Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech. Summer 2018-19 Examination

Semester: 5 **Date: 22/05/2019**
Subject Code: 03106304 **Time: 10:30am to 1:00pm**
Subject Name: Industrial Electronics II **Total Marks: 60**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions **(15)**

1. Harmonics in 3 phase inverters can be reduced by
- a) active filters
- b) passive filters
- c) none of these
- d) all of the mentioned

2. In current source inverters (CSIs)
- a) the amplitude of the output current is independent of the load
- b) the amplitude of the output current dependents on the load
- c) the amplitude of the output voltage is independent of the load
- d) none of the mentioned

3. In the principle of phase control
- a) the load is on for some cycles and off for some cycles
- b) control is achieved by adjusting the firing angle of the devices
- c) control is achieved by adjusting the number of on off cycles
- d) control cannot be achieved

4. In a full bridge VSI, in order to avoid the short circuit across the DC bus and the undefined AC output voltage condition, the modulating technique should ensure that
- a) Top switch of each leg is on at any instant
- b) Bottom switch of each leg is on at any instant
- c) Either (a) or (b)
- d) None of these

5. In square wave operation mode of 3 phase VSI, the VSI
- a) Can control the load voltage
- b)Cannot control the load voltage
- c)Cannot control the load voltage except by means of dc link voltage
- d) Cannot control the load voltage except by means of dc link current

6. In the 180° mode VSI, _____ devices conduct at a time.

7. The 120° mode of operation of a three phase bridge inverter requires _____ number of steps.

8. In the PWM method, _____ order harmonics are minimized.

9. In SPWM the modulating signal is _____.

10. In voltage fed thyristor inverters _____ commutation is required.

11. If energy is taken from the AC side of the inverter and sends it back into the DC side, then it is known as _____.

12. In a 3 phase bridge rectifier the ripple frequency is _____ times input frequency.

13. The shape of the output voltage waveform in a single PWM is _____.

14. In sinusoidal pulse width modulation, _____ wave is compared with a _____ type of wave.

15. _____and _____ can also be called as commutating components.

Q.2 Answer the following questions. (Attempt any three) **(15)**

A) Compare on-off control and phase angle control

B) What are the advantages and disadvantages of cycloconverter?

C) Discuss about Static Relay.

D) Compare different PWM Techniques

Q.3 **A)** What is cycloconverter? Explain its basic working by single phase to single phase cycloconverter. **(07)**

B) Draw and explain single phase ac to ac voltage controller with RL Load. **(08)**

OR

B) Discuss single phase current source inverter. Give comparison between CSI and VSI **(08)**

Q.4 **A)** With waveforms and figure write a note on 3 phase load commutated CSI. **(07)**

OR

A) Explain three phase inverter working of 120 degree mode of conduction with power circuit, conduction sequences and waveforms. **(07)**

B) Write a Short Note on Parallel Inverter with waveforms. **(08)**