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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_\_

**End Semester Examination – Nov/Dec - 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **11EE207/ 12EE207/ EE250** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **DC MACHINES AND TRANSFORMERS** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | Brushes are used in DC generator for \_\_\_\_\_\_\_\_\_\_\_ | (1) |
| 2. | Name the two commutation present in DC machine. | (1) |
| 3. | Draw the Torque Speed Characteristics of DC series motor. | (1) |
| 4. | Flemming’s right hand rule is used to determine \_\_\_\_\_\_\_\_ | (1) |
| 5. | Self-excited DC generator require \_\_\_\_\_\_\_\_\_\_\_\_ | (1) |
| 6. | Core of the transformer are laminated to \_\_\_\_\_\_\_\_ | (1) |
| 7. | Direction of rotation of a DC Motor can be changed by \_\_\_\_\_\_\_\_\_\_ | (1) |
| 8. | Name the losses that occur in transformers. | (1) |
| 9. | Define polarity testing. | (1) |
| 10. | Discuss the merits on paralleling of transformer. | (1) |

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| **PART B(5 X 3= 15 MARKS)** | | |
| 11 | What is the difference between lap and wave winding? | (3) |
| 12 | Define Commutation. | (3) |
| 13 | Draw a simple three point starter. | (3) |
| 14 | Define Voltage regulation. | (3) |
| 15 | How all day efficiency is calculated? | (3) |

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| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. |  | With a neat sketch explain the construction of a DC Machine and label the parts. | (15) |
| (OR) | | | |
| 17. |  | Derive the expression for Torque in a doubly excited system. | (15) |
| 18. |  | Ferromagnetic material with negligible reluctance is used for making the below model. The rotor is free to rotate about the vertical axis. Neglect the leakage and fringing. Obtain the expression for the torque acting on the rotor, Calculate the torque @ 1.5A for the given dimension. Maximum flux density in the airgap is limited to 1.5Wb/m2 because of saturation in the structure, compute the maximum torque of the device. Axial length perpendicular to the plane of the paper h=0.05m, Length of the single air gap, g=0.004m  Radius of the rotor face, r=0.04m | (15) |
| (OR) | | | |
| 19. |  | With a diagram explain the Ward-Leonard system of speed control of a dc machine. Mention the Advantages and disadvantages. | (15) |
| 20. |  | Explain the open circuit characteristics of a DC self-excited generator. | (15) |
| (OR) | | | |
| 21. |  | With the neat plot explain about mechanical, electrical and electromechanical characteristics of a DC Shunt and series motor. | (15) |
| 22. | a. | A 220V DC shunt motor takes 5A on no load and runs at 750 rpm. The resistances of the armature and shunt field windings are 0.2 and 110ohm respectively. Calculate the speed at when the motor is loaded and taking a current of 50A. assume the armature reaction weakens the field by 3 %. | (10) |
|  | b. | Mention the advantages of electrical braking. | (05) |
| (OR) | | | |
| 23. |  | With a neat diagram explain the construction and working of a single phase transformer. | (15) |
| 24. |  | Discuss about the method to determine the polarity of the transformer. | (15) |
| (OR) | | | |
| 25. |  | Mention the procedure with diagram for separating the losses in a transformer. | (15) |

ALL THE BEST