CONTINUOUS INTERNAL EVALUATION– 2

Dept: FY	Sem / Div: II A/B/C	Sub: Basic Electronics	S Code:18ELN24
Date:1/09/2021	Time: 9:30-11:00 am	Max Marks: 50	Elective: N
Note: Answer any 2 full questions, choosing one full question from each part.			

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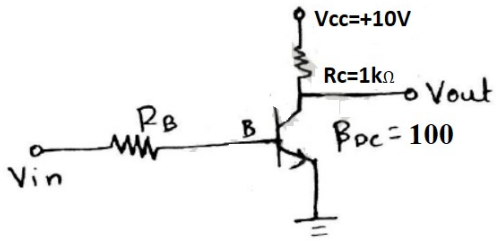
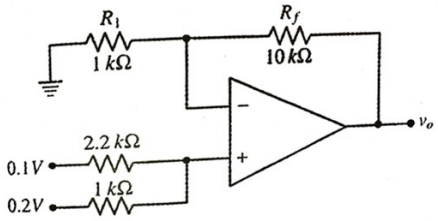
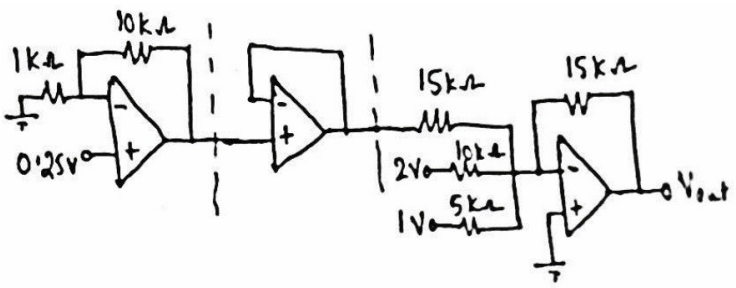
QN		Questions	Marks	RBT	COs
		PART A			
1	a	Explain voltage series feedback circuit and derive an equation for voltage gain A_v with feedback	8	L2	CO1
	b	Explain op-amp as Differentiator with a neat circuit diagram.	8	L2	CO3
	c	The transistor in CE configuration with R_c=1kΩ, β_{dc}=100. Determine (i)V_{ce} at V_{in}=0v (ii) $R_{b(max)}$ when V_{in}=8V. $V_{ce(sat)}$ can be neglected. 	4	L3	CO1
	d	Explain different input modes of an op-amp.	5	L2	CO3
		OR			
2	a	What is feedback amplifier? What are the properties and advantages of negative feedback amplifier.	8	L2	CO1
	b	Explain the following terms with respect to op-amp. (i)Slew rate (ii)CMRR (iii)Input impedance (iv)Input bias current.	8	L2	CO3
	c	Explain how BJT can be used as a switch.	4	L2	CO1
	d	Calculate the output voltage of op-amp circuit shown. 	5	L3	CO3
		PART B			
3	a	Calculate the output Voltage for the circuit shown below 	8	L3	CO3

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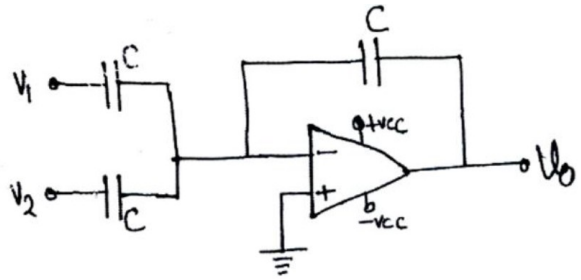
	b	Design an op-amp circuit to get output voltage of V_0= -(0.2V_1+0.45V_2+20V_3). Select R_f=30kΩ	8	L3	CO3
	c	Explain a simple application of a transistor switch.	4	L2	CO1
	d	Derive the relationship between gain and bandwidth of feedback amplifier.	5	L2	CO1
		OR			
4	a	Explain the operation of op-amp as an inverting amplifier with a neat diagram and waveform.	8	L2	CO3
	b	For an op-amp circuit shown find output voltage V_0 	8	L3	CO3
	c	In a transistor amplifier circuit determine the voltage gain and ac output voltage if V_b=200mV, R_c=2kΩ and r_e=45Ω.	4	L3	CO1
	d	Derive an expression to show gain Stability increases with Feedback.	5	L2	CO1