

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY.
TRIVANDRUM 695 011

ENTRANCE TEST - ACADEMIC SESSION 2017

DIPLOMA IN CARDIAC LABORATORY TECHNOLOGY.

Time 90 Minutes.

Max Mark 100

1. Electrocardiogram is an equipment used to measure the
 - a) Electrical activity of Heart.
 - b) Electrical activity of the human body.
 - c) Movement of heart
 - d) Heart's sound

2. The Blood is carried away from the heart through
 - a) Cells.
 - b) Veins.
 - c) Arteries
 - d) Nerves.

3. The Bio-electric generator of heart is situated at
 - a) Aortic valve
 - b) SA node
 - c) AV node
 - d) the brain

4. Fluoroscopic observations of cardiac catheterization is made by
 - a) Fiber endoscope
 - b) echo cardiograph
 - c) electro cardiogram
 - d) X-ray imaging

5. The active transducer in the measurement of pressure is
 - a) Piezoelectric transducer
 - b) Capacitive transducer
 - c) Strain gauge
 - d) Inductive transducer

6. CMMR is more in
 - a) Single ended amplifier
 - b) differential amplifier
 - c) inverting operational amplifier
 - d) chopper amplifier

7. A fuse wire must have
 - a) High resistivity and high melting point
 - b) High resistivity and low melting point
 - c) Low resistivity and high melting point
 - d) Low resistivity and low melting point

8. What is displacement ?
 - a) Longest distance covered by a body in a random direction.
 - b) Shortest distance covered by a body in a random direction.
 - c) Shortest distance covered by a body in a definite direction.
 - d) Longest distance covered by a body in a definite direction.

9. A man goes 10 meters due east and then 24 meters due north.
Find the distance from the starting point.
 - a) 26 meters
 - b) 24 meters
 - c) 28 meters
 - d) 21 meters

10. Ophthalmoscope is an instrument which is used to
 - a) inspect the eye
 - b) inspect the stomach
 - c) inspect the thorax
 - d) inspect the abdominal cavity

11. The amplifier mostly used for biomedical applications is
 - a) single ended amplifier
 - b) differential amplifier
 - c) inverting amplifier
 - d) chopper amplifier

12. Which instrument is used to measure the power of electric circuit ?
 - a) Voltmeter
 - b) Wattmeter
 - c) Wavemeter
 - d) Viscometer

13. The average value of systolic and diastolic pressure of normal adult are
 - a) 80 to 120 mm Hg
 - b) 120 to 80 mm Hg
 - c) 70 to 140 mm Hg
 - d) 140 to 60 mm Hg

14. The specific resistance of a conductor depends upon
 a) Dimension of the conductor b) Resistance of the conductor
 c) All of the above. d). Composition of conductor material
15. The radio activity taken up is measured by the means of
 a) PIN Diode detector b) thermal detector
 c) silicon detector d) IR detector
16. The unit of electric Current is
 a) Coulomb b) Volt c) Ampere d) Farad
- 17 Which instrument is used to measure altitudes in aircraft's ?
 a)Audiometer b)Ammeter c)Altimeter d)Anemometer
18. A conductor has Zero resistance at
 a) Zero degree centigrade b) - 273 degree centigrade
 b) Zero degree Fahrenheit d) - 273 degree Fahrenheit
19. Which instrument is used to measure curvature of spherical objects ?
 a)Spectroscope b)Spherometer c)Spectrometer d)Sextant
20. Calculate the universal gas constant R, if one mol of gas at S.T.P occupies 22.4 liters.
 a) 7.31 J/mol/K b) 8.31 J/mol/K c) 10 J/mol/K d) 15 J/mol/K
21. Calculate the r.m.s velocity of a gas at 300K given its molecular mass= 32 and R= 8.3 J/mol/K.
 a) 834 m/s b) 348m/s c) 448 m/s d) 483m/s
22. Temperature of the human body is 98.4°F. Find the corresponding temperatures on the Celsius scale.
 a) 309.9°C b) 39.9°C c) 36.9°C d) 40°C
23. Which of the following is dimensionally correct?
 a) Pressure = Energy/ unit area b) Pressure = Energy/ unit volume
 c) Pressure = Force/unit volume d) Pressure = momentum/unit volume/unit time
24. When a mass is rotating in a plane about a fixed point its angular momentum is directed along
 a) radius b) the tangent to the orbit
 c) axis of rotation d) line at an angle 45° to the plane of rotation
25. An instrument used to measure lung volume quantitatively
 a)impedance pneumograph b)Spirometer
 c)ventilator d)nebulizer
26. To operate properly, a transistor's base-emitter junction must be forward biased with reverse bias applied to which junction?
 a)base-emitter b)emitter-base
 c)collector-emitter d)collector-base
27. In a thermodynamic process in which pressure remains constant is called
 a) adiabatic b) isothermal c) isobaric d) isomeric
28. An electron in the conduction band
 a) is bound to its parent atom
 b) is located near the top of the crystal
 c) has no charge
 d) has a higher energy than an electron in the valence band

29. When a normal atom loses an electron, the atom
 a) becomes a positive ion b) becomes a negative ion
 c) becomes electrically neutral d) is free to move about
30. Which instrument is used to determine the intensity of colours ?
 a) Cathetometer b) Chronometer c) Colorimeter d) Commutator
31. The number of significant digits in 0.02480 is
 a) 3 b) 4 c) 5 d) 6
32. Cardiac output is defined as
 a) Heart rate x stroke volume b) respiration rate x stroke volume
 c) Blood flow rate x stroke volume d) Heart rate x blood flow rate
33. A super conducting substance has
 a) positive temperature coefficient b) negative temperature coefficient
 c) low resistance d) zero resistance
34. When transistors are used in digital circuits they usually operate in the:
 a) linear region b) breakdown region
 c) saturation and cutoff regions d) active region
35. Chemical equations are balanced so that they are in accordance with
 a) law of constant composition b) law of conservation of mass
 c) law of multiple proportion d) law of gaseous volumes
36. Cathode ray consists of
 a) high energy electrons b) low energy electrons
 c) high energy protons d) low energy protons
37. Chadwick discovered
 a) protons b) neutrons c) positrons d) none of these
38. Which of the following has the highest wavelength?
 a) γ - rays b) x- rays c) UV rays d) IR rays
39. An electron has the lowest energy when it is
 a) at infinite distance from the nucleus b) in the ground state
 c) in the excited state d) remaining stationary
40. The Bohr model of atom violates
 a) the uncertainty principle b) the quantum theory
 c) the energy sequence rule d) both a & b
41. The modern periodic table is based on
 a) atomic weight b) atomic number c) atomic size d) none of these
42. Rare gases are inert because their valence shell
 a) contains only paired electrons b) has $s^2 p^6$ configuration
 c) contains no d- orbital d) none of these
43. Which law states, "The rate of loss of heat by a body is directly proportional to the difference in temperature between the body and the surroundings."
 a) Doppler's Effect b) Newton's law of cooling c) Kirchhoff's Law d) Stefan's Law
44. When a negative ion is formed, the effective nuclear charge
 a) increases b) decreases c) remains same d) cannot be predicted

45. The most electronegative element is
 a) chlorine b) oxygen c) fluorine d) nitrogen
46. The most abundant element on earth's crust is
 a) hydrogen b) oxygen c) silicon d) aluminum
47. What is refractive index ?
 a) it is defined as the ratio of speed of light in the medium to the speed of light in vacuum.
 b) it is defined as the ratio of speed of light in vacuum to the speed of light in the medium.
 c) it is defined as the product of speed of light in medium and in vacuum.
 d) None of the above
48. An ionic bond is formed by
 a) mutual sharing of electrons b) transfer of electrons
 c) donation and sharing of electrons d) none of these
49. The valence bond theory was developed by
 a) Pauling b) Bohr c) Mullikan d) Hund
50. Bead test is to identify
 a) anions b) cations c) organic substances d) anions and cations
51. Forward reaction will have lowest velocity
 a) at the beginning b) at equilibrium c) towards the end d) at half time
52. In aqueous solution, Na_2SO_4 will be
 a) acidic b) basic c) neutral d) cannot be predicted
53. A girl was born on September 6, 1970, which happened to be a Sunday. Her birthday has again fall on Sunday in .
 a). 1975 b). 1976 c). 1977 d). 1981
54. The mathematical statement of the first law of thermodynamics is
 a) $\Delta E = Q - W$ b) $\Delta E = Q + W$ c) $\Delta E = W - Q$ d) $\Delta E = -Q - W$
55. All the bonds in benzene are equal due to
 a) resonance b) hyperconjugation c) mesomeris d) asymmetric effect
56. Which of the following is the correct acid strength? (A) chloroacetic acid (B) acetic acid
 (C) benzoic acid
 a) $A > B > C$ b) $A > C > B$ c) $B > C > A$ d) $B > A > C$
57. The process occurring in atom bomb is
 a) atomic fusion b) atomic fission c) both a and b d) none of these
58. Carbon dating is used to determine the age of
 a) fossils b) minerals c) trees d) all these
59. The half life period of a radio isotope is 20min. What fraction of it will remain after one hour?
 a) 75% b) 50% c) 25% d) 12.5%
60. The fuel used in nuclear reactor is
 a) heavy water b) graphite c) cadmium d) uranium
61. Which of following is not a property of cathode ray.
 a) Cathode rays are invisible and travel in a straight line.
 b) These rays can ionise gases.
 c) These rays can penetrate through thin metal foils
 d) These rays make materials cool on which they fall.

62. In an ECG machine Lead I, II, III are called
 a) Augmental limb leads b) Unipolar limb leads
 c) Bipolar limb leads d) unipolar augmented limb leads
63. The sum of the first three terms of an A.P is 6 and their product is -10 . Then, the sum of squares of the terms is
 a) 25 b) 36 c) $37/2$ d) 30
64. Newton's Second Law of Motion given
 a) definition for Force b) definition for torque c) equation for force d) none of these
65. A sum of money amounts to Rs.6690 after 3 years and to Rs.10035 after 6 years on compound interest. Find the sum.
 a). 4460 b) 4630 c) 2640 d) 5000
66. It is easier to roll a stone up a sloping road than to lift it vertical upwards because
 a) work done in rolling is more than in lifting
 b) work done in lifting the stone is equal to rolling it
 c) work done in both is same but the rate of doing work is less in rolling
 d) work done in rolling a stone is less than in lifting it
67. If $(1 + ax)^n = 1 + 8x + 24x^2 + \dots$, then a is equal to
 a) 1 b) 2 c) 0 d) 8
68. The absorption of ink by blotting paper involves
 a). viscosity of ink b) capillary action phenomenon
 c) diffusion of ink through the blotting d) siphon action
69. Light from the Sun reaches us in nearly
 a) 2 minutes b) 4 minutes c) 8 minutes d) 16 minutes
70. $4 \cos 20^\circ \cos 40^\circ \cos 80^\circ =$
 a) $1/16$ b) $1/4$ c) $1/2$ d) $-1/2$
71. Nuclear sizes are expressed in a unit named
 a) fermi b) angstrom c) newton d) tesla
72. The maximum value of $\cos 2\theta + \sin \theta$ is
 a) $9/8$ b) $3/4$ c) $5/4$ d) $7/8$
73. The Pa (Pascal) is the unit for
 a) Pressure b) conductivity c) force d) time
74. If the sides of a triangle are 7, $4\sqrt{3}$ and $\sqrt{13}$, then the smallest angle of the triangle is
 a) 15° b) 30° c) 36° d) 45°
75. If $r_1 = r_2 = r_3$, then the triangle is
 a) right angled b) isosceles c) equilateral d) obtuse angled
76. Metals are good conductors of electricity because
 a) the atoms are lightly packed b) they have high melting point
 c) they contain free electrons d) none of the above
77. Which terminal of a PNP transistor is connected to positive supply?
 a) collector b) emitter c) base d) collector & emitter
78. A stick partially immersed in water looks bend, it is a phenomenon of
 a) Reflection b) Parallax view c) Radiation d) Refraction

79. Sound travels with a different speed in media. In what order does the velocity of sound increase in these media?
 a) Water, iron and air b) Iron, air and water
 c) Air, water and iron d) Iron, water and air
80. A car travels 50 miles an hour, and a plane travels 10 miles a minute. How far will the car travel when the plane travels 500 miles?
 a). 50.4 miles b). 37.5 miles c). 41.6 miles d). 39.7 miles
81. If a circle of constant radius $3k$ passes through the origin and meets the axes at A and B, the locus of the centroid of triangle OAB is the circle
 a) $x^2 + y^2 = 4k^2$ b) $x^2 + y^2 = 9k^2$ c) $x^2 + y^2 = k^2$ d) $x^2 + y^2 = 3k^2$
82. The equation $x^2 + 4xy + 4y^2 + 5x + 6y + 1 = 0$ represents
 a) a pair of straight lines b) a circle c) a parabola d) an ellipse
83. The sum of the three angles in an equilateral triangle is
 a) 180° b) 60° c) 360° d) 30°
84. Optical fiber works on the
 a) Refraction b) Total internal reflection c) interference d) polarization
85. If one root of the equation $6x^2 + ax + 6 = 0$ is $2/3$, then the value of a is
 a) 2 b) 3 c) 13 d) -13
86. If A is of order $m \times n$ and B is of order $n \times p$, then AB is of order
 a) $m \times p$ b) $p \times m$ c) $n \times p$ d) $n \times n$
87. If A is a square matrix, then $A + A^T$ is
 a) unit matrix b) null matrix
 c) symmetric matrix d) skew symmetric matrix
88. If the product $AB \neq 0$, then
 a) $A=0, B \neq 0$ b) $A=0$ and $B=0$
 c) either $A=0$ or $B=0$ d) neither A nor B need to be equal to zero
89. An open pipe has fundamental frequency f . If one of its ends is closed, the fundamental frequency is
 a) $2f$ b) $f/2$ c) f d) $4f$
90. The heart sound is recorded by
 a) Electro cardiograph b) Endoscope
 c) Phonocardiography d) Angio cardiography.
91. The number of chambers in human heart is
 a) 1 b) 2 c) 3 d) 4
92. The phase to phase voltage in a normal three phase line is
 a) 200V DC b) 200V AC c) 440V AC d) 440V DC
93. The phase difference between velocity and displacement of a particle executing SHM is
 a) 0 b) $\pi/2$ c) $\pi/4$ d) $\pi/6$
94. One watt-hour is equivalent to
 a) $3.6 \times 10^3 \text{ J}$ b) $6.3 \times 10^3 \text{ J}$ c) $6.3 \times 10^7 \text{ J}$ d) $3.6 \times 10^7 \text{ J}$
95. If an elevator is moving vertically up with acceleration a , the force exerted on the floor by a passenger of mass M is
 a) Ma b) Mg c) $M(g+a)$ d) $M(g-a)$

96. Melting point of ice

- a) 100°C b) 100°F c) 0°C d) 0°F

97. P wave of an eeg signal is related to

- a) Atrial depolarisation b) ventricular depolarization
c)) ventricular repolarization d)b) Atrial repolarization

98. of the following capacitors, which one has the highest dielectric constant?

- a) Air b) paper
c) Mica d) glass

99. Ampere second could be the unit of

- a) Charge b) current
c) Voltage d) power

100. A reduction of 20% in the price of rice enables a purchaser to obtain 2.5 kg more for Rs. 160/- .

Find the original price per Kg of Rice.

- a) Rs. 12 b) Rs. 15 c) Rs. 16 d) Rs. 18

