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Question Paper Code

13016

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024

Sixth Semester

Electronics and Instrumentation Engineering 20ICPC602 - BIOMEDICAL INSTRUMENTATION

Regulations - 2020

Dui	ration: 3 Hours Max	Mark	s: 10	0
	$PART - A (MCQ) (20 \times 1 = 20 Marks)$			
	Answer ALL Questions	Marks	Level	co
1.	The is the only movable part of the skull.	1	K1	CO1
	(a) Nasal Conchae (b) Mandible (c) Vomer (d) Maxilla			
2.	A typical neuron has a resting membrane potential of about	1	K1	CO1
	(a) $+70$ Mv (b) $+70$ V (c) -70 V (d) -70 mV			
3.	Those reflex actions which involve brain are called	1	K1	CO1
	(a)Stimulus (b) Cerebral reflexes (c)Spinal reflexes (d)Reflex arc			
4.	In an optical fiber, the concept of Numerical aperture is applicable in describing the ability	1	<i>K1</i>	CO1
	of			
_	(a)Light Collection (b)Light Scattering (c)Light Dispersion (d)Light Polarization		V_1	CO2
5.	What do you mean by cardiac output?	1	K1	CO2
	(a) the volume of blood received in the atrium			
	(b) the volume of blood received in ventricles			
	(c) the volume of blood ejected from the atrium to the ventricles			
((d)the volume of blood ejected from ventricles to the aorta and pulmonary artery	1	<i>K1</i>	CO2
6.	ESR test is a	1	ΚI	CO2
	(a) specific, screening test (b) specific, diagnostic test			
7	(c)Nonspecific, screening test (d)Nonspecific, diagnostic test Which of the following statements is correct?	1	<i>K1</i>	CO2
7.	(a) 130/90 mm Hg is considered high and require treatment	1	11.1	CO2
	(b) 100/55 mm Hg is considered an ideal blood pressure			
	(c) 105/50 mm Hg makes one active			
	(d) 190/110 mm Hg may harm vital organs			
8.	What is used as a photo detector in pulse Oximetry?	1	<i>K1</i>	CO2
0.	(a) Phototransistor (b) Solar cell (c) Photodiode (d) Photographic plates			
9.	Which of the following is not preferred for electrode making?	1	<i>K1</i>	CO3
,.	(a) Ag-AgCl (b) Copper (c) Stainless-steel (d) Gold			
10.	Normal EEG frequency range is	1	<i>K1</i>	CO3
- 0.	(a) 50-500Hz (b) 0.5-50HZ (c) 0.05-5Hz (d) 1-200Hz			
11.	What is the main purpose of hazard identification?	1	<i>K1</i>	CO3
	(a) To minimise the effect of a consequence (b) For better risk management			
	(c) To characterize adverse effect of toxins (d) To reduce probability of occurrence			
12.	One of the main functions of personal protective grounds is to provide a	1	K1	CO3
	impedance path for a short circuit.			
	(a) High (b) Low (c) Smooth (d) Adequate			
13.	The type of X-ray scan that gives a panoramic or wide view of the lower face	1	K1	CO4
	(a) Orthopedics (b) Orthopentology (c) Orthology (d) Orthopantomography			
14.	If an MRI was done for a long bone, the part of the bone that will be imaged is the	1	K1	CO4
	(a) Bone salts (b) Bony Prominence (c) Inflamed Joints (d) Bone Marrow			
15.	Name the medical technique which is used for remote measurement	1	K1	CO4
	(a)LASER (b)Telemetry (c)LIDAR (d)RADAR	_		
16.	Speed of ultrasound depends upon	1	K1	CO4
	(a)Medium (b)Amplitude (c)Material (d)Wavelength			_
K1 –	Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create	1	3016	,

17.	Which threshold of hearing is measured by a pure –tone audiometer? (a) Air-conduction and bone-conduction thresholds of hearing (b) Speech reception thresholds for diagnostic purposes (c) Bone –conduction threshold of hearing (d) Air-conduction thresholds of hearing	1	K1	CO5		
18.	(d) An-conduction directions of hearing 3. Name the life assisting device which is used for treatment for paralysis (a) Diathermy (b) Pacemaker (c) Defibrillator (d) Nerve and muscle stimulator					
19.	The dialysis that can be performed even at home is	1	K1	CO5		
20.	(a) Apheresis (b) Peritohear Diarysis (c) Hemodiarysis (d) Peritohear Diarysis (c) Hemodiarysis (d) Peritohear Diarysis (d) Pe					
	PART - B ($10 \times 2 = 20 \text{ Marks}$)					
	Answer ALL Questions					
21.	Define All or nothing law.	2	<i>K1</i>	CO1		
	Write Goldman's equation?	2	<i>K1</i>	CO1		
	Explain the principle of sphygmomanometer.	2	K2	CO2		
	What is meant by mean arterial pressure (MAP)?	2	<i>K1</i>	CO2		
	Define Let-go current.	2	<i>K1</i>	CO3		
	What is the purpose of electrode paste?	2	<i>K1</i>	CO3		
27.		2	K2	CO4		
	8. Infer the problems in implant telemetry.					
	29. Explain Peritoneal Dialysis.					
	What is a Defibrillator?	2	<i>K1</i>	CO5		
50.	PART - C ($6 \times 10 = 60 \text{ Marks}$)					
	Answer ALL Questions					
31.	a) Outline the structure of a cell and explain in detail.	10	K2	CO1		
	OR					
	b) Summarize and explain the components of Biomedical Instrumentation system with neat block Diagram.	10	K2	CO1		
32.	a) Explain Indicator Dilution method for Cardiac output measurement. OR	10	K2	CO2		
	b) Outline the principle construction and working of Body plethysmography.	10	K2	CO2		
2.2		10	W2	CO2		
33.	a) Explain different types of electrodes in detail. OR	10	K2	CO3		
	b) Illustrate different devices used to protect against electrical hazards.	10	K2	CO3		
34.	a) Infer CT scan. Give the mathematical details of obtaining a CT image. OR	10	K2	CO4		
	b) Outline the principle of MRI with a suitable diagram.	10	K2	CO4		
35.	a) Explain the heart lung machine with a neat diagram. OR	10	K2	CO5		
	b) Summarize the different types of pacemaker with the neat diagram.	10	K2	CO5		
36.	a) i) Explain the problem associated with implant telemetry circuits.	5	K2	CO4		
	ii) Outline the functions of nerve stimulators. OR	5	K2	CO5		
	b) i) Explain the principle and working of endoscopy.	5	K2	CO4		
	ii) Explain the principle and working of chaoscopy.	5	K2	CO5		
	diagram.					