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B.Tech (Regular) DEGREE EXAMINATION

July, 2021

First Semester

Time: Three Hours

Common to CB, DS, IT & ME

Basic Electrical and Electronics Engineering

Maximum: 70 Marks

Answer Question No. 1 compulsorily.

Answer ONE question from each unit.

(14X1 = 14 Marks)

(4X14 = 56 Marks)

(14X1 = 14 Marks)

1. Answer all questions

- State Kirchhoff's laws.
- Distinguish between ideal and practical voltage source?
- Write the condition of resonance in series RLC circuit?
- Mention the different losses occurred in a transformer.
- Define percentage of slip. Write the relationship between synchronous speed (N_s), no. of poles (P) and frequency.
- Draw the V-I characteristics of PN junction diode.
- Write any two applications of Zener diode.
- Draw the symbol of a NPN transistor.
- Mention the terminals of MOSFET.
- Define the common-mode rejection ratio (CMRR) of op-amp?
- State Faraday's laws of electromagnetic induction.
- Define slew-rate of a Op-amp.
- State Fleming's left hand rule.
- Write the different windings present in a single phase induction motor.

UNIT I

- Analyze the current value in the given circuit if the sources are acting alone and find the current I_a if both the sources are acting by using superposition theorem.



- Calculate the RMS value and average value of an alternating sinusoidal voltage. Also obtain the expression form factor and peak factor.

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(OR)

- Define resonance and derive the condition for resonance in a series RLC circuit.
 - Derive the relation between the Line current and phase current in a Delta-connection using the vector representation.

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UNIT II

- Explain the constructional details of the DC Machine.
 - Outline the Principle of operation and working of a three phase induction motor.

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(OR)

- Explain the construction working of a single phase transformer.
 - Discuss about the rotating magnetic field in a three phase induction machine.

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UNIT III

- With the help of neat circuit diagram and waveforms, explain the operation of full wave bridge rectifier.

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- Draw the input and output characteristics of Common Emitter Connection of transistor.

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- What is zener diode and explain the V-I characteristics of zener diode.
 - Explain the construction and working of P-N-P transistor with neat diagrams.

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UNIT IV

- Explain how an OP-amp acts as an integrator.
 - Write the different properties of an ideal OP-AMP.

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(OR)

- Compare NMOS with PMOS.
 - Illustrate the operation of OP-AMP as Voltage follower with the help of circuit diagram. And obtain the expression for Voltage gain.

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