



श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, त्रिवेंद्रम, केरल- 695 011
(एक राष्ट्रीय महत्व का संस्थान, विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार)
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ENTRANCE EXAMINATION - ACADEMIC SESSION JANUARY 2025

Program: PG Diploma in Cardiac Laboratory Technology

Time:90 Minutes

Max. Marks: 100

(Select the most appropriate answer)

(There are **no negative** marks for wrong answers)

1	The smallest value which is measured using an instrument is known as	
	a	Absolute count
	b	Least count
	c	Round off value
	d	Minimum count
2	Which among the following is a scalar quantity?	
	a	Force
	b	Mass
	c	Momentum
	d	Velocity
3	Farad is the unit of	
	a	Luminosity
	b	Wavelength
	c	Permittivity
	d	Inertia
4	What is a Holter monitor used for?	
	a	Long-term ECG monitoring
	b	Imaging the heart
	c	Measuring blood pressure
	d	Checking oxygen levels
5	The symbol to represent "Amount of Substance" is	
	a	K
	b	A
	c	Cd
	d	mol
6	Forces acting for a short duration are called _____	
	a	Short force
	b	Interval force
	c	Impulsive forces
	d	Interrupting force
7	The rate of doing work is called _____	
	a	Force
	b	Power
	c	Acceleration
	d	Displacement

8	The energy possessed by the body by virtue of its motion is known as?	
	a	Chemical energy
	b	Thermal energy
	c	Potential energy
	d	Kinetic energy
9	The combination of rotational motion and the translational motion of a rigid body is known as _____.	
	a	Rolling motion
	b	Axis motion
	c	Angular motion
	d	Frictional motion
10	Which device is implanted to regulate the heart's rhythm?	
	a	Catheter
	b	Stent
	c	Pacemaker
	d	Defibrillator
11	The satellite having the same time period of revolution as that of the earth is called _____.	
	a	Stationary satellite
	b	Geostationary satellite
	c	Gravitational satellite
	d	Geo satellite
12	Which among the following is the Supplementary Unit——	
	a	Mass
	b	Time
	c	Luminosity
	d	Solid angle
13	AU is the unit of _____	
	a	Astronomical unit
	b	Astronomy Unit
	c	Astrological Unit
	d	Archaeological Unit
14	Dimensions of kinetic energy is the same as that of _____	
	a	Acceleration
	b	Velocity
	c	Work
	d	Force
15	Joule second is the unit of _____	
	a	Force
	b	Power
	c	Energy
	d	Angular momentum
16	Electromagnetic waves are considered to be which of the following types?	
	a	Transverse
	b	Longitudinal
	c	Both Transverse & Longitudinal
	d	Neither longitudinal nor transverse

17	What is the frequency of SHM?	
	a	Time for one oscillation
	b	Number of oscillations per unit time
	c	Time taken for motion to reverse direction
	d	Same as angular frequency
18	Zeroth law of thermodynamics helped in the creation of which scale?	
	a	Heat energy
	b	Pressure
	c	Internal energy
	d	Temperature
19	First law of thermodynamics is based on?	
	a	Conservation of mass
	b	Conservation of momentum
	c	Conservation of energy
	d	Conservation of work
20	Which of the following types of kinetic energies contribute to internal energy?	
	a	Translational
	b	Rotational
	c	Vibrational
	d	Translational, Vibrational & Rotational
21	Which of the following causes dispersion?	
	a	Refraction
	b	Reflection
	c	Total internal reflection
	d	Total internal dispersion
22	What is an angiogram used for?	
	a	Imaging the lungs
	b	Imaging blood vessels
	c	Imaging the brain
	d	Imaging the heart
23	What is the primary function of the sinoatrial (SA) node?	
	a	Filter blood
	b	Regulate blood pressure
	c	Generate electrical impulses
	d	Pump blood
24	Which of the following unit is related to sound frequency?	
	a	Hertz
	b	Decibel
	c	Second
	d	Meter
25	The energy possessed by a body by the virtue of its position is called	
	a	Kinetic energy
	b	Potential energy
	c	Total energy
	d	Position energy

26	Which imaging technique uses radioactive tracers?	
	a	Ultrasound
	b	CT scan
	c	PET scan
	d	MRI
27	The property which differentiates two kinds of charges is called _____.	
	a	Equality of charge
	b	Polarity of charge
	c	Fraction of charge
	d	None of the option
28	What does the "CT" in CT scan stand for?	
	a	Constant Tomography
	b	Clinical Tomography
	c	Computed Tomography
	d	Circular Tomography
29	What is the dielectric constant of a metal?	
	a	1
	b	1
	c	0
	d	Infinite
30	The force per unit charge is known as _____.	
	a	Electric field
	b	Electric potential
	c	Electric current
	d	Electric space
31	The work done against electrostatic force gets stored in which form of energy?	
	a	Potential energy
	b	Kinetic energy
	c	Thermal energy
	d	Solar energy
32	The capacity of the parallel plate capacitor increases when	
	a	area of the plate is decreased
	b	area of the plate is increased
	c	distance between the plates increases
	d	None of the option
33	The electric potential inside a conducting sphere _____	
	a	is zero
	b	increases from centre to the surface
	c	decreases from centre to the surface
	d	remains constant from centre to the surface
34	Dielectrics are _____	
	a	Conducting substances
	b	Non-conducting substances
	c	Semi-conducting substances
	d	None of the option

35	What does a PET scan detect?	
	a	Brain tumors
	b	Blood clots
	c	Bone fractures
	d	Metabolic activity
36	When the charged particles move in a combined magnetic and electric field, then the force acting is known as _____.	
	a	Centripetal force
	b	Orbital force
	c	Lorentz force
	d	Centrifugal force
37	SI unit of the magnetic field is _____.	
	a	Dyne
	b	Tesla
	c	Ohm
	d	Volt
38	The resistivity of certain metals or alloys drops to zero when they are cooled below a certain temperature, this phenomenon is known as _____.	
	a	Superconductivity
	b	Partial conductivity
	c	Conductivity
	d	Non-conductivity
39	Current density is a _____.	
	a	scalar quantity.
	b	vector quantity
	c	dimensionless quantity.
	d	none of these options
40	Unit of conductance is _____.	
	a	Ohm
	b	Volts
	c	Siemens
	d	Dyne
41	Motion in a plane is called	
	a	Motion in one dimension
	b	Motion in two dimensions
	c	Motion in three dimensions
	d	Motion in four dimensions
42	Identify the principle behind the working of an a.c. generator.	
	a	Eddy currents
	b	Faraday's law
	c	Lenz's law
	d	Electromagnetic induction
43	The number of electrons in the valence shell of a semiconductor is	
	a	1
	b	2
	c	3
	d	4

44	In order to visualize the flow of blood in the renal arteries, what process is done with CT?	
	a	CT Angiography
	b	CT Angioplasty
	c	Simple CT
	d	CT Cardiography
45	Circular motion is a	
	a	Motion in one dimension
	b	Motion in two dimensions
	c	Motion in three dimensions
	d	Motion in four dimensions
46	MRI stands for	
	a	Mechanical Resonance Imaging
	b	Magnetic Resonance Imaging
	c	Mutually Related Imaging
	d	Magnetic Resultant Imaging
47	Which of the following instrument is used for recording the electrical activity of the brain?	
	a	ECG
	b	EMG
	c	PCG
	d	EEG
48	In which section studies are performed on various body tissues and fluids to determine the presence of pathological micro-organisms?	
	a	Chemistry
	b	Haematology
	c	Microbiology
	d	Blood Bank
49	Recording electrical activities associated with heart is known as	
	a	EEG
	b	EOG
	c	EMG
	d	ECG
50	Arteries are best defined as the vessels which	
	a	Carry blood from one visceral organ to another visceral organ
	b	Supply oxygenated blood from the brain to the different organs
	c	Carry blood away from the heart to different organs
	d	Break up into capillaries which reunite to form a vein
51	Which of the following states that an emf is induced whenever there is a change in the magnetic field linked with electric circuits?	
	a	Lenz's Law
	b	Ohm's Law
	c	Faraday's Law of Electromagnetic Induction
	d	None of the above
52	Imaging technique uses x-rays to create detailed images of the inside of the body?	
	a	PET scan
	b	MRI
	c	Ultrasound
	d	CT scan

53	Which of the following apparatus construction uses electromagnetic induction?
a	Voltmeter
b	Galvanometer
c	Generator
d	Electric Motor
54	Which of the following rules is used to identify the direction of the current induced in a wire moving in a magnetic field?
a	Ampere's Rule
b	Fleming's Right-Hand Rule
c	Fleming's Left-Hand Rule
d	None of the above
55	Electrical Inertia is the measure of
a	Self Inductance
b	Mutual Inductance
c	Impedance
d	None of the above
56	What is the frequency of the AC Mains in India?
a	60 Hz
b	50 Hz
c	40 Hz
d	30 Hz
57	An alternating current can be produced by
a	Choke Coil
b	Electric Motor
c	Dynamo
d	Transformer
58	Which wave from ECG waveforms becomes widened when the self-triggering impulse does not arrive through the AV node?
a	P wave
b	T wave
c	ST wave
d	QRS wave
59	When the heartbeat is slower than the normal rate of the heart(less than 60), this type of arrhythmias called _____
a	Bradycardia
b	Tachycardia
c	Arterial contraction
d	Ventricular contraction
60	Any disturbance in the heart's normal rhythmic contraction is called?
a	Heart stroke
b	Cardiac arrest
c	Arrhythmias
d	Premature contraction
61	What is the name of the largest artery in the body?
a	Coronary artery
b	Aorta
c	Carotid artery
d	Pulmonary artery

62	According to Maxwell's Hypothesis, a changing electric field gives rise to?	
	a	Induced EMF
	b	Electric Field
	c	Magnetic Field
	d	Magnetic Dipole
63	Which of the following proves that electromagnetic waves are transverse?	
	a	Reflection
	b	Diffraction
	c	Interference
	d	Polarisation
64	Which of the following is used to investigate the structure of solids?	
	a	Gamma Rays
	b	Infrared Rays
	c	X-Rays
	d	Cosmic Rays
65	Which waves are used by artificial satellites for communication?	
	a	Infrared rays
	b	Microwaves
	c	Radio waves
	d	X-Rays
66	Which of the following phenomena of light results in a mirage?	
	a	Refraction of light
	b	Reflection of light
	c	Total internal reflection
	d	Diffraction of light
67	For which of the following is the field of view maximum?	
	a	Concave mirror
	b	Convex mirror
	c	Plane mirror
	d	Cylindrical mirror
68	Which electrolyte is crucial for the generation of cardiac action potentials?	
	a	Magnesium
	b	Potassium
	c	Sodium
	d	Calcium
69	What should be increased to increase the angular magnification of a simple microscope?	
	a	The power of the lens
	b	The focal length of the lens
	c	Lens Aperture
	d	Object Size
70	Which valve prevents blood from flowing back into the left atrium from the left ventricle?	
	a	Mitral valve
	b	Tricuspid valve
	c	Pulmonary valve
	d	Aortic valve

71	What is the term for high blood pressure?	
	a	Cardiomyopathy
	b	Hyperlipidemia
	c	Hypotension
	d	Hypertension
72	Polaroid glasses are used in sunglasses because	
	a	They reduce the light intensity to half on account of polarization
	b	They have a good colour
	c	They look fashionable
	d	They are cheaper
73	Which of the following factors does the intensity of light depend on?	
	a	Frequency
	b	Wavelength
	c	Amplitude
	d	Velocity
74	What is the normal resting heart rate for adults?	
	a	90-150 beats per minute
	b	40-70 beats per minute
	c	80-140 beats per minute
	d	60-100 beats per minute
75	Two light sources are said to be coherent when both the sources of light emit light of	
	a	The same amplitude and phase
	b	The same intensity and wavelength
	c	The same speed
	d	The same wavelength and constant phase difference
76	A photoelectric cell is a device which	
	a	Converts light energy into electricity
	b	Converts electricity into light energy
	c	Stores Light energy
	d	Stores Electricity
77	The emission of electrons does not occur in which of the following?	
	a	Photoelectric Emission
	b	Thermionic Emission
	c	Secondary Emission
	d	X-Ray Emission
78	What does a cathode ray consist of?	
	a	Protons
	b	Electrons
	c	Photons
	d	Alpha particles
79	Which of the following metals is not sensitive to visible light?	
	a	Rubidium
	b	Sodium
	c	Caesium
	d	Cadmium

80	The photoelectric effect is based on the law of conservation of	
	a	Mass
	b	Momentum
	c	Energy
	d	Angular momentum
81	Electrons in the atom are held to the nucleus by	
	a	Nuclear Force
	b	Coulomb's Force
	c	Gravitational Force
	d	Van Der Waal's Force
82	Which part of the heart is responsible for pumping oxygenated blood to the body?	
	a	Right atrium
	b	Right ventricle
	c	Left atrium
	d	Left ventricle
83	The electrons of Rutherford's model would be expected to lose energy because	
	a	They jump on the nucleus
	b	They move randomly
	c	Radiate electromagnetic waves
	d	Escape from the atom
84	What is the medical term for a heart attack?	
	a	Cardiac arrest
	b	Myocardial infarction
	c	Angina
	d	Arrhythmia
85	The first model of the atom was proposed by	
	a	J.J Thompson
	b	Albert Einstein
	c	Neils Bohr
	d	Ernest Rutherford
86	A nucleus undergoes gamma decay due to	
	a	Excess of neutrons
	b	Excess of protons
	c	Its excited state
	d	Large mass
87	Sun's radiant energy is due to	
	a	Nuclear Fusion
	b	Nuclear Fission
	c	Photoelectric Effect
	d	Radioactive Decay
88	Which of the following are not emitted by radioactive substances?	
	a	Protons
	b	Electrons
	c	Gamma Rays
	d	Helium Nuclei

89	In nuclear reactions, there is a conservation of	
	a	Energy only
	b	Mass only
	c	Mass, energy and momentum
	d	Momentum only
90	Isotones have the same number of	
	a	Protons
	b	Electrons
	c	Neutrons
	d	All of the above
91	What bonds are present in a semiconductor?	
	a	Monovalent
	b	Bivalent
	c	Trivalent
	d	Covalent
92	In a p-type semiconductor, the current conduction is due to	
	a	Holes
	b	Atoms
	c	Electrons
	d	Protons
93	What happens to the resistance of semiconductors on heating?	
	a	Increases
	b	Decreases
	c	Remains the same
	d	First increases later decrease
94	Which of the following is a universal gate?	
	a	NOT
	b	AND
	c	OR
	d	NAND
95	A p-type semiconductor is	
	a	Positively charged
	b	Negatively charged
	c	Uncharged
	d	None of the above
96	What happens when the frequency deviation is doubled in FM?	
	a	The modulation index is decreased
	b	Modulation is doubled
	c	Modulation is halved
	d	Carrier swing is halved
97	The summation of three sinusoidal waves is equal to	
	a	AM Waves
	b	FM Waves
	c	Both (a) and (b)
	d	Neither of these
98	Television signals are	
	a	Amplitude modulated
	b	Frequency modulated
	c	Phase modulated
	d	Both frequency and amplitude modulated

99	A microphone converts	
	a	electrical signals into sound signals
	b	sound signals into electrical signals
	c	Both (a) and (b)
	d	signal remains the same, only frequency will change
100	In a communication system, out of three elements which of the following is the physical medium that connects the other two	
	a	Transmitter
	b	Channel
	c	Receiver
	d	Any of the above