

DIPLOMA IN NEURO TECHNOLOGY.

Time 90 Minutes.

Max Mark 100

1. The EEG signal is originated from the  
a) Brain Cells.      b) Motor units.      c) Sino arterial node      d) Acetylcholine.
2. 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 $\mu$ V to 1000 $\mu$ V  
c) 0.5 Hz to 100 Hz and 10 $\mu$ V to 100 $\mu$ V      d) 20 Hz to 100 Hz and 0 to few mV
3. The brain wave with frequency between 8 to 13 Hz and a mean amplitude of 50  $\mu$ V are called  
a) spike and waves due to Epilepsy      b) delta waves      c) theta waves      d) alpha waves
4. The amplifier which has no drift.  
a) Differential Amplifier      b) D C Amplifier  
c) Single ended Amplifier      d) chopper Amplifier
5. CMMR is more in  
a) Single ended amplifier      b) differential amplifier  
c) inverting operational amplifier      d) chopper amplifier
6. 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.
7. EMG deals with the study of  
a) Brain activity      b) myocardial activity  
c) muscular activity      d) central nervous system
8. The normal pH of blood is  
a) 7      b) 7.4      c) 6.6      d) 7.8
9. The ground faults can be avoided by  
a) using 3 pin plug system      b) using fuses in the circuits  
c) using isolated power supply      d) using pure DC alone
10. 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
11. A man is watching two trains one leaving and the other coming in with equal speeds of  $\text{ms}^{-1}$ . If they sound their whistles, each of natural frequency of 250 Hz, the number of beats heard by the man will be (velocity of sound in air =  $320 \text{ ms}^{-1}$ ).  
a) 6      b) 3      c) 0      d) 12
12. Otoscope is an instrument which is used to  
a) inspect the ear drum      b) inspect the stomach  
c) inspect the thorax      d) inspect the abdominal cavity
13. 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
14. Hygrometer is used for measuring  
a) amount of  $\text{O}_2$  in air      b) temperature of air  
c) pressure variation of air      d) humidity of air

15. The length of the simple pendulum is increased by 44%. What is the percentage in its time period?  
 a). 10%      b). 20%      c). 40%      d). 44%
16. The unit of electric potential is  
 a) Coloumb      b) Volt      c) Ampere      d) Farad
17. An oscillator is an amplifier with  
 a) negative feedback      b) positive feedback  
 c) no feedback      d) variable negative feedback
18. An ideal current source is one whose internal resistance is  
 a) very high      b) very low      c) zero      d) infinite
19. 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)  $1\text{ M}\Omega \pm 10\%$
20. Which of these is not an example of an inclined plane?  
 a. ladder      b. stairs      c. wall      d. driveway
21. Unit of pressure is  
 a)  $\text{N/m}^2$       b)  $\text{N/m}$       c)  $\text{Nm}$       d) Newton
22. 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
23. A car is moving with a speed of 72 km/hr. how many meters will it cover in 15 minutes?  
 a)1080      b)16000      c)18000      d)12000
24. Find the number if its 25.5 % is 153  
 a)600      b)501      c)595      d)613
25. what is the role of positive catalyst in a chemical reaction?  
 a)it increases the rate of reaction  
 b)it decreases the rate of reaction  
 c) it increases the yield of the product  
 d) it provides better purity of the products
26. The gas used in a refrigerator is  
 a) cooled down on flowing  
 b) heated up on flowing  
 c) cooled down when compressed  
 d) cooled down when expanded
27. Which one among the following vitamin is necessary for blood clotting  
 a)A      b)D      c)K      d)C
28. which of the following hormones is responsible for the emotional states such as fear, anger and tension and rise in blood pressure and heart rate  
 a) somatotropin      b)oxytocin  
 c) thyroxine      d)adrenaline
29. The blood which leaves the liver and moves to the heart has higher concentration of  
 a)glucose      b)bile pigments      c)bile      d)urea
30. DNA structure was first described by  
 a) Cat Cheside      b) Nirenberg  
 c)Lederberg      d) watson and crick

31. Name the following having oxygen storing capacity?  
 a) myoglobin                      b) prophase 11  
 c) anaphase 11                      d) meataphase 11
32. Movement of toung muscle is controlled by  
 a) facial nerve                      b) trigeminal nerve  
 c) hypoglossal nerve              d) vagus nerve
33. Temperature sensing can be achieved by the use of  
 a) thermocouples                  b) RTDs  
 c) thermistors                      d) all the above
34. Part of brain which controls voluntary action  
 a) cerebrum                          b) cerebellum  
 c) medula oblongata              d) hypothalamus
35. Spinal code has a length of  
 a)42cm              b)45cm              c)48cm              d)50 cm
36. Which one of the following diseases is not transmitted by tiger mosquitos  
 a) dengue                              b) chickungunya  
 c) Japanese encephalitis          d)yellow fever
37. Which one of the following air pollution can affect blood stream leading to death  
 a) Cadmium                            b) Asbestos dust  
 c) carbon monoxide                  d) lead
38. Principle of transformer  
 a) mutual induction                  b) self induction  
 c) eddy current                        d) Joule's law
- 39.The disease caused by deficiency of protein in children is called  
 a)pellagra                              b)marasmus  
 c) beri-beri                              d)rickets
40. What would happen if human blood becomes acidic?  
 a) oxygen carrying capacity of haemoglobin increases  
 b) oxygen carrying capacity of haemoglobin decreases  
 c) will remain same  
 d) none of the above
41. Normal breadth rate of human is  
 a)10-16              b)12-50              c)12-20              d)60-100
42. 20% of 2 is equal to  
 a)20                  b)4                      c)0.4                  d)0.04
43.  $1/\tan\theta$   
 a)  $\sin\theta$               b)cote                  c)cosece              d)seco
44. . How many balls of radius 4cm can be made from a solid sphere of lead  
 Of radius 8cm ?  
 a)4      b)8      c)16      d)2
45. . Perimeter of a square is 40 cm. find the area?  
 a)10 cm<sup>2</sup>              b)400 cm<sup>2</sup>              c)100 cm<sup>2</sup>              d)160 cm<sup>2</sup>
46. A can do a piece of work in 6 days and B can do in 4 days. How long will they take  
 If both work together?  
 a)5/12              b)2.2/5              c)1.1/2              d) none of these

47. The bleaching action of chlorine occurs in the presence of  
 a) moisture                      b) sunlight  
 c) pure oxygen                  d) pure sulphur dioxide
48. Which one among the following statement is correct?  
 a) All bases are alkali  
 b) none of the basis is alkali  
 c) There are no more bases except the alkalies  
 d) all alkalies are bases but all bases are not alkalies
49. 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). 36 , 41                      b). 46 , 51                      c). 26, 41                      d). 16, 41
50. In a periodic table from left to right, the atomic size  
 a) decreases                      b) increases                      c) remains same                      d) none of these
51. Bonding in diamond is  
 a) Covalent    b) Coordinate Covalent    c) Ionic    d) vander Waal's forces
52. 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)  $\Delta E = - Q - W$
53. In CE configuration of amplifier, the resistor in emitter terminal is for  
 a) AC bypassing                      b) Stabilization                      c) higher gain    d) collector biasing
54. Which of the following terms refers to the molecular modeling computational method that uses quantum physics?  
 a) Quantum mechanics                      b) Molecular calculations  
 c) Molecular mechanics                      d) Quantum theory
55. The temperature of a body on Celsius scale is found to be  $x^{\circ}\text{C}$ , when it is measured by Fahrenheit thermometer, it is found to be  $x^{\circ}\text{F}$ . Then x is  
 a). 301.25                      b). 574.25                      c). -313                      d). -40
56. If A and B are two sets,  $A \cap (A' \cap B) =$   
 a)  $\phi$                       b) A                      c) B                      d) B'
57. Scalar Quantities are  
 a) physical quantities which have magnitude only and no direction  
 b) physical quantities which have no magnitude only and only direction  
 c) physical quantities which have magnitude only and direction  
 d) physical quantities which have no magnitude and no direction
58. If  $\alpha, \beta$  are the roots of  $x^2 + ax + b = 0$ , then the roots of  $x^2 - ax + b = 0$  are  
 a)  $\alpha, -\beta$                       b)  $-\alpha, \beta$                       c)  $-\alpha, -\beta$                       d)  $\alpha, \beta$
59. If the  $p^{\text{th}}$  term of an A.P is q and the  $q^{\text{th}}$  term is p, then the  $r^{\text{th}}$  term is  
 a) p-r                      b) q-r                      c) q - p + r                      d) p + q - r
60. 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
61. The first term of a G.P whose second term is 2 and the sum to infinity is 8 is  
 a) 1)                      b) 2                      c) 3                      d) 4

62. Which law is also called law of inertia  
 a) Newton first law    b) Newton second law    c) Newton third law    d) All of above
63. Microorganisms that can only live and grow in the presence of oxygen are called:  
 a) Anaerobe    b) Pathogen    c) Aerobe    d) Mold
64. The arithmetic mean of first 'n' natural numbers is  
 a)  $\frac{n+1}{2}$     b)  $\frac{n(n+1)}{2}$     c)  $n(n+1)$     d)  $n + \frac{1}{2}$
65. In a group of 8 observations, the arithmetic mean of the first 5 items is 15 and that of the next 3 items is 18. The mean of the whole group is  
 a) 16.1    b) 16.6    c) 17.2    d) 17.3
66. The mean of the squares of the first n natural numbers is  
 a)  $\frac{(n+1)(n-1)}{2}$     b)  $n^2/4$     c)  $\frac{(n+1)(2n+1)}{2}$     d)  $n \frac{(n+1)(2n+1)}{6}$
67. Blood is brought back to the heart from the body by  
 a) Cells.    b) Veins.    c) Arteries    d) Nerves.
68. If  $(1+ax)^n = 1 + 8x + 24x^2 + \dots$ , then a is equal to  
 a) 1    b) 2    c) 0    d) 8
69. When a mass is rotating in a plane about a fixed point its angular momentum is directed along  
 a). radius    b). the tangent o the orbit  
 c). axis of rotation    d). line at an angle 45 to the pane of rotion
70. At absolute zero the resistance of a conductor is  
 a) 0    b) 100    c) 230    d) -273
71. An indicator is:  
 a)- Change color with change pH    b)- Resist acidic pH  
 c) - Resist alkaline pH    d)- Weak acid + weak base
72. Heparin is:  
 a)- Protein    b)- Enzyme    c)- Polysaccharide    d)- Oligosaccharide
73. A car traveling at a speed of 54km/h is brought to rest in 90 seconds. Find the retardation.  
 a)  $-1/5m/s^2$     b)  $-1/6m/s^2$     c)  $1/5m/s^2$     d)  $1/6m/s^2$
74. A train of length 200m crosses a bridge of length 600m with a uniform speed of 36km/hr. Time taken by it is  
 a) 50 sec    b) 60sec    c) 70 sec    d) 80 sec
75. Which of the following is an electromagnetic wave ?  
 a) Cathode rays    b) Sound wave    c) Ultrasonic wave    d) Infra red rays
76. An infection that is acquired in the hospital is called a or an \_\_\_\_\_ infection:  
 a) Parasite    b) Pathogen    c) Nosocomial .    d) Anaerobic
77. Pick out the only scalar quantity from the following physical quantity  
 a) velocity    b) torque    c) area    d) electric current
78. What force acting on a mass of 15kg for one minute can change its velocity from 10m/s to 50m/s?  
 a) 5N    b) 10N    c) 15N    d) 20N
79. List the different types of Surface electrodes.  
 a) Metal Plate electrodes    Suction cup electrodes  
 c) Adhesive tape electrodes    all the above

80. Ohms Law states that at constant temperature  
 a)  $V/I = R$                       b)  $V \cdot I = R$                       c)  $I/V = R$                       d)  $I \cdot R = V$
81. When 33 is subtracted from a number it reduces to its  $5/8$ th . What is the number  
 a). 99                      b) 88                      c) 66                      d) 128
82. The frequency of a sinusoidal wave  $y=0.40 \cos(2000t + 0.80)$  is  
 a)  $1000\pi$ Hz                      b) 2000Hz                      c) 20Hz                      d)  $(1000/\pi)$ Hz
83. Regarding the electroencephalogram (EEG), order of brain waves with respect to increase of frequency.  
 a)  $\theta, \delta, \beta, \alpha$                       b)  $\beta, \delta, \alpha, \theta$                       c)  $\delta, \beta, \alpha, \theta$                       d)  $\beta, \alpha, \theta, \delta$
84. The voltage between line and neutral in Indian standard electricity.  
 a) 230 V dc                      b) 230Vac                      c) 400Vdc                      d) 400Vac.
85. The sum of the digits of a two digit number is 11 and their product is 18.  
 The digit at the unit place larger than the digit at the tenth place. What is the number?  
 a). 92                      b). 29                      c). 38                      d). 74
86. The first computer language is  
 a) Basic                      b) Fortran                      c) Pascal                      d) Cobol
87. A and B are parent of C, But C is not the son of A. What is C to A?  
 a) Daughter                      b) Father                      c) Nephew                      d) Aunt
88. Which statement is true regarding radiation hazard:  
 a) Radiation guidelines are set by food and drug act  
 b) Radiation is not transferred into the body  
 c) Radiation does not affect a fetus  
 d) Radiation accidents may be difficult to recognize
89. A stick partially immersed in water looks bend , it is a phenomenon of  
 a) Reflection                      b) Parallax view                      c) Radiation                      d) Refraction
90. The first electronic computer to become widely known as  
 a) UNIVAC                      b) APPLE                      c) IBM                      d) ENIAC
91. Who discovered X-rays  
 a) Becquerel                      b) Curie                      c) Rontgen                      d) Michelson
92. Which part of the brain regulates, heartbeat, breathing and other vital functions?  
 a) brain steam                      b) cerebrum                      c) cerebellum                      d) pituitary gland
93. A carpet of 26 meters X 19 meters was bought at the cost of Rs. 68666/-.  
 What is the cost per square meter?  
 a) Rs.139/-                      b) Rs. 2641/-                      c) Rs. 1525/-                      d) Rs.145/-
94. Type of brain surgery that uses system of three dimensional coordinates to locate the operative site is called?  
 a) Densitometry                      b) stereotatic surgery  
 b) c) microsurgery                      d) laproscopic surgery
95. Density of water is maximum at  
 a)  $0^{\circ}\text{C}$                       b)  $4^{\circ}\text{C}$                       c)  $4^{\circ}\text{K}$                       d) non of the above
96. Melting point of ice  
 a)  $100^{\circ}\text{C}$                       b)  $100^{\circ}\text{F}$                       c)  $0^{\circ}\text{C}$                       d)  $0^{\circ}\text{F}$
97. Video transmission for TV broadcasting is usually on  
 a) AM                      b) PM                      c) FM                      d) non of these.

98. The transistor configuration that possess the highest input impedance

- a) Common base                      b) Common emitter    c) Common collector    d) non of these

99. Darlington pair is used for

- a) High input impedance                      b) High output impedance  
c) Low input impedance                      d) Overload protection

100. How many pairs of crainial nerves in human being

- a) 10    b) 14                      c) 12                      d) 8

