

51/2015

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. Heart wall is divided into different layers. Muscular layer of heart is known as :
(A) Pericardium (B) Myocardium
(C) Endocardium (D) Epicardium
2. Which of the following polymer is stored in the liver of animals?
(A) Amylase (B) Cellulose
(C) Amylopectin (D) Glycogen
3. The transducer used to produce ultrasound in ultrasound imaging is known as :
(A) Strain guage (B) Capacitive transducer
(C) Piezo-electric transducer (D) Silicon diode
4. Which parameter represent noise rejection characteristics of a differential amplifier?
(A) Drift (B) Frequency response
(C) Impedance (D) CMRR
5. Which of the following recorders has highest frequency response?
(A) Electro-static recorder (B) Direct writing recorder
(C) Ink jet recorder (D) Potentiometric recorder
6. Calculate mean arterial pressure if systolic pressure is 120 mm of Hg and diastolic pressure is 90 mm of Hg :
(A) 40 mm of Hg (B) 140 mm of Hg
(C) 60 mm of Hg (D) 100 mm of Hg
7. The frequency of current which produces tingling sensation at 5 mA is :
(A) 50Hz (B) 100Hz
(C) 1KHz (D) 1MHz
8. Which filter is used in EEG machine to remove muscle artefact?
(A) Low pass filter (B) High pass filter
(C) Band reject filter (D) Notch filter

9. Bone vibrator is used in audiometry for the measurement of bone conduction threshold. It transforms :
- Electrical energy into mechanical energy
 - Mechanical energy into electrical energy
 - Electrical energy into thermal energy
 - Thermal energy into electrical energy
10. In fourth generation CT scanner :
- X-ray source and detectors are rotating
 - X-ray source is rotating but Detectors are stationary
 - X-ray source and detectors has linear and rotational movement
 - X-ray source and detectors are stationary
11. Which of the following is used in operation theatres and ICU's for providing suction?
- Compressed air
 - Vacuum
 - Oxygen
 - Nitrous oxide
12. Ethers are isomeric with :
- Aldehydes
 - Vinyl alcohols
 - Alcohols
 - Ketones
13. Which one among the following gases is a good promoter of fire?
- Oxygen
 - Nitrogen
 - Carbondioxide
 - All the above
14. Identify the X-ray receptor in which the image formed is dynamic visible and real time :
- X-ray film
 - X-ray screen-film
 - Fluorescent screen
 - None of these
15. 150 KV is applied between the anode and cathode of a X-ray tube. Calculate the maximum energy of X-ray generated :
- 50 KeV
 - 100KeV
 - 150KeV
 - 200KeV
16. In a centre-tap full wave rectifier, peak voltage between the ends of the transformer secondary is 24V. Find the maximum voltage across the reverse biased diode :
- 24V
 - 12V
 - 48V
 - 6V

17. Electrode used in conductivity meter is made of :
- (A) Gold (B) Platinum
(C) Titanium (D) Silver
18. Which of the following light detectors has 9 to 16 dynodes between photo anode and cathode?
- (A) Photoconductive cell (B) Photomultiplier tube
(C) High vacuum photocell (D) Gas filled photocell
19. What are the characteristics of image formed in compound microscope?
- (A) Real, magnified (B) Virtual, magnified
(C) Real, magnified, inverted (D) Virtual, magnified, inverted
20. In high power objective adjustment of compound microscope :
- (A) Condenser is lowered, iris diaphragm is half opened
(B) Condenser is raised, iris diaphragm is half opened
(C) Condenser is lowered, iris diaphragm is $3/4^{\text{th}}$ opened
(D) Condenser is raised, iris diaphragm is $3/4^{\text{th}}$ opened
21. Which of the following electrode is used as coagulation electrode in ESU?
- (A) Lancet electrode (B) Needle electrode
(C) Ball type electrode (D) Lead plate electrode
22. Choose the correct statement :
- (A) Pyrex glass will break during autoclaving
(B) Thermostable glass containers having liquid inside will break during autoclaving
(C) Pyrex glass has high thermal expansion
(D) All the above
23. Which bio signal is used as stimulating signal for artificial limb?
- (A) ECG (B) EEG
(C) EMG (D) ERG
24. Which of the following EEG electrode has minimum movement artefact?
- (A) Ear clip electrode (B) Pad electrode
(C) Needle electrode (D) Disc electrode
25. Which method is used to get continuous information of blood pressure of a patient?
- (A) Auscultatory method (B) Palpitatory method
(C) Catheterization (D) Automated indirect method

26. Name the EEG wave used for measuring depth of anaesthesia :
- (A) Alpha wave (B) Beta wave
(C) Theta wave (D) Delta wave
27. Statements related to CRT are given below. Select the statement which is wrong :
- (A) When cathode is heated it emits electrons and electrons are accelerated towards phosphor screen
(B) Control grid is given a negative potential while focussing anode and accelerating anode are given positive potential
(C) Focussing anode converges the electron beam
(D) The positive potential on the phosphor screen determines the intensity of electron beam
28. A moving coil galvanometer is converted into ammeter by connecting :
- (A) A low resistance in series (B) A low resistance in parallel
(C) A high resistance in series (D) A high resistance in parallel
29. The audio frequency amplifier which has flat frequency response is :
- (A) RC coupled amplifier (B) Transformer coupled amplifier
(C) Direct coupled amplifier (D) None of these
30. What are the features of transistors used in power amplifier?
- (A) Thick base, small beta, metal casing (B) Thin base, small beta, metal casing
(C) Thin base, large beta, plastic casing (D) Thick base, large beta, plastic casing
31. Tank circuit produces oscillations in an oscillator. Tank circuit of colpitt's oscillator has :
- (A) One capacitor and two inductors (B) Two capacitors and one inductor
(C) Three RC network (D) A transformer and two capacitors
32. Cut off frequencies determines the passband of a filter. Cut off frequencies are the frequencies at which :
- (A) Distortion falls below 81.2% of maximum value
(B) Frequency falls below 70.7% of maximum value
(C) Noise falls below 81.2% of maximum value
(D) Gain falls below 70.7% of maximum value
33. Mutations that arise suddenly in nature are called :
- (A) Chromosomal mutations (B) Induced mutations
(C) Gene mutations (D) Spontaneous mutations

34. SCR is used in high power control circuits. It is switched off by :
- (A) Reducing the gate current (B) Reducing the gate voltage
(C) Reducing the anode voltage (D) Reducing anode current
35. In lead II configuration for ECG measurement, active electrodes are placed at :
(note : RA-Right arm, LA-Left arm, LL- Left leg, RL-Right leg)
- (A) RA and LA (B) LA and LL
(C) RA and LL (D) RA and RL
36. Name the valve connecting right atrium and right ventricle :
- (A) Bicuspid valve (B) Tricuspid valve
(C) Aortic valve (D) Pulmonary valve
37. Blue light emitting LED's are made of :
- (A) SiC (B) GaP
(C) GaN (D) GaAs
38. Unit of X-ray absorption is :
- (A) Rem (B) Roentgen
(C) Rad (D) Curie
39. Efficiency of X- ray production at 200KV diagnosis purpose X-ray tube is :
- (A) 1% (B) 10%
(C) 5% (D) 20%
40. Which of the following instrument assist in the treatment of psychiatric disorder manic depression?
- (A) Spectrophotometer (B) Flame photometer
(C) Chloride meter (D) Conductivity meter
41. The Diffraction grating is working on the principle that :
- (A) Refractive index of prism is same for different frequencies
(B) Refractive index of prism is different for different materials
(C) Refractive index of prism is different for different frequencies
(D) Refractive index of prism is same for different materials
42. Which of the following radio isotope is used in teletherapy units in hospitals for tumour destruction?
- (A) Iodine-53 (B) Cobalt-60
(C) Phosphorous-32 (D) Barium-131

43. The wavelength of visible spectrum is :
(A) 400-700 nm (B) 300-480 nm
(C) 680-880 nm (D) 280-410 nm
44. In ECG waveform repolarization of ventricles is represented by :
(A) P wave (B) QRS complex
(C) T wave (D) U wave
45. 1N4001 is the name of a semiconductor device. Identify it :
(A) UJT (B) SCR
(C) Transistor (D) Diode
46. The principle of X-ray production at Coolidge tube depends on :
(A) Conversion of potential energy into electromagnetic radiation
(B) Conversion of thermal energy into electromagnetic radiation
(C) Conversion of kinetic energy into electromagnetic radiation
(D) Conversion of mechanical energy into electromagnetic radiation
47. The External magnetic field in 1.5T MRI machine is generated using :
(A) A permanent magnet (B) An electromagnet
(C) A superconducting magnet (D) All the above
48. Average velocity of ultrasound in bone is :
(A) 1540 m/s (B) 4080 m/s
(C) 330 m/s (D) 220 m/s
49. Which of the following instrument uses ultrasound for its operation?
(A) Electroencephalograph (B) Magnetoencephalograph
(C) Electromyograph (D) Echoencephaloscope
50. When transistor is used as an amplifier?
(A) Emitter-base junction is reverse biased and collector-base junction is forward biased
(B) Emitter-base junction is forward biased and collector-base junction is reverse biased
(C) Emitter-base junction and collector-base junction are reverse biased
(D) Emitter-base junction and collector-base junction are forward biased
51. A carbon resistor having silver colour in fourth band has a tolerance value of $\pm 50\%$. Find the value of the resistor :
(A) $1K\Omega$ (B) $1.5K\Omega$
(C) $2K\Omega$ (D) 500Ω

52. Resting membrane potential of a living cell is :
- (A) +70 mV (B) -70mV
(C) +120mV (D) -120mV
53. Resting membrane potential of a biological cell is as a result of :
- (A) Diffusion of sodium and chlorine ions across the cell
(B) Diffusion of potassium and chlorine ions across the cell
(C) Diffusion of sodium and potassium ions across the cell
(D) Diffusion of magnesium and potassium ions across the cell
54. Leakage current can cause micro shock to patients. Name an instrument to check the leakage current :
- (A) Ground fault interrupter (B) Line isolation monitor
(C) Receptacle tester (D) Electrical safety analyser
55. One of the options given below is not a characteristics of bioamplifier. Identify :
- (A) High gain (B) Low input impedance
(C) Low output impedance (D) Good frequency response
56. The condition at which heart rate rises above 100 bpm is called :
- (A) Hypertension (B) Hypotension
(C) Tachycardia (D) Bradycardia
57. Name the brain wave which is present during relaxed, eyes closed but not sleeping condition :
- (A) Alpha wave (B) Beta wave
(C) Theta wave (D) Delta wave
58. The natural pacemaker of heart is called :
- (A) AV node (B) AV bundle
(C) Purkinje fibres (D) SA node
59. The ESU Technique in which superficial tissue destruction caused by sparks produced from the electrode placed above the skin is called :
- (A) Cutting (B) Fulguration
(C) Desiccation (D) Blending
60. The equivalent resistance of two, 8Ω resistors connected in parallel is equal to :
- (A) 4Ω (B) 8Ω
(C) 16Ω (D) 32Ω

61. Two copper wires have same length. Area of cross section of one of the wire is twice as that of the other. If the resistance of large area wire is 12Ω , then resistance of other wire is :
- (A) 24Ω (B) 6Ω
 (C) 12Ω (D) 8Ω
62. According to Kirchhoff's current law :
- (A) The sum of voltages around a closed loop is equal to zero
 (B) The sum of incoming currents at a junction is always greater than the sum of outgoing currents
 (C) The algebraic sum of currents meeting at a junction is equal to zero
 (D) The sum of incoming currents at a junction is always less than sum of outgoing currents
63. Which of the following capacitor is polarized?
- (A) Mica capacitor (B) Paper capacitor
 (C) Ceramic capacitor (D) Electrolytic capacitor
64. The equation for finding the charge q stored in a capacitor c is :
- (A) $q = cv$ where v -voltage
 (B) $q = cl$ where l -current
 (C) $q = fc$ where f - frequency
 (D) $q = dc$ where d -distance between the plates
65. Select a variable resistor from the options given below :
- (A) Preset (B) Trimmer
 (C) Padder (D) Triac
66. In a CRO, time Knob is set at 0.5ms/division . 1mV , 500Hz signal is applied to the CRO. Number of divisions in which one cycle of input wave displayed is :
- (A) 1 division (B) 2 divisions
 (C) 3 divisions (D) 4 divisions
67. Give an example for a device which converts light energy into electrical energy :
- (A) Lead zirconium titanate
 (B) Light emitting diode
 (C) Linear variable differential transformer
 (D) Selenium detector
68. One of the following is not a property of JFET :
- (A) Monopolar (B) Voltage controlled
 (C) Thermal runaway (D) High input impedance

69. An amplifier has an input voltage of 1mV and a voltage gain of 40dB. Find the output voltage :
- (A) 100mV (B) 80mV
(C) 1V (D) 4V
70. Which of the following oscillator has highest frequency stability?
- (A) Hartly oscillator (B) Colpitts oscillator
(C) RC oscillator (D) Crystal oscillator
71. Resistance of a semiconductor _____ with increase in temperature.
- (A) Increases (B) Decreases
(C) Remains constant (D) First increases then decreases
72. Name the transistor configuration used for impedance matching :
- (A) Common base configuration (B) Common emitter configuration
(C) Common collector configuration (D) All the above
73. In an elastic collision :
- (A) Both momentum and kinetic energy are constant
(B) Both momentum and kinetic energy are not constant
(C) Only energy is conserved
(D) Only momentum is conserved
74. Select the function of kidney from the options :
- (A) Blood pumping (B) Respiratory rate control
(C) Water and salt balance (D) Temperature control
75. For sterilizing antibiotic solutions _____ is used.
- (A) Autoclave (B) Radiation
(C) Hot air oven (D) Filtration
76. Name a device working on the principle of seebeck effect :
- (A) Solar cell (B) Thermistor
(C) Strain guage (D) Thermocouple
77. Name the electrode used for measuring blood pH :
- (A) Calomel electrode (B) Combination electrode
(C) Tungsten electrode (D) Surface electrode

78. In ventricular systole :
- (A) Semilunar valves closed. Ventricular filling
 - (B) Semilunar valves open. Blood pumped into aorta and pulmonary artery
 - (C) AV valves opened
 - (D) AV valves closed
79. Which of the following is constant in a projectile motion?
- (A) Horizontal component of the velocity
 - (B) Vertical component of the velocity
 - (C) Velocity of projection
 - (D) All of the above
80. The instrument used for measuring bone conduction threshold is :
- (A) Puretone audiometer
 - (B) Speech audiometer
 - (C) Screening audiometer
 - (D) All the above
81. The author of 'Poverty and Unbritish rule in India' is :
- (A) Rajani Kothari
 - (B) Dadabhai Naoroji
 - (C) Lala Lajpath Rai
 - (D) Rajendraprasad
82. The Chief guest of the Sixty-fifth Republic day was :
- (A) Shinzo Abe
 - (B) Junichiro Koizumi
 - (C) Akieabe
 - (D) Yoshihiko Noda
83. Founder of 'Bengal Gazette' :
- (A) Robert Irnight
 - (B) J. Netice
 - (C) R. Williams
 - (D) James Hicky
84. The first session of the Indian National congress was attended by :
- (A) 52 delegates
 - (B) 62 delegates
 - (C) 72 delegates
 - (D) 82 delegates
85. The French possession in Kerala which became the part of Pondicherry :
- (A) Mahe
 - (B) Yanam
 - (C) Karaikkal
 - (D) Chandranagar

86. Government of Kerala observed the 75th Anniversary of the following incident on 12 November 2011 :
- (A) Guruvayur Satyagraha (B) Vaikkam Satyagraha
(C) Temple Entry Proclamation (D) Malabar Mutiny
87. Bhagath Singh Sukh Dev and Rajguru were hanged to death on the charges of throwing bomb in the central assembly hall in Delhi on :
- (A) 23rd March 1930 (B) 23rd March 1931
(C) 23rd March 1932 (D) 23rd March 1933
88. 'Salt Suddenly became a mysterious word, a word of power' who said :
- (A) M.K. Gandhi (B) Lord Irwin
(C) Jawaharlal Nehru (D) Rajagopalachari
89. The crowd who were gathered at Jallian Wallabhag on 13th April 1919 in order to protest against the arrest of :
- (A) Lala Lajpath Rai and Bipin Chandrapal
(B) Rash Behari Bose and Sachin Sanyal
(C) Prafulla Chaki and Khudiram Bose
(D) Saifuddin Kitchlew and Satyapal
90. The place where Beegum Hazrath Mahal gave leadership to the Revolt of 1857 :
- (A) Delhi (B) Lucknow
(C) Kanpur (D) Pune
91. The only Indian who participated in all the three Round Table conference was :
- (A) M.K. Gandhi (B) B.R. Ambedkar
(C) Motilal Nehru (D) W.C. Banerji
92. Identify the correct chronological sequence of the following :
- a. Kakori Revolution b. INA Trial
c. Poona Pact d. Nehru Report
(A) a,d,c,b (B) b,c,d,a
(C) a,c,d,b (D) c,d,a,b

93. Match list-1 with list-2 and select the correct answer from code given below :

List-1		List-2	
(a) Separate Electorate		1. Lord Delhousie	
(b) Introduction of civil service		2. Lord Wellington	
(c) Local Self Government		3. Lord Cornwallis	
(d) Post and Telegraph		4. Lord Rippon	

Codes

	(a)	(b)	(c)	(d)
(A)	2	3	4	1
(B)	4	3	1	2
(C)	3	1	2	4
(D)	1	2	3	4

94. Dyarchy in Province was set up under the :

- (A) Government of India Act 1935
(B) Indian Independence Act 1947
(C) Indian Council Act 1909
(D) Government of India Act 1919

95. The servants of India Society was founded by :

- (A) Annie Besant
(B) Bipin Chandrapal
(C) Gopalakrishana Gokhale
(D) Balagangadhar Thilak

96. Who said, 'No caste, No Religion, No God for man' :

- (A) Sri Narayana guru
(B) Vaikundam swamikal
(C) Ayyankali
(D) Sahodaran Ayyappan

97. The Cabinet Mission Came to India on 4th March 1946 consisted of three British cabinet ministers. They were :

- (A) Pethwick Lawrence, A.V. Alexander and Edward Shils
(B) Pethwick Lawrence, A.V. Alexander and David Apter
(C) Pethwick Lawrence, David Apter and Edward Shils
(D) Pethwick Lawrence, A.V. Alexander and Stafford Cripps

98. Head quarters of Ghadar party was :

- (A) Lucknow
(B) Delhi
(C) New York
(D) Sanfransisco

99. Champaran satyagraha was held in :

- (A) 1915
(B) 1916
(C) 1917
(D) 1918

100. The Princely state which was annexed to the British Dominion in 1848 as per doctrine of Lapse was :

- (A) Nagpur
(B) Avadh
(C) Jhansi
(D) Satara