RollNo. | | | | | | | | | | |

**ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)**

**B.E. /B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, APR/MAY 2025**

Mining Engineering
Third Semester
**EE5305 and Electrical Drives and Control**
(Regulation2019)

Time: 3hrs Max. Marks: 100

**PART- A(10x2=20Marks)**
(Answer all Questions)

| Q.No. | Questions | Marks |
|---|---|---|
| 1 | Mention the advantages of an Electrical Drives | 2 |
| 2 | Compare switch and circuit breaker. | 2 |
| 3 | Why regenerative braking is not feasible for DC series motor? | 2 |
| 4 | Draw the speed torque characteristics for a DC shunt motor when it is operated with variable armature voltage. | 2 |
| 5 | What are the features of slip ring induction motor? | 2 |
| 6 | Relate slip and rotor copper losses. | 2 |
| 7 | What is the need for starters? | 2 |
| 8 | What are the features of rotor resistance starters? | 2 |
| 9 | Classify different insulating materials and its temperature range. | 2 |
| 10 | Write the different types of duty in drives. | 2 |

**PART- B(5x 13=65Marks)**
(Restrict to a maximum of 2 subdivisions)

| Q.No. | Questions | Marks |
|---|---|---|
| 11 (a) | Explain the four quadrant operation of electric drive | 13 |
| | **OR** | |
| 11 (b) | Explain the working principle of a relay with neat circuit diagram. | 13 |
| | | |
| 12 (a) | Explain the speed torque characteristics of DC shunt and Series motors. | 13 |
| | **OR** | |
| 12 (b) | Explain the Ward Leonard speed control of DC motor. | 13 |
| | | |
| 13 (a) | Explain V/f control of an induction motor, | 13 |
| | **OR** | |
| 13 (b) | Explain slip power recovery scheme of an induction motor. | 13 |
| | | |
| 14 (a) | Explain any one DC motor starter | 13 |
| | **OR** | |
| 14 (b) | Explain any one AC motor starter. | 13 |
| 15 (a) | Explain the heating and cooling curve in a motor. | 13 |
| | **OR** | |
| 15 (b) | Explain the various duty used in drive applications with examples | 13 |

**PART- C(1x 15=15Marks)**
(Q.No.16 is compulsory)

| Q.No. | Questions | Marks |
|---|---|---|
| 16. | A 200 V, 10.5 A, 2000 rpm shunt motor has the armature and field resistances of 0.5 and 400 Ohms respectively. It drives a load whose torque is constant at rated motor torque. Calculate the motor speed if the source voltage drops to 155 V. | 15 |