



# Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science and Engineering

Final Examination, Fall 2024

Course Code: CSE215

Course Title: Electronic Devices and Circuits

Level: 2

Term: 1

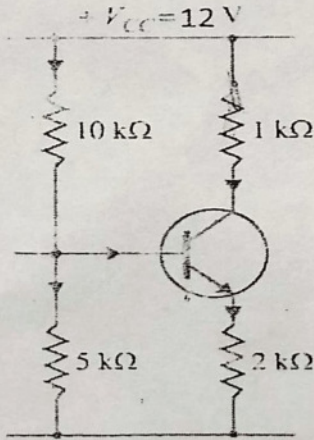
Batch: 65

Time: 2:00 Hours

Full Marks: 40

Answer all the following three questions

[All portions of each question must be answered sequentially]

Q1.	a.	Write a short note on CMOS.	5x1 =5	CO1	
	b.	Recall the conditions for the faithful amplification of a transistor.			
	c.	Show the virtual ground using a connection diagram of an OP-AMP.			
	d.	Recall frequency responses of Multistage Amplifiers.			
	e.	Define positive and negative feedback.			
Q2.	a.	Explain the circuit operation of n-channel D-MOSFET.	3x5 =15	CO2	
	b.	Demonstrate the practical circuit of the transistor amplifier.			
	c.	Explain the operation of Colpitt's and Hartley Oscillators in detail.			
Q3.	a.	A JFET has a drain current of 6 mA. If $I_{DSS} = 12$ mA and $V_{GS}(\text{off}) = -6$ V, Solve for the value of (i) $V_{GS}$ and (ii) $V_p$ .	4	CO3	
	b.	In an amplifier, the output power is 2 watts at 2 kHz and 1 watt at 20 Hz, while the input power is constant at 10 mW. Solve for the value of how many decibels the gain at 20 Hz is below that at 2 kHz.	4		
	c.	The following silicon transistor is biased using Voltage Divider Biased Method. Solve the biasing circuit for (i) the load line and (ii) the operating point.			
	d.	The gain of an amplifier without feedback is 100 whereas with negative voltage feedback, it falls to 50. If due to ageing, the amplifier gain falls to 80, Solve for the percentage reduction in stage gain (i) without feedback and (ii) with negative feedback.			6

