

1.1 SYLLABUS

EE2301 POWER ELECTRONICS

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- 1. POWER SEMI-CONDUCTOR DEVICES** **9**
Study of switching devices, - Frame, Driver and snubber circuit of SCR, TRIAC, BJT, IGBT, MOSFET,- Turn-on and turn-off characteristics, switching losses, Commutation circuits for SCR,
- 2. PHASE-CONTROLLED CONVERTERS** **9**
2-pulse, 3-pulse and 6-pulse converters – Effect of source inductance – performance parameters – Reactive power control of converters – Dual converters - Battery charger.
- 3. DC TO DC CONVERTER** **9**
Step-down and step-up chopper – Time ratio control and current limit control – Buck, boost, buck-boost converter, concept of Resonant switching – SMPS.
- 4. INVERTERS** **9**
Single phase and three phase (both 120° mode and 180° mode) inverters – PWM techniques: Sinusoidal PWM, modified sinusoidal PWM - multiple PWM – Introduction to space vector modulations - Voltage and harmonic control – Series resonant inverter – Current source inverter.
- 5. AC TO AC CONVERTERS** **9**
Single phase AC voltage controllers – Multistage sequence control - single and three phase cycloconverters –Introduction to Integral cycle control, Power factor control and Matrix converters.

TOTAL : 45 PERIODS

TEXT BOOKS

1. M.H. Rashid, „Power Electronics: Circuits, Devices and Applications“, Pearson Education, PHI Third edition, New Delhi 2004.
2. Philip T.Krein, “Elements of Power Electronics” Oxford University Press, 2004 Edition.

REFERENCES

2. Ashfaq Ahmed Power Electronics for Technology Pearson Education, Indian reprint, 2003.
3. P.S.Bimbra “Power Electronics” Khanna Publishers, third Edition 2003.
3. Ned Mohan, Tore.M.Undeland, William.P.Robbins, „Power Electronics: Converters, Applications and Design“, John Wiley and sons, third edition, 2003.