**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, November 2022**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **2BT3177** | Roll No. | Total Printed Pages: 2 |
| **2BT3177** |  |
| B. Tech. II Year III-Semester (EC) (Back) End Semester Examination, November 2022 | |
| **BEC03101 : Circuit Analysis & Synthesis** | | | |

# Time: **3** Hours. Total Marks: **60**

Min. Passing Marks: **21**

Attempt **five** questions selecting one question from each Unit. There is internal choice from Unit I to Unit V. Marks of each question or its parts are indicated against each question / parts. Draw neat sketches wherever necessary to illustrate the answer. Assume missing data suitably (if any) and clearly indicate the same in the answer.

Use of following supporting material is permitted during examination for this subject.

# **1. --------------------------Nil--------------------** **2. ------------------Nil-----------------------**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | Calculate the voltage across 5 Ω resistor in circuit shown, by using nodal analysis. | **(6)** | Applying |
|  |  |  |  |  |
|  | **(b)** | Draw the graph and write down the tie-set matrix of the networks shown in figure  . | **(6)** | Analysing |
|  |  | **OR** |  |  |
| **Q.2** | **(a)** | Draw the Graph & Tree of the following circuit. | **(6)** | Applying |
|  |  |  |  |  |
|  | **(b)** | Write the mesh equations for the circuit shown in the figure and determine the current in 12 Ω resistor. | **(6)** | Understanding |
|  |  | **UNIT-II (CO2)** |  |  |
|  |  |  |  |  |
| **Q.3** | **(a)** | What is the relationship between RL and RTH in maximum power transfer theorem and drive the formula for maximum power? | **(6)** | Analysing |
|  | **(b)** | For the following circuit find the value of VTH and RTH using Thevenin theorem. | **(6)** |  |
|  |  | **OR** |  |  |
| **Q.4** | **(a)** | Write the short note on superposition theorem. | **(6)** | Analysing |
|  |  |  |  |  |
|  | **(b)** | What is power loss in the 10 Ω resistor? Use Thevenin’s Theorem.  C:\Users\Surendra Sharma\AppData\Local\Microsoft\Windows\INetCache\Content.Word\IMG_20200404_133355.jpg | **(6)** | Understanding |
|  |  | **UNIT-III (CO3)** |  |  |
| **Q.5** | **(a)** | Why is study state different to transient state explain with graph. | **(6)** | Applying |
|  |  |  |  |  |
|  | **(b)** | In a series RLC circuit R=5 Ω, L=1 H and C= 1 F. A d.c. voltage of 20 V is applied at t=0. Obtain i (t). | **(6)** |  |
|  |  | **OR** |  |  |
| **Q.6** | **(a)** | How would you evaluate step response of DC, R-L series circuit? | **(6)** | Applying |
|  |  |  |  |  |
|  | **(b)** | Find the current in a series R- L circuit having R= 2 Ω and L= 10 H while a dc voltage of 100 V is applied. What is the value of this current after 5 sec. of switching on? | **(6)** | Analysing |
|  |  | **UNIT-IV (CO4)** |  |  |
| **Q.7** | **(a)** | What is the relationship between h- parameters and Y-parameters and compare them. | **(6)** | Analysing |
|  | **(b)** | Find the h- parameters for the network shown |  |  |
|  |  | **OR** |  | Analysing |
| **Q.8** | **(a)** | Find the ABCD parameters for the network shown | **(6)** | Analysing |
|  | **(b)** | What is the relationship between h- parameters and Z-parameters and compare them. | **(6)** | Analysing |
|  |  | **UNIT V (CO5)** |  |  |
| **Q.9** |  | Find the first and second caver forms of the given function.  Description: C:\Users\Surendra Sharma\AppData\Local\Microsoft\Windows\INetCache\Content.Word\IMG_20200403_183508.jpg | **(12)** | Applying |
|  |  |  |  |  |
|  |  | **OR** |  |  |
| **Q.10** |  | Find the first and second foster forms of the given function.  Description: C:\Users\Surendra Sharma\Desktop\image (1).jpg | **(12)** | Understandin |