श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकीसंस्थान, तिरुवनंतपुरम्-11
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY
THIRUVANANTHAPURAM—695 011

ENTRANCE EXAMINATION - ACADEMIC SESSION JANUARY 2022

Program: PG Diploma in Neurotechnology

Time:90 Minutes | Max. Marks: 100

(Select the most appropriate answer)
(There are **no negative** marks for wrong answers)

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1 The angular velocity of a body moving with a constant speed v in a circle of radius r is given by

a. V2/r
b. Vr
c. V/r
d. R/v

2 The area under a velocity-time graph represents:

a. acceleration
b. change in acceleration
c. Displacement
d. change in velocity

3 An object moving at constant velocity in an inertial frame must:

a. have a net force on it
b. eventually stop due to gravity
c. not have any force of gravity on it
d. have zero net force on it

4 The point of contact between two nerves is called a/an

a. Axon
b. Dendrite
c. Synapse
d. Node of Ranvier

5 Electric motor converts

a. Electric energy into mechanical energy
b. Mechanical energy into electrical energy
c. Electrical energy into light energy
d. None of above

6 The measure of light gathering capacity of the optical fibre is called

a. Scattering
b. Numerical Aperture
c. Interference
d. Refraction

7 Brass is an alloy of

a. Copper and zinc
b. Copper and nickel
c. Nickel and tin
d. Zinc and nickel

8 The principle of LVDT operation is:

a. Mutual inductance
b. Resistance
c. Capacitance
d. None of these

9 Suspension of slaked lime in water is known as

a. Quick lime
b. Lime water
c. Milk of lime
d. None of these

10 Aqua regia consists of

a. Nitric acid and Hydrochloric acid
b. Sulphuric acid and Hydrochloric acid
c. Nitric acid and Carbonic acid
d. Nitric acid and Sulphuric acid

11 Which among the following metal is stored in kerosene?

a. Aluminium
b. Sodium
c. Bromine
d. Calcium

12 The inertia of a body tends to cause the body to:

a. speed up
b. slow down
c. resist any change in its motion
d. fall toward Earth

13 The mass of a body:

a. is slightly different at different places on Earth
b. is a vector
c. is independent of the free-fall acceleration
d. is the same for all bodies of the same volume

14 A brick slides on a horizontal surface. Which of the following will increase the magnitude of the frictional force on it?

a. Putting a second brick on top
b. Decreasing the surface area of contact
c. Increasing the surface area of contact
d. Decreasing the mass of the brick

15 The element which can be cut with a knife

a. Pottasium
b. Aluminium
c. Magnesium
d. Iron

16 The metal present in haemoglobin is

a. Fe
b. K
c. Al
d. Mg

17 The metal present in chlorophyll is

a. Fe
b. K
c. Al
d. Mg

18 Allotrope of carbon used as a lubricant is

a. Diamond
b. Graphite
c. Fullerene
d. Charcoal

19 An optically active compound

a. changes the direction of polarised light
b. does not allow plane polarised light to pass through
c. rotates the plane of polarised light
d. none of these

20 A metal surface ejects electrons when hit by green light but nothing when hit by yellow light. The electrons will be ejected when the surface is hit by

a. heat rays
b. infrared light
c. red light
d. blue light

21 A tachometer is a device to measure

a. Gravitational pull
b. Speed of rotation
c. Surface tension
d. Tension in a spring

22 A body of mass 1kg is attracted by the earth with a force which is equal to

a. 9.8N
b. 6.67x 1011 m/s2
c. 1 N
d. 9.8m/s

23 The use of notch filter in signal conditioning system is

a. to filter RF noise
b. to filter 50Hz noise from mains
c. to filter the signal from HF noises
d. to attenuate the evoked response potentials.

24 Which part of the brain helps in temperature regulation?

a. Thalamus
b. Hypothalamus
c. Cerebellum
d. Pineal gland

25 Otoscope is an instrument which is used to

a. inspect the abdominal cavity
b. inspect the thorax
c. inspect the stomach
d. inspect the ear drum

26 The structure connecting two hemispheres of the brain is called

a. Corpus callosum
b. Corona radiata
c. Arcuate fasciculus
d. Tegmental tract

27 The unit of electric potential is

a. Volt
b. Ampere
c. Coloumb
d. Farad

28 Find the number if its 25.5 % is153

a. 400
b. 600
c. 550
d. 625

29 Principle of transformer is

a. eddy current
b. mutual induction
c. self induction
d. Joule's law

30 Mirage is a phenomenon due to.

a. reflection of light
b. refraction of light
c. total internal reflection of light
d. diffraction of light

31 Potential barrier developed in a junction diode opposes the flow of

a. electrons in p region
b. holes in p region
c. majority carriers only
d. minority carrier in both regions only

$\frac{26}{30} \times 153$

32 In a half wave rectifier circuit operating from 50 Hz mains frequency, the fundamental frequency in the ripple would be

a. 100 Hz
b. 25 Hz
c. 70.7 Hz
d. 50 Hz

33 Bauxite and cryolite are ore of

a. Iron
b. Aluminium
c. Magnesium
d. Gold

34 The element with the highest conductivity is

a. Gold
b. Iron
c. Silver
d. Carbon

35 Amalgam is an alloy containing

a. Iron
b. Aluminium
c. Magnesium
d. Mercury

36 Which receptors in human retina are important in peripheral vision?

a. Pyramidal cells
b. Cone cells
c. Rod cells
d. Basket cells

37 How many pairs of spinal nerves are present in human body?

a. 31
b. 33
c. 35
d. 37

38 Which organelle is referred to as the 'powerhouse of a cell'?

a. Nucleus
b. Ribosomes
c. Lysosomes
d. Mitochondria

39 An object moves around a circle. If the radius is doubled keeping the speed the same then the magnitude of the centripetal force must be:

a. twice as great
b. half as great
c. four times as great
d. one-fourth as great

40 A potential difference of 10 V is applied across a conductor whose resistance is 2.5 ohm. What is the value of current flowing through it?

a. 4 amperes
b. 2 amperes
c. 6 amperes
d. 10 amperes

41 Which of the following is NOT a component of the central nervous system?

a. Cerebellum
b. Spinal cord
c. Optic nerve
d. Facial nerve

42 The pre and paravertebral ganglia contain

a. Sympathetic neurons
b. Parasympathetic neurons
c. Sensory neurons
d. Somatic motor neurons

43 The activity of an enzyme becomes ineffective

a. at low temperature
b. at atmospheric pressure
c. at high temperature
d. in aqueous medium

44 The current in a simple series circuit is 5.0 amp. When an additional resistance of 2.0 ohms is inserted, the current drops to 4.0 amp. The original resistance of the circuit in ohms was:

a. 1.25
b. 8
c. 10
d. 20

45 The wavelength of the radiation emittec by a body depends upon:

a. the nature of the surface
b. the area of the surface
c. the temperature of die surface
d. all of the above factors

46 Which of the following energy-dependent pumps is important in maintaining the resting membrane potential of neurons?

a. Calcium-sodium pump
b. Sodium-potassium pump
c. Potassium-chloride pump
d. Chloride-calcium pump

47 Which among the following sensory receptors are the most common ones infected with COVID-19 virus?

a. Inner hair cells
b. Ganglion cells
c. Mechano-receptors
d. Olfactory receptors

48 Which body part is important in maintaining body balance?

a. Cerebrum
b. Cerebellum
c. Thalamus
d. Mamillary body

49 Which neurological disease results from an interruption of blood supply to a part of the brain?

a. Migraine
b. Alzheimer's disease
c. Epilepsy
d. Stroke

50 Which among the following is NOT an ear ossicle?

a. Incus
b. Stapedius
c. Malleus
d. Stapes

51 Tendons and ligaments are _____.

a. Muscular tissue
b. Fibrous connective tissue
c. Connective tissue
d. Skeletal tissue

52 Which of these is a disease of the myelin sheath?

a. Leprosy
b. Polio
c. Alzheimer
d. Multiple sclerosis

53 Which of these has the highest permeability in a resting nerve cell?

a. Cl-
b. K+
c. Na+
d. I-

54 Where will the image of a distant object be formed when a person using a concave lens to correc vision, is not using glasses?

a. behind retina
b. in front of the retina
c. on the blindspot
d. on the yellow spot

55 A cornea transplant is never rejected in humans because

a. it consists of enucleated cells
b. it is a non-living layer
c. it has no blood supply
d. its cells are least penetrable by bacteria

56 The transparent lens in the human eye is held in its place by

a. ligaments attached to the ciliary body
b. smooth muscles attached to the iris
c. ligaments attached to the iris
d. smooth muscles attached to the ciliary body

57 Which mirror is to be used to obtain a parallel beam of light from a small lamp?

a. Plane mirror
b. Convex mirror
c. Concave mirror
d. Any one of the above

58 The insulation around nerves is subserved by the following cells.

a. Astrocytes
b. Microglia
c. Schwann cells
d. Ranvier cells

59 A patient's temperature changed daily between 96.8 F and 105.8 F during a course of illness. The temperature recorded on the Celsius scale

a. 37,42
b. 38,41
c. 36,41
d. 36,40.5

60 The complementary mRNA sequence for GGTAAC is

a. CCATTG
b. TTGCCA
c. UUGCCA
d. CCAUUG

61 Which chemical substance affects the Ozone Layer?

a. Hexafluorocarbon
b. Chlorofluorocarbon
c. Chlorine
d. Molecular Carbon

62 Which vitamin deficiency results in pernicious anemia?

a. Vitamin A
b. Vitamin B1
c. Vitamin B6
d. Vitamin B12

63 Force of attraction between the different substances is called

a. Adhesive force
b. Surface tension
c. Cohesive force
d. None of above

64 A divergent lens will produce

a. Always virtual image
b. Always real image
c. Sometimes real and sometimes virtual image
d. None of these

65 A ray is incident at an angle 38° on a mirror, the angle between normal and reflected ray is

a. 90°
b. 52°
c. 38°
d. 76°

66 A gas behaves more closely as an ideal gas at

a. Low pressure and low temperature
b. Low pressure and high temperature
c. High pressure and low temperature
d. High pressure and low temperature

67 Bakelite is an example of

a. elastomer
b. fibre
c. thermoplastic
d. thermosetting polymer

68 Tyndall effect confirms the

a. gravity effect on the sol. Particles
b. light scattering by the sol. Particles
c. heterogeneous nature of sols.
d. Brownian motion of the sol. Particles

69 Shape selective catalysis is a reaction catalysed by

a. zeolite
b. enzymes
c. platinum
d. Ziegler-Natta catalyst

70 SI unit for length is

a. yard
b. meter
c. Centimeter
d. feet

71 Among the following properties describing diamagnetism identify the property that is wrongly stated:

a. Diamagnetic material do not have permanent magnetic moment
b. Diamagnetism is explained in terms of electromagnetic induction
c. Diamagnetic materials have a small positive susceptibility
d. The magnetic moment of individual electrons neutralize each other

72 In which of the following regions of a nephron does maximum reabsorption of useful substances, takes place?

a. Henles loop
b. Glomerulus
c. Proximal convoluted tubule
d. Distal convoluted tubule

73 The apparent change in frequency due to the relative motion between the source and observer is called

a. Harmonic waves
b. Theory of Relativity
c. Doppler effect
d. Photoelectric effect

74 An electron microscope is better than optical microscope because of

a. Comfortable use
b. Low purchasing cost
c. Observation can be taken quickly
d. More resolving power

75 Which of the following is the most accurate statement regarding X-linked transmission of genetic disease?

a. Consecutive generations are not affected
b. Females do not manifest the disease
c. There is no male-to-male transmission
d. Heteroplasmy leads to varying presentations

76 The number of genes in human genome as per the current information is

a. 3,000
b. 30,000
c. 300,000
d. 30,00,000

77 Which among the following is not a classification of EEG waves?

a. Beta waves
b. Alpha waves
c. PQRS waves
d. Theta waves

78 The fluid between the lens and retina of the eye is called

a. Synovial fluid
b. Vitreous humor
c. Cerebrospinal fluid
d. Aqueous humor

79 Which term describes the normal chromosome number in a human somatic cell?

a. Haploid
b. Diploid
c. Triploid
d. Tetraploid

80 Sound waves can pass through

a. air only
b. vacuum
c. air and other states of matter
d. vacuum and other states of matter

81 Perimeter of a square is 40 cm. find the area?

a. 10 cm^2
b. 400 cm^2
c. 100 cm^2
d. 160 cm^2

82 The process of breakdown of aminoacids to synthesize glucose is called as

a. Glycolysis
b. Glycogenolysis
c. Glucogenolysis
d. Gluconeogenesis

83 The type of muscle fibre in human skeletal muscle is

a. Multinuclear striated muscle fibre
b. Uni-nuclear striated muscle fibre
c. Multinuclear smooth muscle fibre
d. Uni-nuclear smooth muscle fibre

84 Acetylcholine is a

a. Hormone
b. Neurotransmitter
c. Cytokine
d. Nutrient

85 The motion of a particle of air, when sound wave passes through it is

a. Periodic
b. Adiabatic
c. Isothermal
d. Oscillatory but not periodic

86 Longitudinal waves are produced in

a. Solids
b. Gases
c. Liquids
d. Solids, gases and liquids

87 The intensity of loudness of sound is measured in unit of

a. Hertz
b. Volt
c. Decibel
d. Ampere

88 The vibrations which a human ear can perceive are called

a. Periodic
b. Ultrasonic
c. Infrasonic
d. Sonic

89 The stesthescope used by doctors works on

a. Refraction of sound
b. Transmission of sound
c. Reflection of sound
d. Interference of sound

90 Sudden withdrawal of hand on touching a hot stove is an example of a

a. Primal fear
b. Classical conditioning
c. Memory-triggered response
d. Spinal reflex

91 Which nerve is responsible for hearing?

a. Facial nerve
b. Trochlear nerve
c. Vestibulocochlear nerve
d. Vagus nerve

92 Which part of brain has control of automatic respiration?

a. Frontal lobe
b. Pons
c. Medulla
d. Thalamus

93 Early loss of recent memory is a feature of which of the following diseases?

a. Parkinson's disease
b. Multiple sclerosis
c. Frontotemporal dementia
d. Alzheimer's disease

94 The normal folds and ridges of the cerebrum are referred to as

a. Gyri
b. Sulci
c. Foliae
d. Nodules

95 The number of vertebrae which contribute to the neck (cervical) portion of human spine is

a. 5
b. 6
c. 7
d. 8

96 What is the main acid secreted in human stomach?

a. Hydrochloric acid
b. Sulphuric acid
c. Acetic acid
d. Ascorbic acid

97 The kinetic energy of gas molecules decreases with

a. Increase in temperature
b. Decrease in temperature
c. Temperature indpendednt
d. None of the above

98 The radioactive isotope of hydrogen contains..... Number of neutrons

a. 0
b. 1
c. 2
d. 3

99 Nucleus was discovered by

a. J J Thomson
b. Neils Bohr
c. Chadvick
d. Rutherford

100 The electron of an atom moves from its valence shell to K shell. It will

a. Absorb energy
b. Release energy
c. Neither absorb or release energy
d. No change will occur

PGDNT- ANSWER KEY JAN 2022

1	c
2	c
3	d
4	c
5	a
6	b
7	a
8	a
9	c
10	a
11	b
12	c
13	c
14	a
15	a
16	a
17	d

18	b
19	c
20	d
21	b
22	a
23	b
24	b
25	d
26	a
27	a
28	b
29	b
30	c
31	c
32	d
33	b
34	c

35	d
36	c
37	a
38	d
39	b
40	a
41	d
42	a
43	c
44	b
45	c
46	b
47	d
48	b
49	d
50	b
51	b

52	d
53	b
54	b
55	c
56	a
57	c
58	c
59	c
60	d
61	b
62	d
63	a
64	a
65	b
66	b
67	d
68	c

69	a
70	b
71	a
72	b
73	c
74	d
75	c
76	b
77	c
78	b
79	b
80	c
81	c
82	d
83	a
84	b
85	a

86	d
87	c
88	d
89	c
90	d
91	c
92	c
93	d
94	a
95	c
96	a
97	b
98	c
99	d
100	b

22 JAN

Shaj Chandran

17/1/22