Reg. No. :

Question Paper Code : 11274

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2011

Sixth Semester

Electronics and Communication Engineering

EC 2021 — MEDICAL ELECTRONICS

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions

PART A — (10 × 2 = 20 marks)

1. What is Half- cell potential?

2. Give the EMG signal characteristics.

3. How is the pulse rate measured?

4. What is stroke volume?

5. Draw the circuit of DC Defibrillator and give its output specifications.

6. List the applications of Bio- Telemetry.

7. What is the need of cooling system in X- ray tube?

8. How the radio isotopes are used for therapy?

9. What is Micro shock?

10. Which laser is used for surgery?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw the action potential waveform and explain the following terms. Resting potential; Action potential; Absolute Refractory period and Relative refractory period.   (10)

    (ii) Discuss about the different EEG signal frequency bands.   (6)

Or

    (b) (i) Draw the 12 lead system used in ECG.   (8)

    (ii) How the PCG signals are generated? Explain the measurement of PCG.   (8)

12. (a) Explain the Blood pressure measurement using following technique

    (i) Sphygmomanometer (8)

    (ii) Ultrasonic. (8)

Or

(b) Explain the principle of following :

    (i) pH measurement (8)

    (ii) Auto analyzer. (8)

13. (a) (i) Explain the function of synchronized DC Defibrillator with neat block. (12)

    (ii) Discuss about the radio pill. (4)

Or

(b) What is the need of pacemaker? Explain the different types of pacemakers. (16)

14. (a) Draw the block diagram of X-ray imaging system and explain the components. (16)

Or

(b) Explain production, properties, isotopes used and applications of' the following radiations

    (i) Alpha

    (ii) Beta

    (iii) Gamma. (16)

15. (a) Explain the function of surgical diathermy and various modes of operation. (16)

Or

(b) Write short notes on following

    (i) Thermograph (8)

    (ii) Ground fault interrupter. (8)

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