U218-134 (T2)

OCTOBER 2018/IN-SEM (T2)

S. Y. B. TECH. (E&TC) (SEMESTER - I)

COURSE NAME: Semiconductor Devices and Circuits

COURSE CODE: ETUA21174

(PATTERN 2017)

Q.NO	Sub Q.NO	Marking Scheme	Marks	Difficulty Level	Cognitive level	CO Mapped
Q1	a)	$K_n = 1.40$ mA/V^2 [2] (a) $i_D = 0.224$ mA [2] (b) $i_D = 2.02$ mA [2] Example 3.1 P. No. 134	[6]	M	Analysis	CO3
	b)	$I_D = 0.1$ mA [2] $V_{DS} = 3$ V [2] $P_T = 0.3$ mW [2] Example 3.3 P. No. 147	[6]	M	Analysis	CO3
	c)	Diagram [2] Working [2]	[4]	L	Knowledge	CO3
		OR				
Q2	a)	(a) $I_D = 0.625$ uA [2] (b) $I_D = 0.6475$ uA [2] (c) for (a) $r_o = \infty$ [1] (c) for (b) $r_o = 53.3$ MΩ [1] TYU 3.5 P. No. 146	[6]	M	Analysis	CO3
	b)	$R_1 = 885$ KΩ [2] $R_2 = 454$ KΩ [2] $R_D = 2.6$ KΩ [2] Exercise 3.4 P. No. 150	[6]	H	Design	CO3
	c)	Body effect definition [2] Diagram [1] Equation [1]	[4]	L	Knowledge	CO3
Q3	a)	$G_m = 1.79$ mA/V [2] $R_o = 50$ KΩ [2] Av= - 4.26 [2] Example 4.2 P. No. 211	[6]	M	Analysis	CO4
	b)	Definition of transconductance [2] Derivation of transconductance [2]	[4]	L	Knowledge	CO4
	c)	$K_n = 1.25$ mA/V^2 [2] $g_m = 1.41$ mA/V [2]	[4]	L	Knowledge	CO4

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		Example 4.1 P. No. 209				
		OR				
Q4	a)	A_v = -5.21 [2] R_i = 42 KΩ [2] R_o = 9.66 KΩ [2] Example 4.3 P. No. 218	[6]	M	Analysis	CO4
	b)	AC equivalent circuit diagram [2] Explanation [2]	[4]	L	Knowledge	CO4
	c)	g_m = 0.975 mA/V [2] A_v = - 2.48 [2] Example 4.5 P. No. 223	[4]	L	Knowledge	CO4