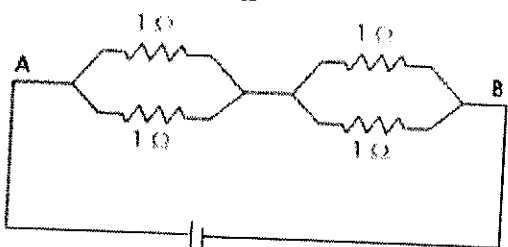


Time 90 Minutes.

Max Mark 100

- Which of the following statements does not represent ohm's law?
 - current / potential difference = constant
 - potential difference / current = constant
 - potential difference = current x resistance
 - current = resistance x potential difference
- The Blood is carried away from the heart through
 - Cells.
 - Veins.
 - Arteries
 - Nerves.
- The Bio-electric generator of heart is situated at
 - Aortic valve
 - SA node
 - AV node
 - the brain
- Which organ is made up of air-carrying tubes and tiny sacs?
 - The brain
 - The lungs
 - The stomach
 - The diaphragm
- The resistance across AB is

 - $4\ \Omega$
 - $1\ \Omega$
 - $2\ \Omega$
 - $0.5\ \Omega$
- The current in a wire _____
 - depends only on the potential difference applied
 - depends only on the resistance of the wire
 - depends on both resistance and potential difference
 - does not depend on resistance and potential difference.
- Which of the following is an ohmic resistor?
 - Diode
 - Germanium
 - Nichrome
 - Diamond
- What is the respiratory system?
 - The body's breathing system
 - The body's system of nerves
 - The body's food-processing system
 - The body's blood-transporting system
- A man goes 10 meters due east and then 24 meters due north.
Find the distance from the starting point.
 - 26 meters
 - 24 meters
 - 28 meters
 - 21 meters
- Ophthalmoscope is an instrument which is used to
 - inspect the eye
 - inspect the stomach
 - inspect the thorax
 - inspect the abdominal cavity

11. Electric shock occurs when electric current flows through the body because:
- a person becomes part of an electric circuit
 - a fatal shock occurs
 - there is no earth leakage
 - a person is not wearing rubber-soled shoes
12. Which instrument is used to measure the power of electric circuit ?
- Voltmeter
 - Wattmeter
 - Wavemeter
 - Viscometer
13. The average value of systolic and diastolic pressure of normal adult are
- 80 to 120 mm Hg
 - 120 to 80 mm Hg
 - 70 to 140 mm Hg
 - 140 to 60 mm Hg
14. The term "duty of care" refers to the:
- tasks that workers must undertake
 - responsibilities of employers to workers' families
 - safety responsibilities of health and safety representatives
 - safety responsibilities of employers and workers and others
15. Insulating mats should be used:
- as the only means of insulation
 - when working on live conductors to improve conduction of electricity
 - when working on live conductors or where accidental contact with live conductors is possible
 - to provide insulation from dirt on the ground or floor
16. The unit of electric Current is
- Coulomb
 - Volt
 - Ampere
 - Farad
17. To prevent transmission of disease:
- hands must be washed before contact with each client
 - gloves must be worn and rinsed between handling clients
 - masks and protective eyewear should always be worn
 - all of the above
18. A conductor has Zero resistance at
- Zero degree centigrade
 - 273 degree centigrade
 - Zero degree Fahrenheit
 - 273 degree Fahrenheit
19. Under the Work Health and safety Act, employers must:
- appoint a safety officer
 - consult with workers, but only with managers
 - provide information, instruction, training and supervision to workers and enable them to work safely
 - all of the above
20. Calculate the universal gas constant R, if one mol of gas at S.T.P occupies 22.4 liters.
- 7.31 J/mol/K
 - 8.31 J/mol/K
 - 10 J/mol/K
 - 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.
- 834 m/s
 - 348m/s
 - 448 m/s
 - 483m/s
22. Temperature of the human body is 98.4°F. Find the corresponding temperatures on the Celsius scale.
- 309.9°C
 - 39.9°C
 - 36.9°C
 - 40°C
23. Which of the following is dimensionally correct?
- Pressure = Energy/ unit area
 - Pressure = Energy/ unit volume
 - Pressure = Force/unit volume
 - Pressure = momentum/unit volume/unit time

24. First aid treatment for burns include:
- placing the burnt area under cool running water
 - removing clothing from the burn area
 - applying any soothing cream or ointment if available
 - all of the above
25. An instrument used to measure lung volume quantitatively
- impedance pneumograph
 - Spirometer
 - ventilator
 - nebulizer
26. To operate properly, a transistor's base-emitter junction must be forward biased with reverse bias applied to which junction?
- base-emitter
 - emitter-base
 - collector-emitter
 - collector-base
27. A material that contains an abundance of free carrier is called
- Insulator
 - Semi-insulator
 - Conductor
 - Semiconductor
28. An electron in the conduction band
- is bound to its parent atom
 - is located near the top of the crystal
 - has no charge
 - has a higher energy than an electron in the valence band
29. In human centred operating theatres, data tells us that the use of Surgical Safety Checklist has :
- Made operating times and waiting lists shorter
 - Helped staff members get to know each other better
 - Improved communication and reduced preventable incidents in theatre
 - Reduced waste in the operating theatre
30. Which instrument is used to determine the intensity of colours ?
- Cathetometer
 - Chronometer
 - Colorimeter
 - Commutator
31. What is displacement ?
- Longest distance covered by a body in a random direction.
 - Shortest distance covered by a body in a random direction.
 - Shortest distance covered by a body in a definite direction.
 - Longest distance covered by a body in a definite direction.
32. Cardiac output is defined as
- Heart rate x stroke volume
 - respiration rate x stroke volume
 - Blood flow rate x stroke volume
 - Heat rate x blood flow rate
33. What is clinical governance?
- Working according to the Code of Conduct
 - Ensuring that you keep your CPD hours up to date
 - Working using the latest textbook and online information
 - A process of reflection, analysis and improvement of practice
34. When transistors are used in digital circuits they usually operate in the:
- linear region
 - breakdown region
 - saturation and cutoff regions
 - active region
35. . The EEG signal is originated from the
- Brain Cells.
 - Motor units.
 - Sino arterial node
 - Acetylcholine.
36. Cathode ray consists of
- high energy electrons
 - low energy electrons
 - high energy protons
 - low energy protons

37. The range of frequency and voltage related to EEG are
 a) 0 to 1000kHz and 0.1mV to few mV b) DC to 10kHz and 10 μ V to 1000 μ V
 c) 0.5 Hz to 100 Hz and 10 μ V to 100 μ V d) 20 Hz to 100 Hz and 0 to few mV
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. EMG deals with the study of
 a) Brain activity b) myocardial activity
 c) muscular activity d) central nervous system
41. Among the following imaging systems, which has more noninvasive character?
 a) Ultrasonic imaging system b) CT imaging system
 c) Nuclear imaging system d) PET system
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) Kirchoff'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. A resistor has a colour band sequence: brown, black, green and gold. Its value is
 a) $1 \text{ k}\Omega \pm 10\%$ b) $1000 \text{ k}\Omega \pm 5\%$ c) $10 \text{ k}\Omega \pm 5\%$ d) $1 \text{ M}\Omega \pm 10\%$
50. Unit of pressure is
 a) N/m^2 b) N/m c) Nm d) Newton
51. An object is placed at the focus of a concave mirror. The image will be
 a) real, inverted, same size at the focus
 b) real, upright, same size at the focus
 c) virtual, inverted, highly enlarged infinity
 d) real, inverted, highly enlarged infinity
52. The resistance of a conductor is inversely proportional to
 a) The length b) The resistivity c) The cross-sectional area d) The pressure

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. What does LED stand for?
 a) Light Emitting Display b) Low Energy Display
 c) Light Emitting Diode d) Light Emitting Detector
62. In an ECGmachine 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 and 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. Name the three leads of a common transistor
 a) Collector Bias Omitter
 b) Base Collector Case
 c) Emitter Collector Bias
 d) Collector Base Emitter
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 schmitt trigger may be used to?
 a) change voltage to corresponding frequency b) Change frequency to voltage
 c) Square slowly varying input d) None of above
69. What is the smallest element of a matter?
 a)atom b)molecule c) crystald. d)wafer2.

70. SR Flip flop can be converted to T-type flip-flop if ?
 a) S is connected to Q b) R is connected to Q
 c) Both S and R are shortend d) S and R are connected to Q and Q' respectively
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. If two resistors are placed in series, is the final resistance:
 a) Higher b) Lower c) The same d) cannot predict
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) 3.6×10^3 J b) 6.3×10^3 J c) 6.3×10^7 J d) 3.6×10^7 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) Atrial repolarization
98. The potential difference required to pass a current 0.2 A in a wire of resistance 20W is ____.
 a) 100 V b) 4V c) 0.01V d) 40V
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
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