

BITS, PILANI-DUBAI
DUBAI INTERNATIONAL ACADEMIC CITY, DUBAI

TEST1

MEDICAL INSTRUMENTATION- EEEEC432 /INSTRC481

Date: 26/10/08
Time: 50 Mts

Max Marks: 25
Weightage: 25

Answer ALL Questions
Start each question on a new page

1. Explain how the action potential is generated. Draw the wave form and show the different regions. (5M)
2. Classify Bio potential electrodes. Explain each of them in detail. (5M)
3. Discuss the effects of artifacts on ECG recording. (5M)
4. Explain the working of the following blood pressure transducers with figures:
 - (i) A resistance type (2.5M)
 - (ii) A linear variable differential transformer type. (2.5M)
5. You have measure blood pressure, blood flow and heart rate in an anesthetized patient lying on an operating table. Design a system to do this by
 - (i) Describing the transducers you would use. (2M)
 - (ii) All necessary instrumentation. (2M)
 - (iii) Draw the block diagram. (1M)

BITS, PILANI-DUBAI
DUBAI INTERNATIONAL ACADEMIC CITY, DUBAI
IV Year EEE/EIE
TEST 2 (Open Book)
MEDICAL INSTRUMENTATION- EEEEC432 /INSTRC481

Date: 10/12/08
Time: 50 Mts

Max Marks: 20
Weightage: 20

Answer ALL Questions
Start each question on a new page

1. What is Plethysmography. Explain electric impedance plethysmography. (4M)
2. Discuss different types of CRT's used in hospital display systems. (3.5M)
3. Design the Cardiology department of a small hospital to include the facilities for intensive care monitoring, surgery and diagnostics. Specify all the equipment and instrumentation necessary including the possibility of emergencies. (6.5M)
4. Design a system that is capable of transmitting ECG of a patient at home to a hospital and sending the data to a cardiologist to diagnose. (6M)

Name:

ID No:

BITS PILANI
DUBAI INTERNATIONAL ACADEMIC CITY
IV Year EEE&EIE – I Semester 2008-09

QUIZ 3

MEDICAL INSTRUMENTATION

EEE UC432/INSTR UC481

Date: 5/11/08

Max. Marks: 10

Time: 30mts

Weightage: 5%

Design a coronary care hospital suite. Show the layout. Illustrate all your instrumentation systems by block diagrams.

Suggest suitable design and layout.

BITS, PILANI-DUBAI
DUBAI INTERNATIONAL ACADEMIC CITY, DUBAI
IV Year EEE/EIE
Comprehensive Examination
MEDICAL INSTRUMENTATION- EEEEC432 /INSTRC481

Date: 31/12/08
Time: 3 Hrs

Max Marks: 40
Weightage: 40

Answer ALL Questions
Start each question on a new page

1. Discuss in detail the various types of ECG recorders. (8M)
2. Explain the different types of pacing modes in pace makers. (8M)
3. Suggest the block diagram of an electronic Spirometer. Explain how this design is comparable to an existing Spirometer. (8M)
4. Explain the following.
 - (i) Ultrasonic transducers (4M)
 - (ii) Echocardiography (4M)
5. Design a Biotelemetry system to monitor the following parameters simultaneously.

ECG, EMG, Pulse rate, Blood pressure

The system should be capable of transmitting over a distance of 1Km.
Suggest the type of modulation, the frequencies, the antenna requirements
and any other detail you feel is important. (8M)