Reg. No. :

Question Paper Code : P 1292

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Fifth Semester

Electrical and Electronics Engineering

EE 1301 — POWER ELECTRONICS

(Common to Electronics and Instrumentation Engineering/Instrumentation and Control Engineering)

(Common to B.E. (Part-Time) Fourth Semester-Regulation 2008)

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions

PART A — (10 × 2 = 20 marks)

1. What is holding current of SCR?
2. Define the pinch off voltage off MOSFET.
3. Why power factor of semi converter is better than full converter?
4. What are the basic requirements for the successful firing of the thyristor?
5. What are the disadvantages of frequency modulation scheme over the pulse width modulation scheme?
6. What do you mean by integral cycle control?
7. Mention the methods available for the output voltage control of inverters.
8. List the different types of PWM techniques.
9. What is on-line UPS?
10. Mention the different types of HVDC link.

PART B — (5 × 16 = 80 marks)

11. (a) Discuss steady state and the switching characteristics of power MOSFET.

Or

(b) Sketch the transverse and switching characteristics of IGBT.

12. (a) Explain the operation of three phase fully controlled rectifier supplying R load with neat waveforms and also derive an expression for average output voltage.

Or

(b) A single phase full converter is supplied from 230 V, 50 Hz source. The load consists of R = 10 Ω and a large inductance so as to render the load current constant. For a firing angle of 30 degree, determine

(i) average output voltage

(ii) average output current

(iii) average and rms values of thyristor currents

(iv) the power factor.

Also if the source has an inductance of 1.5 mH, determine

(1) average output voltage

(2) the angle overlap

(3) the power factor.

13. (a) Classify the basic topologies of switching regulators and explain the operation of cuk converter.

Or

(b) Describe a ZVS resonant converter with appropriate circuits and waveforms.

14. (a) Discuss the function of three phase voltage source inverter supplying a balanced star connected load in 180 degree operating mode.

Or

(b) Explain the operation of single phase capacitor commutated CSI with R load.

15. (a) Explain the operation of on-line and off-line UPS in detail.

Or

(b) Discuss the principle of operation of unified power controller as compensator with a neat circuit arrangement.

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Reg. No. : | | | | | | | | | | | | |

Question Paper Code : P 1304

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Seventh Semester

(Regulation 2004)

Electrical and Electronics Engineering

EI 1351 — BIO–MEDICAL INSTRUMENTATION

(Common to Sixth Semester B.E Electronics and Instrumentation Engineering/ B.E – Instrumentation and Control Engineering)

(Common to B.E. (Part-Time) Seventh Semester – Regulation 2005)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Define Resting Potential.

2. Name some transducers that can be used for blood flow measurement (Aortic and Venous).

3. Define Electro-retinogram.

4. Draw equivalent circuit of microelectrode.

5. What is the principle of working of Electromagnetic blood flow meter?

6. What is Spirometer?

7. Mention different methods of reconstruction techniques in CT.

8. Differentiate Micro shock from Macro shock.

9. List the different modes of operation in a pacemaker.

10. What is ventrilator?

PART B — (5 × 16 = 80 marks)

11. (a) Draw the structure of a living cell of our body and explain its constituents. (16)

Or

(b) Write short notes on :

(i) Strain gage type chest transducer. (8)

(ii) Thermistor as respiration sensor. (8)

12. (a) Explain any four types of surface electrodes in detail. (16)

Or

(b) Describe in detail the needle-electrodes and its types. (16)

13. (a) Describe in detail a method to determine total Lung capacity. (16)

Or

(b) Draw a circuit diagram of a pH meter and explain its working details. (16)

14. (a) Explain in detail different Generation techniques in CT. (16)

Or

(b) With a neat block diagram explain in detail Bed side patient monitoring system. (16)

15. (a) (i) Give the difference between internal and external pacemaker. (8)

(ii) Give short note on Double square pulse defibrillator. (8)

Or

(b) Why do we require heart-lung machine? Draw a block diagram of it and explain its working. (16)