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SARDAR PATEL UNIVERSITY

M.Sc.(Instrumentation) Semester III Examination

PS03CINS01 (Bio Medical Instrumentation)

Friday, 30th November 2012

2.30 pm to 5.30 pm

Total Marks: 70

- Que.1 Choose a correct option for the questions given below: 8
1. Needle electrodes are used as sensor in:
 - a) EEG
 - b) EMG
 - c) ECG
 - d) All
 2. Lead I, II and III are taking signal from
 - a) RA Vs LA, RA Vs RL and LA Vs LL
 - b) RA Vs LA, RA Vs LL and LA Vs LL
 - c) RA Vs RL, RA Vs RL and LA Vs LL
 - d) RA Vs LA, LA Vs RL and LA Vs LL
 3. Which of these is a pulse measurement method?
 - a) Electrical Impedance change
 - b) Strain Gauge
 - c) Optical method
 - d) All
 4. Which of these is an indirect method of blood pressure measurement
 - a) Rheographic
 - b) Differential Auscultatory
 - c) Oscillometric
 - d) All
 5. Which is not an electrode for direct FECG measurement?
 - a) Scalp
 - b) Clip
 - c) Pregelled disposable
 - d) Limb
 6. An arrhythmia monitor will
 - a) Store normal QRS for reference
 - b) Initiate alarm on ectopic beat
 - c) Detects and triggers alarm when artifacts are present
 - d) All the above
 7. Which of the following is/are in vivo oximetry techniques?
 - a) Ear oximetry
 - b) Pulse oximetry
 - c) Both (a) and (b)
 - d) None of the above
 8. A complete blood gas analyser is used to measure
 - a) pH
 - b) pCO₂
 - c) pO₂
 - d) all of them

- Que.2 Answer any seven in brief: 14
- A. Describe limb electrodes.
 - B. Write a brief note on origin of heart sounds.
 - C. Write a short description of bio-feedback instrumentation.
 - D. Explain average, beat to beat and combined type of heart rate measurement in brief.
 - E. Differentiate between the direct and indirect blood pressure measurement techniques.
 - F. Draw the block diagram of arrhythmia monitor and describe its operating sequence.
 - G. Write a brief note on sports telemetry.
 - H. Describe transmission oximetry in brief.
 - I. Explain in brief pure tone audiometer.

PTO

Que.3	A	With necessary diagrams explain ECG leads in detail.	6
	B	Draw the block diagram of EEG and explain it.	6
		OR	
	B	Write short notes on:	
		1. Origin of bioelectric signals	3
		2. Electrodes for EMG	3
Que.4	A	Draw the block diagram of bedside patient monitoring system and explain it in detail	6
	B	Write short notes on:	
		1. Transmission type pulse rate meter	3
		2. Instantaneous heart rate meter	3
		OR	
	B	With necessary diagrams explain any two methods of indirect blood pressure measurement.	6
Que.5	A	Give a detailed account on data recording, replay and analysis in view of ambulatory monitoring system.	6
	B	Write a detailed note on ECG telemetry system.	6
		OR	
	B	Write short notes on:	
		1. Abdominal foetal electrocardiogram.	3
		2. Implantable telemetry for blood pressure and blood flow	3
Que.6	A	Explain in detail complete blood gas analyser with necessary diagrams.	6
	B	Write a detailed note on sine and square wave electromagnetic blood flow meter.	6
		OR	
	B	Write short notes on:	
		1. Blood pO_2 measurement	3
		2. Basic spirometer	3

Best Wishes