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SOLVED

Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science and Engineering
Final Examination, Summer - 2026
Course Code: CSE215 Course Title: Electronic Devices and Circuits
Level: 2 Term: 2 Batch: 68

Exam Duration:2 Hours **Marks: 40**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	*a)*	**Draw** the block diagram of multistage amplifier.	[2]	CO1
	b)	**Define** feedback and state its significance in electronic amplifiers.	[2]	
	c)	**Define** faithful amplification and state the conditions required to achieve it.	[2]	
	d)	**State the** role of Emitter bypass capacitor (C_E) and Coupling capacitor (C_C).	[2]	
	e)	**List** the Ideal characteristics of OP-Amp.	[2]	
2.	*a)*	**Describe** the working principle of E-MOSFET with necessary diagram.	[5]	CO2
	b)	**Discuss** tank circuit with necessary circuit diagram.	[5]	
3.	*a)*	A 1 pF capacitor is available. Calculate the inductor values in a Hartley oscillator so that f = 1 MHz and m_v = 0.2.	[5]	CO3
	b)	In a transistor circuit shown in Fig. 01, determine the operating point. Assume silicon transistor is used.	[5]	

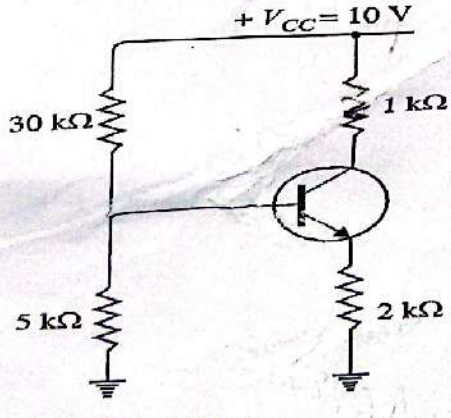


Fig. 01

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	c)	An amplifier has an open-loop gain $A_V = 100{,}000$. Negative feedback of 10 db is applied. Solve for: (i) voltage gain with feedback (ii) value of feedback fraction m_v.	[5]	
	d)	Determine the value of I_C for voltage divider method if V_{CC} = 9V, $R_E = 1k\Omega$, $R_1 = 39\ k\Omega$, $R_2 = 10\ k\Omega$, $R_C = 2.7\ k\Omega$, V_{BE} = 0.15 V and $\beta = 90$.	[5]	

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ANSWER SHEET (Mathematical Questions Only)

Q3(a) Hartley Oscillator - Inductor values (C = 1 pF, f = 1 MHz, mv = 0.2):

L1 = 4.22 mH

L2 = 21.11 mH

(L1 + L2 = 25.33 mH)

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Q3(b) Operating Point of Transistor Circuit (Fig. 01):

VB = 1.43 V

VE = 0.73 V

IE = IC = 0.364 mA

VCE = 8.91 V

Q3(c) Amplifier with Negative Feedback (Av = 100,000, FB = 10 dB):

(i) Avf = 31,623

(ii) mv = 2.16 x 10^-5

Q3(d) IC using Voltage Divider Method:

VTH = 1.84 V

RTH = 7.96 k-ohm

IB = 17.05 uA

IC = 1.53 mA