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Name of Examination : **Winter 2020** - (Preview)

Course Code & Course Name : **EE401 - Electrical Drives**

Generated At : **19-04-2022 11:07:29**

Maximum Marks : **60**

Duration : **3 Hrs**

[Edit](#) [Print](#) [View Answer Key](#) [Close](#) **Answer Key Submission Type:** Marking scheme with model answers and solutions of numerical

Instructions:

1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.

1) Attempt any three

- a) Explain chopper control of DC drive [6]
- b) Explain the drawbacks of rectifier fed DC drives [6]
- c) Draw a neat diagram of static Kramer's drive and Explain why it is used for low range of speed control [6]
- d) A constant speed motor has the following duty cycle i) load rising linearly from 300kw to 600kw=5 min ii) Uniform load of 500 kw=2 min iii) Regenerative power return to supply reducing linearly from 500kw to 0 = 4min iv)remains ideal=5 min determine power rating of motor assuming loss to be proportional to power square [6]

2) Attempt any three

- a) State essential part of electric drive. what are the function of power modulator [6]
- b) Derive fundamental torque equation and explain speed torque convention and multi quadrant operation [6]
- c) Describe the principle of operation of switched reluctance motor ? What are the advantages of switched reluctance motor drive over ac motor drive [6]
- d) Explain the operation of permanent magnet ac motor drive with classification of them [6]

3) Attempt any three

- a) Why variable frequency control of induction motor is more efficient than stator voltage control ? [6]
- b) Compare voltage source inverter and current source inverter for ac motor [6]
- c) Why current sensing is required ? What are the common methods of current sensing [6]
- d) Why a cycloconverter self controlled synchronous motor drive is preferred over inverted control synchronous motor drive for low speed operation [6]

4) Attempt

- a) What are the main factors which describe the choice of electric drive for given application [6]

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