

BE Semester-VIII (I. C.) Question Bank

(Industrial Drives & Control)

All questions carry equal marks(10 marks)

Q.1	Draw and explain the modified series inverter circuit.
Q.2	Draw and explain the operation of three-phase series inverter circuit.
Q.3	Draw and explain the operation of the time sharing inverter circuit.
Q.4	Give the detailed circuit analysis of single –phase parallel commutated inverter.
Q.5	Give design aspects of parallel inverter employing feedback diodes.
Q.6	Explain the operation of single-phase bridge inverter with the help of load voltage and load current.
Q.7	Draw the schematic of step-down and step-up choppers and derive an expression for output voltage in terms of duty cycle for a step-up and step-down choppers
Q.8	With the circuit diagram and output voltage waveforms, explain the working of Jones chopper.
Q.9	Derive the expression for average load current for type A chopper.
Q.10	Explain the continuous conduction mode and non-continuous conduction mode of class A chopper.
Q.11	With the help of circuit diagram and associated waveforms, explain the principle of working of class C chopper.
Q.12	With the help of circuit diagram and associated waveforms, explain the principle of working of class E chopper.
Q.13	With the help of circuit diagram and associated waveforms, explain the principle of working of class D chopper.
Q.14	Give the classification of chopper commutation.
Q.15	Describe voltage commutated chopper with associated voltage and current waveforms as a function of time.
Q.16	With the help of basic power circuit diagram, explain the working of a current commutated chopper. Also, draw the waveforms.
Q.17	With the circuit diagram and output voltage waveforms, explain the working of Morgan chopper.
Q.18	Enumerate the merits and demerits of load commutated chopper.
Q.19	Draw and explain the working of chopper firing circuit.
Q.20	Explain the basic principle of operation of a cycloconverter with neat equivalent circuit diagram.
Q.21	Describe the basic principle of working of a single-phase to single-phase cycloconverter for both continuous and discontinuous conductions for a bridge type cycloconverter.
Q.22	Describe three-phase to three-phase cycloconverter with relevant circuit

	arrangements using 18 thyristors and 36 thyristors.
Q.23	Draw and explain the control circuit block diagram for a cycloconverter with non-circulating current mode.
Q.24	Discuss the basic principle of operation of a ring-connected cycloconverter circuit. Also draw the associated waveform for ideal case.
Q.25	Describe any suitable reference voltage generator block diagram for a non-circulating cycloconverter. (three-phase to three-phase)
Q.26	Draw the equivalent circuit of a separately excited d.c. motor and derive the expressions for motor torque and armature voltage.
Q.27	Explain briefly the following methods of breaking a d.c. motor <ol style="list-style-type: none"> 1) Regenerative braking 2) Dynamic braking 3) Plugging
Q.28	Explain the various scheme of d.c. motor speed control.
Q.29	Draw and explain the operation of single-phase, half- wave converter drive. Also, draw related voltage and current waveforms.
Q.30	Draw and explain the torque-speed characteristics of a semiconverter feeding a separately excited d.c. motor.
Q.31	Draw and explain the torque-speed characteristics at a different firing angles for a full-converter feeding a separately excited d.c. motor.
Q.32	Explain in detail the breaking operation of a rectifier controlled separately excited d.c. motor.
Q.33	Derive all the basic equations for a series motor speed control using line commutated converter.
Q.34	List the various techniques of improving power factor in phase-controlled converters.
Q.35	Explain the basic principle of operation of an induction motor with reference to its equivalent circuit.
Q.36	Explain in detail the induction motor performance characteristics.
Q.37	Draw the torque-speed characteristics of the poly-phase induction motor. Also, explain the following operating regions. <ol style="list-style-type: none"> 1) Motoring region 2) Generating region 3) Braking region
Q.38	State and discuss the various methods of speed control of induction motor.
Q.39	Explain the advantages of variable frequency induction motor drives.
Q.40	State and explain the various schemes for induction motor speed control by voltage source inverter.