

518201**May, 2024****M.Tech. (PED) II Semester****PWM Converter and Applications (MP-ED-201)**

Time : Three Hours]

[Maximum Marks : 75

Note :

1. *Question no. 1 is compulsory from Part-I.*
2. *Attempt any four questions from Part-II.*

PART-I

1. (a) Enumerate the applications of current source converters.
- (b) Why do you use PWM in inverters?
- (c) What are the advantages of Multilevel inverters?
- (d) Define a space vector with example.
- (e) What are the drawbacks of passive filters?
- (f) What is inverter dead time?
- (g) What is the principle of operation of Shunt active filter?
- (h) What are zero state vectors in space Vector modulation?
- (i) What is load commutation in inverters?
- (j) Enumerate the applications of Multilevel inverters?
(1.5×10=15)

PART-II

2. (a) Explain the operation of Single-phase half controlled converter with R-L load. Draw relevant waveforms. (7.5)
(b) Explain the operation of 3-phase Voltage source inverter in 180 degree conduction mode with star connected load. Draw load voltage waveforms. (7.5)
3. (a) Explain the operation of 5 Level Flying Capacitor multilevel inverter with switching table. (7.5)
(b) Explain the working of Cascaded H-bridge multilevel inverter with relevant waveforms. (7.5)
4. Explain space vector modulation technique for inverters. Enumerate its advantage over PWM technique. (15)
5. (a) Explain Sinusoidal PWM for inverters. (7.5)
(b) Explain staircase modulation. (7.5)
6. (a) Explain the working of constant V/F induction motor drive. (7.5)
(b) Explain the principle of operation and applications of a Series active filter. (7.5)
7. (a) Explain selective harmonic elimination PWM method for inverters. (8)
(b) Explain estimation of current ripple in inverter fed drives. (7)