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## ENTRANCE EXAMINATION - ACADEMIC SESSION JANUARY 2025

### Program: PG Diploma in Neuro Technology

Time:90 Minutes

Max.Marks: 100

(Select the most appropriate answer)

(There are no negative marks for wrong answers)

1	Which of the following has the greatest affinity for hemoglobin?
a	O <sub>2</sub>
b	CO <sub>2</sub>
c	NO
d	CO
2	What is the basic structural and functional unit of life?
a	Cell
b	Tissue
c	Organ
d	Organ system
3	Which organelle is known as the powerhouse of the cell?
a	Mitochondria
b	Tissue
c	Organ
d	Organ system
4	The process by which green plants make their food is called:
a	Respiration
b	Photosynthesis
c	Fermentation
d	Digestion
5	What is the role of ribosomes in a cell?
a	Energy production
b	Protein synthesis
c	DNA replication
d	Cell division
6	The genetic material in prokaryotic cells is:
a	DNA
b	RNA
c	Protein
d	Lipid

7	Which of the following is not a part of the human circulatory system?	
	a	Heart
	b	Blood
	c	Kidney
	d	Arteries
8	Which of the following is responsible for the transmission of nerve impulses?	
	a	Neurons
	b	Glial cells
	c	Muscle cells
	d	Epithelial cells
9	Which part of the plant is responsible for photosynthesis?	
	a	Roots
	b	Stems
	c	Leaves
	d	Flowers
10	What is the main function of the large intestine?	
	a	Absorption of nutrients
	b	Absorption of water
	c	Digestion of proteins
	d	Synthesis of vitamins
11	Which of the following diseases is caused by a virus?	
	a	Tuberculosis
	b	Malaria
	c	Influenza
	d	Typhoid
12	What is the primary function of red blood cells?	
	a	Carry oxygen
	b	Fight infection
	c	Clot blood
	d	Maintain pH
13	The basic unit of heredity is:	
	a	Chromosome
	b	Gene
	c	DNA
	d	Allele
14	Which of the following is a characteristic of living organisms?	
	a	Growth
	b	Reproduction
	c	Metabolism
	d	All of the above
15	The theory of evolution by natural selection was proposed by:	
	a	Gregor Mendel
	b	Charles Darwin
	c	Louis Pasteur
	d	Alfred Wallace



16	Which of the following is true for a charged particle moving perpendicular to a uniform magnetic field?	
	a	It moves in a circular path
	b	It moves in a straight line
	c	It moves in an elliptical path
	d	Its speed increases
17	In an LCR circuit at resonance, the power factor is:	
	a	0
	b	0.5
	c	1
	d	-1
18	A capacitor stores energy in the form of:	
	a	Electric charge
	b	Magnetic field
	c	Electric field
	d	Current
19	The speed of electromagnetic waves in a vacuum is:	
	a	Dependent on frequency
	b	Dependent on wavelength
	c	Constant
	d	Zero
20	Which of the following phenomena is a result of the wave nature of light?	
	a	Photoelectric effect
	b	Interference
	c	Emission spectrum
	d	Blackbody radiation
21	The SI unit of magnetic flux is:	
	a	Weber
	b	Tesla
	c	Henry
	d	Gauss
22	In a nuclear fission reaction, the mass of the products is:	
	a	Equal to the mass of reactants
	b	Less than the mass of reactants
	c	More than the mass of reactants
	d	Unchanged
23	The photoelectric effect proves that light has:	
	a	Wave nature
	b	Particle nature
	c	Dual nature
	d	Magnetic nature
24	Which of the following is a semiconductor material?	
	a	Copper
	b	Silicon
	c	Silver
	d	Iron

25	The refractive index of a material depends on:	
	a	The angle of incidence
	b	The frequency of light
	c	The distance from the source
	d	The thickness of the material
26	In an AC circuit, the phase difference between voltage and current is zero for:	
	a	A resistor
	b	An inductor
	c	A capacitor
	d	An LCR circuit
27	Which of the following quantities remains unchanged in an elastic collision?	
	a	Momentum
	b	Kinetic energy
	c	Both momentum and kinetic energy
	d	Speed of individual objects
28	Which of the following cannot be polarized?	
	a	Sound waves
	b	Transverse waves
	c	Longitudinal waves
	d	Light waves
29	The electric potential energy of a system of two point charges is:	
	a	Inversely proportional to the product of the charges
	b	Directly proportional to the distance between them
	c	Inversely proportional to the distance between them
	d	Directly proportional to the square of the charges
30	The SI unit of capacitance is:	
	a	Farad
	b	Henry
	c	Tesla
	d	Coulomb
31	Which of the following is the main component of natural gas?	
	a	Methane
	b	Ethane
	c	Propane
	d	Butane
32	The rate of a chemical reaction depends on:	
	a	Concentration of reactants
	b	Nature of reactants
	c	Temperature
	d	All of the above
33	Which of the following elements does not exhibit variable oxidation states?	
	a	Zinc
	b	Iron
	c	Copper
	d	Chromium



34	The pH of pure water at 25°C is:	
	a	7
	b	5
	c	9
	d	6
35	What is the oxidation state of sulfur in sulfuric acid (H <sub>2</sub> SO <sub>4</sub> )?	
	a	2
	b	4
	c	6
	d	-2
36	Which of the following is not a greenhouse gas?	
	a	Carbon dioxide
	b	Methane
	c	Nitrogen
	d	Ozone
37	What is the main product formed when sodium reacts with water?	
	a	Sodium hydroxide
	b	Sodium chloride
	c	Sodium carbonate
	d	Sodium oxide
38	Which of the following is an alloy of copper and tin?	
	a	Brass
	b	Bronze
	c	Steel
	d	Solder
39	The gas most commonly used to disinfect water in swimming pools is:	
	a	Oxygen
	b	Hydrogen
	c	Chlorine
	d	Nitrogen
40	What is the name of the process in which an ore is heated in the absence of air?	
	a	Roasting
	b	Calcination
	c	Smelting
	d	Refining
41	Which of the following is the best conductor of electricity?	
	a	Copper
	b	Silver
	c	Gold
	d	Aluminum
42	The hardest naturally occurring substance is:	
	a	Quartz
	b	Diamond
	c	Graphite
	d	Topaz

43	In organic chemistry, the functional group –OH is known as:	
	a	Carboxyl group
	b	Hydroxyl group
	c	Carbonyl group
	d	Amino group
44	The atomic number of an element represents:	
	a	Number of protons
	b	Number of neutrons
	c	Number of electrons
	d	Number of protons and neutrons
45	Which of the following is a weak electrolyte?	
	a	Hydrochloric acid
	b	Sodium hydroxide
	c	Acetic acid
	d	Ammonium chloride
46	What is the primary function of the respiratory system in humans?	
	a	Oxygen exchange
	b	Nutrient absorption
	c	Waste elimination
	d	Hormone regulation
47	Which of the following is a physical change?	
	a	Rusting of iron
	b	Boiling water
	c	Digestion of food
	d	Combustion of wood
48	What type of bond is formed when two atoms share electrons?	
	a	Ionic bond
	b	Covalent bond
	c	Metallic bond
	d	Hydrogen bond
49	Which part of the cell is selectively permeable?	
	a	Cell wall
	b	Cytoplasm
	c	Cell membrane
	d	Nucleus
50	Which of the following is a characteristic of enzymes?	
	a	They are proteins.
	b	They increase the activation energy.
	c	They are always active at high temperatures.
	d	They change the equilibrium of the reaction.
51	Vision is subserved by .....	
	a	Vestibular Nerve
	b	Optic Nerve
	c	Trigeminal Nerve
	d	Abducens Nerve



52	V waves, spindles and k complexes are seen in	
	a	ECG in sleep
	b	EEG in Sleep
	c	Polysomnography
	d	EEG in awake state and sleep
53	The balance of Human body is maintained by .....	
	a	Brain stem
	b	Cerebellum
	c	Basal Ganglia
	d	Cerebral Cortex
54	All are nerves in the hand except.....	
	a	Ulnar Nerve
	b	Radial Nerve
	c	Femoral Nerve
	d	Axillary Nerve
55	Brain continues down the neck as	
	a	Brain stem
	b	Spinal cord
	c	Brachial Plexus
	d	Lumbosacral plexus
56	The following are excitatory neurotransmitters in the brain except .....	
	a	Glutamate
	b	Dopamine
	c	Serotine
	d	GABA
57	What is IPSP in action potential	
	a	Increasing Polysynaptic potential
	b	Inducing Pre synaptic potential
	c	Inhibitory Post synaptic potential
	d	Incoming post synaptic potential
58	Which neurotransmitter gets released at the neuro muscular junction during an action potential?	
	a	Acetylcholine
	b	GABA
	c	Non adrenaline
	d	Adrenaline
59	When exposed to bright light, what happens to the pupil?	
	a	Dilates
	b	Become ovular
	c	Constricts
	d	Any of the above
60	Which part of the brain subserves the memory?	
	a	Occipital lobe
	b	Frontal lobe
	c	Parietal lobe
	d	Temporal Lobe
61	Who discovered EEG?	
	a	Hans Berger
	b	Frederick Anderman
	c	Hughes
	d	Gibbon

62	What is the expression of MRI?
	a Magnetic resonance imaging
	b Magnetization resonance intensity
	c Magnetic resonating interval
	d Magno resolution imaging
63	Which among this is a blood vessel (artery) in human body?
	a Aorta
	b Pectineus artery
	c Sartorius artery
	d Limbic artery
64	Depolarisation phase of AP occurs influx of
	a $\text{Na}^+$
	b $\text{K}^+$
	c $\text{Ca}^{++}$
	d P
65	What is the approximate weight of human brain?
	a 800 g
	b 1000 g
	c 750 g
	d 1300 g
66	A stroke (acute brain attack) occurs due to which of the following?
	a Cardiac cause(embolism)
	b Trauma to head
	c Drug overdosage
	d Multiple Sclerosis
67	Purkinje Cells are seen in
	a Brain stem
	b Cerebellum
	c Spinal cord
	d Cerebral cortex
68	Expand EMG
	a Electrical mapping graph
	b Electromotorgraphy
	c Electromyography
	d Electrode mapping Graphy
69	The following statements are true of spinal cord
	a Spinal cord is round and spherical in its length
	b Spinal cord has cells called anterior horn cells
	c Spinal cord has only veins supplying it
	d Spinal cord injury causes hand weakness commonly
70	A "pus collection" in the brain or any other part of the body is called
	a hemorrhage
	b serositis
	c abscess
	d fistula
71	Name the quick response to the stimuli that passes the brain
	a Reflex action
	b Knee jerk
	c Synaptic reaction
	d Ankle jerk



72	Which of the following is a membrane that covers the brain?	
	a	Dura mater
	b	Dendrites
	c	Fascia Lata
	d	axon
73	Which of the following connects the two hemispheres of the brain	
	a	Pons
	b	Medulla
	c	Mid brain
	d	Callosum
74	Even after the brain of a frog has been crushed, it itself respond to pinch on the leg. This act is an example of	
	a	Conditioned reflex
	b	Simple reflex
	c	Automated motor response
	d	Neurotransmitter induced response
75	Parkinson's Disease patients have which of the following?	
	a	No speech
	b	Cannot swallow
	c	Tremor
	d	Memory loss
76	Gray matter is found in	
	a	Brain
	b	Nerves
	c	Arteries
	d	Veins
77	A person has memory loss, way finding difficulty, misplacing objects, naming difficulty etc. for the past 3-4 years, which of the following is likely?	
	a	Parkinson's disease
	b	Stroke
	c	Epilepsy
	d	Alzheimer's disease
78	What is the term for repeating the same word or letters while speaking?	
	a	Stammering
	b	Praxis
	c	Ataxia
	d	delirium
79	Repolarisation consists of which of the following?	
	a	Na <sup>+</sup> leaves the cell
	b	Ca <sup>++</sup> leaves the cell
	c	K <sup>+</sup> enters the cell
	d	K <sup>+</sup> leaves the cell
80	Which of the following personalities have a condition Myasthenia Gravis ( refers to inability to use the muscles incessantly which causes fatigue)	
	a	Sharuq Khan
	b	Anil Kapoor
	c	Amitabh Bachan
	d	Anupam kher

81	What is the unit of electrical resistance?	
	a	Volt
	b	Ampere
	c	Ohm
	d	Watt
82	Which of the following is a common artifact in EEG recordings?	
	a	Heartbeat
	b	Eye movements
	c	Muscle contractions
	d	All the above
83	What is the value of $\sin(30^\circ)$ ?	
	a	$1/2$
	b	$\sqrt{3}/2$
	c	1
	d	0
84	The mean of 4 numbers is 5. If three of the numbers are 3, 4, and 6, what is the fourth number?	
	a	4
	b	5
	c	6
	d	7
85	Which law states that the current through a conductor between two points is directly proportional to the voltage across the two points?	
	a	Ohm's Law
	b	Faraday's Law
	c	Coulomb's Law
	d	Newton's Law
86	What is the speed of light in a vacuum?	
	a	$3 \times 10^6$ m/s
	b	$3 \times 10^8$ m/s
	c	$3 \times 10^{10}$ m/s
	d	$3 \times 10^{12}$ m/s
87	What is the chemical symbol for gold?	
	a	Ag
	b	Au
	c	Pb
	d	Fe
88	Which element is most abundant in the Earth's crust?	
	a	Oxygen
	b	Silicon
	c	Aluminum
	d	Iron
89	What is the pH of a neutral solution?	
	a	0
	b	7
	c	14
	d	1



90	What is the derivative of $x^2$ ?	
	a	$2x$
	b	$x$
	c	$x^2$
	d	$2x^2$
91	What is the function of an autoclave in a biomedical setting?	
	a	To freeze samples
	b	To sterilize equipment
	c	To measure blood pressure
	d	To scan brain activity
92	What is the main type of bond in organic compounds?	
	a	Ionic bond
	b	Covalent bond
	c	Metallic bond
	d	Hydrogen bond
93	Which among the following waves are used in telecommunication?	
	a	Visible light
	b	Microwaves
	c	Ultraviolet
	d	Infrared
94	Which of the following is the smallest unit of data in a computer?	
	a	Byte
	b	Nibble
	c	Bit
	d	Word
95	What does HTTP stand for?	
	a	Hypertext Transfer Protocol
	b	Hyper Transfer Text Protocol
	c	Hypertext Transmission Protocol
	d	Hyper Transfer Transmission Protocol
96	Which of the following is a non-volatile memory?	
	a	RAM
	b	Hard Disk
	c	Cache
	d	ROM
97	Which resolution is referred as Full HD?	
	a	720p
	b	4K
	c	1080p
	d	1440p
98	What is the work done by a force of 10 N moving an object 5 meters in the direction of the force?	
	a	2 J
	b	15 J
	c	50 J
	d	100 J
99	Which of the following statements is true about a black body?	
	a.	It reflects all incident radiation.
	b	It absorbs all incident radiation.
	c	It transmits all incident radiation.
	d	It emits no radiation.

100	What is the primary function of a notch filter?	
	a	To pass a narrow band of frequencies
	b	To reject a narrow band of frequencies
	c	To pass all frequencies equally
	d	To amplify a narrow band of frequencies