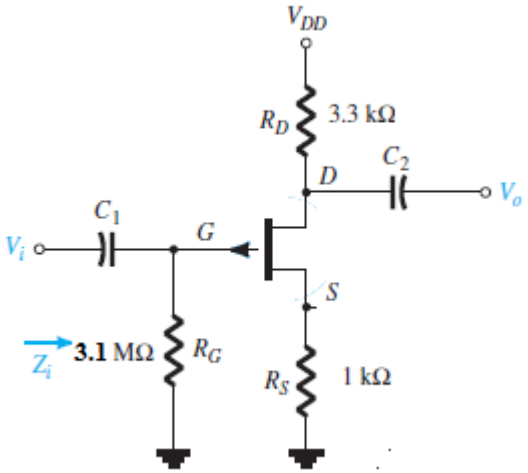

Fig. Q2B

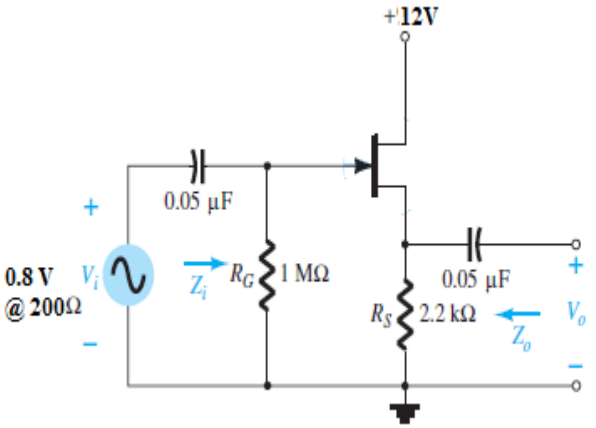

Fig. Q3B

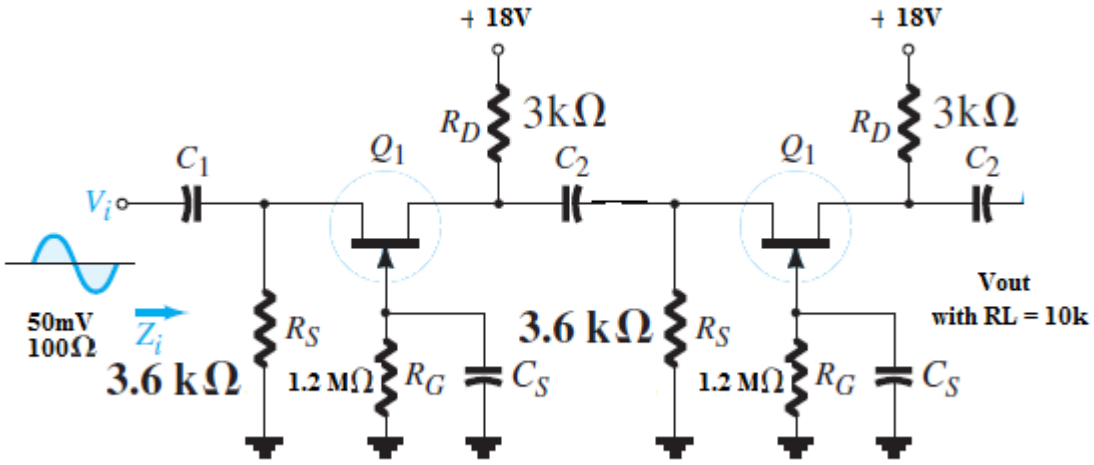

Fig. Q3A