

**SANT GADGEBABA AMRAVATI UNIVERSITY, AMRAVATI**  
**Summer Examination 2020**  
**HVPM's College of Engineering and Technology**  
**Department of Mechanical Engineering**  
**Bachelor of Engineering Sem.- IV**

**Subject: - Basic Electrical Drives & Controls**

**Code:- 4ME01**

**Instructions:-**

**1) Solve any two questions**

**2) All questions carry equal marks**

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**Q1.**

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|---|-----------------|
| a) Derive expression for heating and cooling curves of electric motor.    | 02 Credit Point |
| b) Explain basic characteristics of D.C. series and shunt motors.         | 02 Credit Point |
| c) Explain principle and working of universal motor.                      | 02 Credit Point |
| d) Explain (v/f) speed control method of AC motors.                       | 02 Credit Point |
| e) Explain working of A.C. and D.C. Tachogenerator.                       | 01 Credit Point |
| f) Write a short note on application of electrical drives in Cement Mill. | 01 Credit Point |

**Q2.**

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|--|-----------------|
| a) Explain with suitable diagrams classes of duty of electric motors.        | 02 Credit Point |
| b) Derive torque equation of DC motor.                                       | 02 Credit Point |
| c) Explain working of Star- Delta starter of 3 phase induction motor.        | 02 Credit Point |
| d) What is slip power recovery scheme? Explain any one with suitable diagram | 02 Credit Point |
| e) Explain working of Hall Effect Sensor.                                    | 01 Credit Point |
| f) Write a short note on application of electrical drives in Paper Mill.     | 01 Credit Point |

**Q3.**

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|---|-----------------|
| a) Draw and explain characteristics of SCR.   | 02 Credit Point |
| b) What is necessity of starter? Explain three point starter with suitable diagram.     | 02 Credit Point |
| c) Explain with suitable diagrams any two breaking methods of 3 phase induction motors. | 02 Credit Point |
| d) Explain armature and field control methods of speed control of DC motors.            | 02 Credit Point |
| e) Explain working of pressure transducers.   | 01 Credit Point |
| f) Write a short note on Electric Traction.   | 01 Credit Point |

**Q4.**

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|--|-----------------|
| a) What is Electric drive? Explain classification of Electrical Drives.    | 02 Credit Point |
| b) Explain construction and working of servo motor.                        | 02 Credit Point |
| c) Explain Torque- slip characteristics of 3 phase induction motor.        | 02 Credit Point |
| d) Explain Thyristorized speed control method of DC Shunt motor.           | 02 Credit Point |
| e) Explain working of vibration transducers.                               | 01 Credit Point |
| f) Write a short note on application of electrical drives in Textile Mill. | 01 Credit Point |