BENNETT UNIVERSITY
THE TIMES GROUP

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Department/ School: SCSET

END TERM EXAMINATION EVEN SEMESTER 2022-23

COURSE CODE	**CSET102**	**MAX. DURATION**	**2.0 HRS**
COURSE TITLE	**INTRODUCTION TO ELECTRICAL AND ELECTRONICS ENGINEERING**		
COURSE CREDIT	**4**	**TOTAL MARKS**	**35**

GENERAL INSTRUCTIONS: -

1. Do not write anything on the question paper except **name, enrolment number** and **department/school.**
2. Carrying mobile phone, smart watch and any other non-permissible materials in the examination hall is an act of **UFM.**

COURSE INSTRUCTIONS:

a) Do not write answer directly. Step wise solution is required.

b) No marks will be given for writing the correct answer directly.

Q1) In a common emitter connection of a transistor, the base-current amplification factor (β) is 50. If the base current (I_B) is 20 μA, find the emitter current (I_E). (2 marks)

Q2) Consider an inverting amplifier, as shown in Figure 1. If R_1 = 1 kΩ and R_2 = 15 kΩ, find the output voltage if the input voltage is 0.5 V. (2 marks)

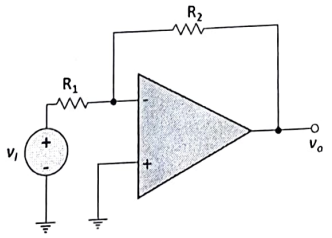

Figure 1: Inverting Operational Amplifier

Q3) Find the equivalent resistance between A and B for the circuit shown in Figure 2. (3 marks)

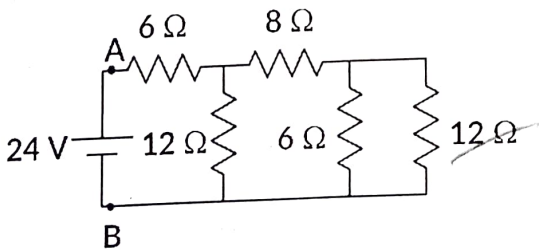

Figure 2: Circuit for Question 3

Q7) For the circuit show
frequency of the filter. Th

Q4) Using nodal analysis, determine the voltage across and current flowing through the 1/5Ω resistor for the circuit shown in Figure 3. (4 marks)

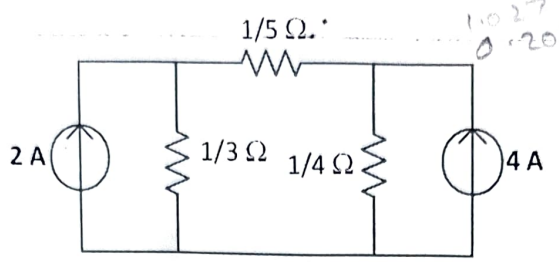

Figure 3: Circuit for Question 4

Q5) Determine the current I, voltages V_1, V_2, V_o for the circuit shown in Figure 4. (4 marks)
Consider the cut in voltage of the diode to be 0.7 V. All the voltages are considered with respect to ground.

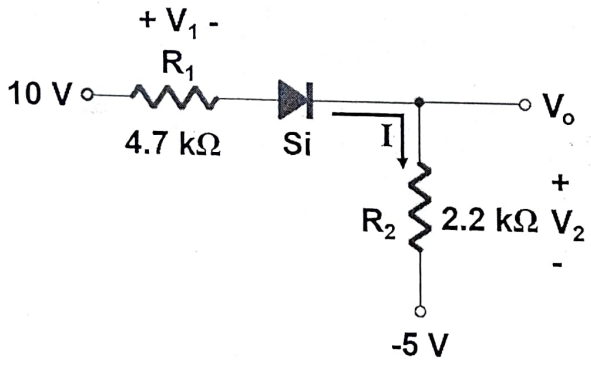

Figure 4: Circuit for Question 5

Q6) Determine the values of Norton's equivalent resistance and Norton's current for the circuit shown in Figure 5. Draw the Norton's equivalent circuit. (5 marks)

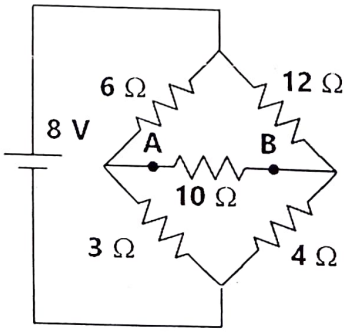

Figure 5: Circuit for Question 6

Q7) For the circuit shown in Figure 6, identify the filter type, find the transfer function and cut-off frequency of the filter. The output of the filter is taken between nodes C and D. (5 marks)

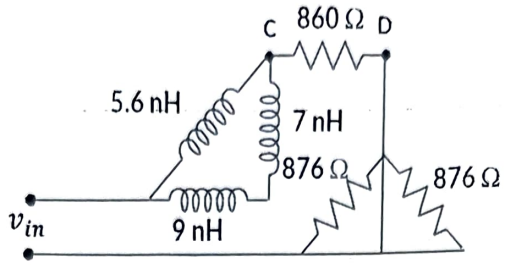

Figure 6: Circuit for Question 7

Q8) Consider the circuit shown in Figure 7. Given that, V_{in} = 40 V, R = 50 Ω, R_L = 100 Ω, V_Z =20 V. (2+2+1 marks)

i) Compute the voltage drop across and current through the load resistance R_L?

ii) Calculate the voltage drop across and current through R?

iii) Determine the current through the Zener diode?

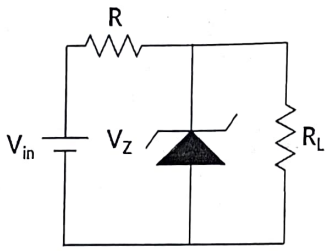

Figure 7: Circuit for Question 8

Q9) Calculate the input voltage V_{in} if the final output, V_O is 10.08 V for the multistage operational amplifier shown in Figure 8. (5 marks)

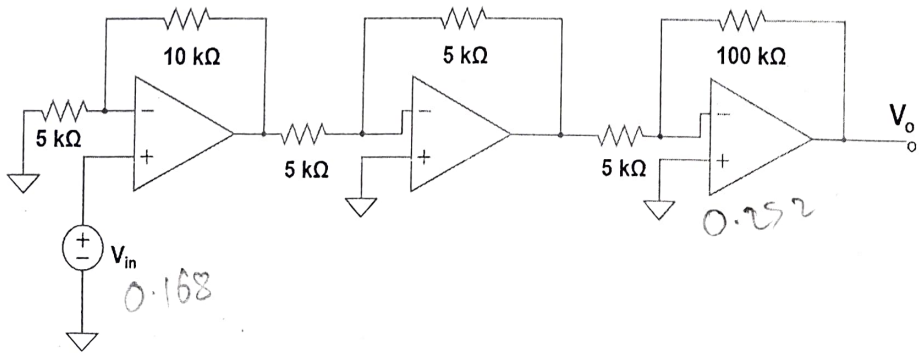

Figure 8: Circuit for Question 9

END OF QUESTION PAPER