



R18 Regulation

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

Subject code: 2P5BB

B.Tech V Semester Regular Examinations, February 2021

POWER ELECTRONICS

(Electrical and Electronics Engineering)

Maximum Marks: 70

Date: 19.02.2021 Duration: 3 hours

- Note:**
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 List the methods to turn off SCR various forced commutation
- 2 Distinguish between SCR and TRIAC
- 3 What is inversion mode in rectifiers?
- 4 What is Snubber circuit?
- 5 Define the term duty cycle in DC –DC converters
- 6 What is phase control in AC voltage controller?
- 7 What are the advantages of PWM control in inverters?
- 8 Why thyristors are not preferred for Inverter?
- 9 Define modulation index.
- 10 List out the difference between 180 degree mode and 120 degree mode inverter.

Part-B

Answer All the following questions.

(10M X 5=50Marks)

- 11 Explain the static and dynamic characteristic of SCR with neat diagram. (10M)
OR
- 12 Explain the working of gate drive circuit for IGBT in detail with neat diagram. (10M)
- 13 Explain the operation of 3 phase half controlled bridge rectifier with R load with necessary diagrams. (10M)
OR
- 14 Explain the operation of single phase fully controlled bridge rectifier with RL load with necessary diagrams. (10M)
- 15 Explain the working of buck converter with neat waveform and also derive the expression of peak to peak voltage across the capacitor. (10M)
OR
- 16 With neat diagram explain the operation of single phase AC voltage controller with R load. (10M)

17 Explain the operation of single phase full bridge inverter in detail with neat diagram. (10M)

OR

18 Explain the operation of DC Jones chopper with neat wave forms and circuit diagram. (10M)

19 Discuss the principle of 3 phase bridge inverter with appropriate circuit diagram, Draw the output phase and line voltage when it is conducting for 120 degree mode. (10M)

OR

20 a) Explain in detail about Bi-polar sinusoidal pulse width modulation (7M)
b) List out the difference between CSI and VSI (3M)