Reg. No. :

Question Paper Code: 35503

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Fifth Semester

Electronics and Instrumentation Engineering

01UEI503 – INDUSTRIAL ELECTRONICS

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. The reverse recovery time of diode is $trr = 3\mu s$ and rate of fall of diode current is $di/dt = 30\ A/\mu s$. Determine (a) the storage charge Q_{RR} (b) the peak current $I_{RR.}$

2. Two MOSFETs are connected in parallel carry a total current $I_T = 20\ A$. The drain to source voltage of MOSFET M_1 is $V_{DS1} = 4.5V$ and that of MOSFET M_2 is $V_{DS2} = 3V$. Determine the drain current of each transistor if $R_{S1} = 0.3\ \Omega$ and $R_{S2} = 0.2\ \Omega$.

3. Define Phase Control.

4. List the advantages of dual converter?

5. Define duty cycle.

6. Classify the inverter circuit based on commutation circuitry.

7. Give few applications of electric drives.

8. Write the expression for average output voltage of full converter fed DC drives.

9. What is a digital timer?

10. Define line regulation and load regulation in voltage regulators.

PART - B (5 x 16 = 80 Marks)

11. (a) What is meant by power diode? Explain about power diode types and also explain about effect of forward and reverse recovery time. (16)

Or

(b) Describe the basic structure of MCT. Give its equivalent circuit and explain the turn on and turn off processes. (16)

12. (a) Analyze the three phase fully controlled converter with necessary circuit diagram and waveforms. (16)

Or

(b) Explain the principle of operation of 1Φ cyclo converter with necessary circuit and waveforms. (16)

13. (a) Explain in detail about the methods for controlling gain in inverters used in industries. (16)

Or

(b) Summarize the types of chopper classification in detail. (16)

14. (a) Explain in detail about closed loop control of separately excited DC motor drive. (16)

Or

(b) With a neat diagram explain the operation of self-controlled synchronous motor. (16)

15. (a) Explain in detail about the operation and types of switching mode power supplies with a neat block diagram. (16)

Or

(b) Analyze the operation of online and offline UPS with neat sketch. (16)

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