Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2019

EN3ES11 Principles of Electrical Engineering

Programme: B.Tech. Branch/Specialisation: CSBS

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. An Electric Current is_____ **1**

(a) Flow of Electrons (b) Opposition of Electrons

(c) Storage of charge (d) Ionization of atom

ii. Which one is the correct expression for ohm's Law. **1**

(a) $V = IR$ (b) $I = V^2R$ (c) $V = I^2R$ (d) $R = I^2V$

iii. Which among the following is also regarded as 'Dual of Thevenin's Theorem'? **1**

(a) Norton's Theorem

(b) Superposition Theorem

(c) Millman's Theorem

(d) Maximum Power Transfer Theorem

iv. In a DC Circuit, Inductive reactance would be_____ **1**

(a) Equal as in AC Circuits (b) High

(c) Extremely High (d) Zero

v. Power factor is _____ **1**

(a) sin ϕ (b) cos ϕ (c) tan ϕ (d) None of these

vi. The unit of electrical energy is / are **1**

(a) Joules (b) Watt - sec

(c) Kilowatt - hour (d) All of these

vii. Constant loss of transformer is: **1**

(a) Iron loss (b) Copper Loss

(c) Heat loss (d) None of these

viii. What does a capacitor store? **1**

(a) Current (b) Voltage (c) Power (d) Charge

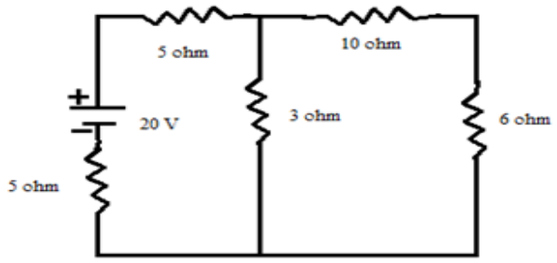
ix. Shunt Capacitor is used in **1**
(a) Long transmission line (b) Short transmission line
(c) Medium transmission line (d) All of these

x. Reactive coil used in the transmission line to protect the _____ **1**
(a) Current (b) Voltage (c) Power (d) Charge

Q.2 i. What are types of sources? **2**

ii. Explain ohm's Law? **3**

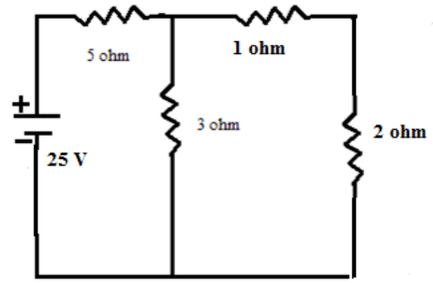
iii. Calculate equivalent resistance in the given circuit? Also calculate current in 3 ohm resistance. **5**



OR iv. Explain Kirchhoff's Law with suitable example. **5**

Q.3 i. Explain the maximum power transfer theorem. **2**

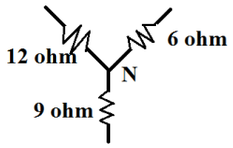
ii. Calculate the load current by Thevenin's network when R_L is 2 ohms? **8**



OR iii. Explain the procedure of superposition theorem with a suitable example. **8**

Q.4 i. Explain form factor and peak factor? **3**

ii. Convert it into Delta Connection? **7**



OR iii. Explain RLC series circuits with Phasor diagram? **7**

Q.5 i. Explain Faraday's law? **4**

ii. Derive the EMF equation of transformer. **6**

OR iii. Explain transformer with its applications and working principle. **6**

Q.6 Attempt any two:

i. What is distribution system? Enlist various layout of distribution system. **5**

ii. What is earthing? Explain its types? Why it is used? **5**

iii. Explain the safety devices used in the transmission line. **5**

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Marking Scheme
EN3ES11 Principles of Electrical Engineering

Q.1	i.	An Electric Current is_____ (a) Flow of Electrons		**1**
	ii.	Which one is the correct expression for ohm's Law? (a) V = IR		**1**
	iii.	Which among the following is also regarded as 'Dual of Thevenin's Theorem'? (a) Norton's Theorem		**1**
	iv.	In a DC Circuit, Inductive reactance would be_____ (d) Zero		**1**
	v.	Power factor is _____ (b) cos ϕ		**1**
	vi.	The unit of electrical energy is / are (d) All of these		**1**
	vii.	Constant loss of transformer is: (a) Iron loss		**1**
	viii.	What does a capacitor store? (d) Charge		**1**
	ix.	Shunt Capacitor is used in (d) All of these		**1**
	x.	Reactive coil used in the transmission line to protect the _____ (a) Current		**1**
Q.2	i.	Types of sources		**2**
	ii.	Explanation of ohm's Law		**3**
	iii.	Calculation of equivalent resistance Calculate current in 3 ohm resistance	3 marks 2 marks	**5**
OR	iv.	Explain Kirchhoff's Law Current Voltage	 2.5 marks 2.5 marks	**5**
Q.3	i.	Maximum power transfer theorem		**2**
	ii.	Calculate the load current by Thevenin's network R_{th} calculation V_{th} calculation Current	 3 marks 3 marks 2 marks	**8**
OR	iii.	Procedure of superposition theorem Example	4 marks 4 marks	**8**
Q.4	i.	Form factor and peak factor		**3**
	ii.	Star to Delta		**7**
OR	iii.	RLC series circuits Explanation Phasor diagram	2 marks 3 marks 2 marks	**7**
Q.5	i.	Faraday's law		**4**
	ii.	Derivation of EMF equation of transformer.		**6**
OR	iii.	Transformer explanation Principle.	3 marks 3 marks	**6**
Q.6		Attempt any two:		
	i.	Distribution system Layout of distribution system	2 marks 3 marks	**5**
	ii.	Earthing Its types Uses	1 mark 2 marks 2 marks	**5**
	iii.	Safety devices used in the transmission line.		**5**

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