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PRESIDENCY UNIVERSITY BENGALURU

SCHOOL OF ENGINEERING

MAKE-UP EXAMINATION - JULY 2024

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| **Semester :I/II** | **Date :09-07-2024** |
| **Course Code :EEE101** | **Time :** **09.30am to 12.30am** |
| **Course Name :Elements of Electrical Engg** | **Max Marks :100** |
| **Program :B.TECH** | **Weightage :50%** |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and non-programmable calculator are permitted.*
4. *Do not write any information on the question paper other than Roll Number.*

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| **PART A** | | | |
| **ANSWER ANY 5 QUESTIONS 5Q X 4M=20M** | | | |
| 1 | State Ohm’s Law and list its limitations. | (CO 1) | [Knowledge] |
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| 2 | Define power factor and write the mathematical expression for power factor. | (CO 1) | [Knowledge] |
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| 3 | List the role of Field winding and Poles in DC machines | (CO 2) | [Knowledge] |
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| 4 | List the different classifications of DC generator | (CO 2) | [Knowledge] |
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| 5 | Describe the various losses in a transformer and how they can be minimized | (CO 3) | [Knowledge] |
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| 6 | Explain two way control of a single lamp. | (CO 3) | [Knowledge] |
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| 7 | List any 5 precautions that has to be followed to prevent Electric shock. | (CO 4) | [Knowledge] |
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| **PART B** | | | |
| **ANSWER ANY 5 QUESTIONS 5Q X 10M=50M** | | | |
| 8 | A series R-L circuit with  and is powered by a 200V, 50Hz, Supply. Identify the unknown parameters that can be determined from the given data and compute the same | (CO 1) | [Comprehension] |
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| 9 | Three resistors are in parallel. The current in the first resistor is 0.1 A. The power dissipated in the second is 3 watts. The voltage drop across the third is 100 volts. Determine the ohmic values of resistors and the total resistance if total current is 0.2 A. | (CO 1) | [Comprehension] |
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| 10 | In a DC Motor, the presence of back emf make the machine self-regulating. Explain the concept of back EMF and its significance. Also give the expression for armature current. | (CO 2) | [Comprehension] |
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| 11 | Explain the concept of synchronous speed, slip, slip speed, rotor current frequency. Write the mathematical expressions relating them. | (CO 3) | [Comprehension] |
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| 12 | Differentiate between AC and DC generators | (CO 3) | [Comprehension] |
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| 13 | It is required to measure electrical energy utilized in kWH for a manufacturing industry. Identify the meter which records the number of units of electricity consumed. With a neat diagram, show the constructional features and working of meter that can be used | (CO 4) | [Comprehension] |
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| 14 | Develop the lay out and wiring Diagram for a part of the House with the following data: A room with two lamps, one Fan and one socket | (CO 4) | [Comprehension] |
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| **PART C** | | | |
| **ANSWER ANY 2 QUESTIONS 2Q X 15M=30M** | | | |
| 15 | Determine the loop currents and the power consumed by 6Ω resistor in the circuit shown in figure. | (CO1) | [Application] |
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| 16 | A DC motor used in an electric locomotive has 6 pole and develops back emf of 480 V. The armature current is 100 A and the flux per pole is 30 milli weber in the machine. The armature is wave connected and has 800 conductors. Obtain speed and the gross torque developed by the armature | (CO2) | [Application] |
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| 17 | A 50kVA single phase transformer has primary and secondary turns of 300 and 20 turns respectively. The primary winding is connected to 220V, 50Hz supply. List and compute unknown parameters from the given data. | (CO3) | [Application] |
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