

178/2014

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. The colour code of a $1\text{ k}\Omega$ resistance is:
(A) Black,brown,red (B) Red,brown,brown
(C) Brown,black,red (D) Black,black,red
2. An ideal voltage source has :
(A) Zero internal resistance (B) Infinite internal resistance
(C) A load-dependent voltage (D) A load-dependent current
3. The scale used with a moving coil meter is :
(A) Linear (B) Non-linear
(C) Square law scale (D) None of the above
4. Electrodynamometer type of instruments can be used to measure :
(A) AC only (B) DC only
(C) Both DC and AC (D) None of the above
5. Which of the following will serve as a donor impurity in silicon?
(A) Boron (B) Indium
(C) Germanium (D) Antimony
6. What is the barrier potential of a silicon diode at room temperature?
(A) 0.3 V (B) 0.7 V
(C) 1 V (D) 2m V per degree Celsius
7. Ripple factor of a full wave rectifier without filter will be :
(A) 0.2 (B) 0.48
(C) 0.24 (D) 1.21
8. The output voltage of a Common Emitter amplifier is :
(A) Amplified (B) Inverted
(C) 180° out of phase with the input (D) All of the above

9. The output waveform of a 555 timer is :
(A) Sinusoidal (B) Triangular
(C) Rectangular (D) Elliptical
10. When Q decreases in a Colpits oscillator, the frequency of oscillation :
(A) Increase (B) Decrease
(C) Remains the same (D) Becomes erratic
11. The property of an ideal Op amp are :
(A) It should have zero input impedance
(B) It should have an infinite output impedance
(C) It should have a zero open loop gain
(D) None of the above
12. An aquadag is used in a CRO to collect :
(A) Primary electrons
(B) Secondary emission electrons
(C) Both primary and secondary emission electrons
(D) None of the above
13. The Diac is a :
(A) Transistor (B) Unidirectional device
(C) Three layer device (D) Bidirectional device
14. The NAND gate output will be low if the two inputs are :
(A) 00 (B) 01
(C) 10 (D) 11
15. A half adder circuit has two inputs and :
(A) One output (B) Two output
(C) Three output (D) None of these
16. The speed of conversion is maximum in :
(A) Successive-approximation A/D converter
(B) Parallel-comparative A/D converter
(C) Counter ramp A/D converter
(D) Dual-slope A/D converter

17. A device which converts BCD to Seven Segment is called:
- (A) Decoder (B) Encoder
(C) Multiplexer (D) Demultiplexer
18. Which technology is used in a CD ROM Drive?
- (A) Mechanical (B) Electromechanical
(C) Optical (D) Fiber optical
19. In 8085 name the 16 bit registers :
- (A) Stack Pointer (B) Program Counter
(C) IR (D) (A) and (B)
20. In 8255, under the I/O mode of operation, we have _____ modes.
- (A) 4 (B) 3
(C) 2 (D) 1
21. Increasing the number of turns of wire on the secondary of a transformer will :
- (A) decrease the secondary current
(B) increase the secondary current
(C) have no effect on the secondary current
(D) increase the primary current
22. Which of the following is an undesirable dynamic characteristic of an instrument?
- (A) Reproducibility (B) Dead zone
(C) Time lag (D) Static error
23. The unit of Magnetic Flux is :
- (A) Tesla (B) Ampere per meter
(C) Weber (D) Lux
24. Strain gauge, thermocouple and LVDT are examples of :
- (A) Active transducers (B) Passive transducers
(C) Analog transducers (D) Primary transducers
25. The degree of reproducibility among several independent measurements of same true value under reference conditions is known as:
- (A) Accuracy (B) Linearity
(C) Precision (D) Calibration

26. Stroboscope is used for measurement of :
(A) Density (B) Viscosity
(C) Speed (D) Magnetic flux
27. Residual voltage in the LVDT is the :
(A) Voltage when the core is at the left side of the null position
(B) Voltage when the core is at the right side of the null position
(C) Maximum available voltage
(D) Voltage when the core is at the null position
28. Flapper nozzle is used in a/an _____ controller.
(A) Pneumatic (B) Electronic
(C) Hydraulic (D) None of these
29. Radiation Pyrometers are used in the temperature range of :
(A) 1200 – 2500°C (B) 500 – 1000°C
(C) 0 – 500°C (D) –250 – 500°C
30. The operation of a rotameter is based on :
(A) rotation of a turbine (B) pressure drop across a nozzle
(C) pressure at a stagnation point (D) variable flow area
31. Which of the following temperature measuring instruments need not touch the object whose temperature is being measured?
(A) Radiation Pyrometer (B) Filled system thermometer
(C) Mercury in glass thermometer (D) Thermocouple
32. A magnetic flow meter is :
(A) based on the principle of Faraday's law
(B) capable of measuring the flow rate of slurries and electrolytes
(C) based on the linear relationship between the fluid flow rate and the induced voltage
(D) all (A), (B) and (C)

33. A proportional controller with a gain of K_C is used to control a first order process. The offset will increase, if :
- (A) K_C is reduced
 - (B) K_C is increased
 - (C) integral control action is introduced
 - (D) derivative control action is introduced
34. Which of the following thermocouples can measure the maximum temperature?
- (A) Platinum-rhodium
 - (B) Chromel-alumel
 - (C) Tungsten-Molybdenum
 - (D) Iron-Constantan
35. Thermistors are made of :
- (A) ultra pure metals
 - (B) iron-copper alloys
 - (C) nickel-chromium alloys
 - (D) metal oxides
36. A barometer measures the _____ pressure.
- (A) Absolute
 - (B) Gauge
 - (C) Absolute as well as gauge
 - (D) Dynamic
37. The strain gauge should have low :
- (A) Resistance temperature coefficient
 - (B) Gauge factor
 - (C) Resistance
 - (D) All of the above
38. Pick the odd one out :
- (A) Pirani gauge
 - (B) Thermocouple gauge
 - (C) McLeod gauge
 - (D) Resistance-wire strain gauge
39. Feed forward controller accounts for the _____ changes.
- (A) set point
 - (B) load
 - (C) both (A) and (B)
 - (D) neither (A) nor (B)
40. Pirani gauge is used for the measurement of :
- (A) liquid level at atmospheric pressure
 - (B) very high pressure
 - (C) liquid level under pressure
 - (D) high vacuum

41. The deflection of the free end of the bimetallic strips in a bimetallic thermometer with temperature is nearly:
- (A) linear (B) non-linear
(C) parabolic (D) hyperbolic
42. Positioning controllers are used for:
- (A) low loads (B) high loads
(C) temperature changes (D) flow rate changes
43. Use of I-control along with P-control facilitates :
- (A) elimination of offset (B) reduction of offset
(C) reduction of stability time (D) none of these
44. Which of the following is not a mechanical pressure sensing element?
- (A) Bellows (B) Diaphragm
(C) Bourdon tube (D) U-tube
45. On-off controllers are normally used for :
- (A) low loads (B) temperature changes
(C) flow rate changes (D) none of these
46. pH meter has :
- (A) one cell (B) two cells
(C) three cells (D) no cell
47. Which of the following is not a differential pressure flow meter ?
- (A) Venturimeter (B) Orifice meter
(C) Rota meter (D) Flow nozzle
48. Very low pressure is expressed in microns(μ), which is equal to _____ mm of Hg column (absolute) at 0°C.
- (A) 0.001 (B) 0.1
(C) 0.01 (D) 0.0001

49. Cascade control means :
- (A) feed forward control (B) more than one feed-back loop
(C) on-off control (D) one feed-back loop
50. On-off control, which is a special case of proportional control, has a band width of about _____ percent.
- (A) 100 (B) 75
(C) 25 (D) 0
51. Solenoid valves are operated by :
- (A) Pneumatic signal (B) Hydraulic signal
(C) Electrical signal (D) None of these
52. A control valve shows the flow is directly proportional to the valve opening for a constant pressure drop is :
- (A) Linear valve (B) Quick opening valve
(C) Equal percentage valve (D) None of the above
53. The scan time of PLC depends on :
- (A) Scan rate
(B) Length of the program
(C) Types of functions used in the program
(D) All the above
54. The input device used for PLC is :
- (A) Push buttons (B) Alarms
(C) Relays (D) All the above
55. The quick opening valve that consist of a metal circular disk with its pivot axes at right angles to the direction of flow in the pipe is called :
- (A) Butterfly valve (B) Ball valve
(C) Globe valve (D) Solenoid valve
56. When transistors are used in digital circuits they usually operate in the :
- (A) active region (B) breakdown region
(C) saturation and cutoff regions (D) linear region

57. Another name for a unity gain amplifier is :
(A) difference amplifier (B) comparator
(C) voltage follower (D) integrator
58. The number of bits used to store a BCD digit is :
(A) 8 (B) 4
(C) 1 (D) 2
59. How will electrons flow through a p-channel JFET?
(A) from source to drain (B) from drain to source
(C) from source to gate (D) from drain to gate
60. What is the reactance value for a capacitor installed in a dc circuit?
(A) Infinite (B) Zero
(C) Moderate (D) Cannot tell
61. How many valence electrons are in every semiconductor material?
(A) 1 (B) 2
(C) 3 (D) 4
62. Voltage regulation requires :
(A) only line regulation (B) only load regulation
(C) a constant load (D) load and line regulation
63. NAND gates means :
(A) Inversion followed by AND gate (B) AND gate followed by an inverter
(C) AND gate followed by an OR gate (D) OR gate followed by an AND gate
64. Total number of cells in the Karnaugh map of a switching function (X,Y,Z) consisting of any three variables is :
(A) 4 (B) 8
(C) 10 (D) 12
65. For a MOSFET, the gate current :
(A) Is dependent on drain current
(B) Is negligibly small
(C) Is independent of gate voltage
(D) Increases with increase in gate voltage

66. Four variable logic expression can be realized using only one :
(A) NAND gate (B) Demultiplexer
(C) 16:1 Multiplexer (D) NOR gate
67. Race around condition occurs in a JK Flip Flop when?
(A) Both the inputs are 0
(B) Both the inputs are 1
(C) The inputs are complementary
(D) Any one of the above input combinations are present
68. The number of Flip Flops required for a MOD- 16 ring counter are :
(A) 4 (B) 8
(C) 12 (D) 16
69. According to Kirchoff's current law :
(A) No current can leave the junction without some current entering into it
(B) Net current flow at the junction is negative
(C) Total sum of currents meeting at the junction is zero
(D) Algebra sum of the currents meeting at the junction is zero
70. Which of the following capacitor can have the highest capacitance value?
(A) Mica (B) Paper
(C) Electrolytic (D) Ceramic
71. The gain of a cascaded amplifier is equal to :
(A) Product of individual gain (B) Sum of individual gain
(C) Ratio of stage gains (D) None of these above
72. A 'd' Arsonval galvanometer can have the instrument error due to :
(A) Humidity (B) High temperature
(C) Friction in bearing (D) Vibration in the taut suspension
73. The time base of a CRO is developed by a :
(A) Sine waveform
(B) Square waveform
(C) Rectangular waveform
(D) Saw tooth waveform

74. The XY recorder records :
- (A) The parameter on digital display
 - (B) One parameter with reference to the other parameter
 - (C) One parameter on the X axis and the other parameter as time on the Y axis
 - (D) One parameter on the Y axis and the other parameter as time on the X axis
75. In a practical RC oscillator, to meet phase shift requirement we need :
- (A) 1 RC section
 - (B) 2 RC section
 - (C) 3 RC section
 - (D) No RC section
76. Which of the following is not true for the HART protocol ?
- (A) It maintains compatibility with the 4-20 mA system
 - (B) It uses no digital communication
 - (C) It is a master/slave protocol
 - (D) It uses twisted pair cables
77. The quality factor 'Q' and dissipation factor 'D' :
- (A) Are same
 - (B) Are not related
 - (C) Are related by $Q=1/D$
 - (D) Are related by $Q=1/2D$
78. Which of the following features is not provided by a Field Bus?
- (A) Increase in Wiring
 - (B) Bi directional digital communication
 - (C) Multi-variable access
 - (D) Remote configuration
79. Pick up the appropriate word for a pointer moving over a scale :
- (A) Instrument
 - (B) Recorder
 - (C) Indicator
 - (D) Transducer
80. Which of the following device is used as a standard for calibrating pressure gauges?
- (A) Dead weight tester
 - (B) Bellows
 - (C) Manometer
 - (D) Piezoelectric transducer
81. Name the river, which is considered as the headwaters of Ganga, that originates from 'Gaymukh' in Gangotri Glacier :
- (A) Bhagirathi
 - (B) Alaknanda
 - (C) Meghna
 - (D) Yamuna

82. The northern most range of Himalaya, consisting of the loftiest peaks with an average height of 6000 metres, is known as :
(A) Himachal (B) Siwalik
(C) Himadri (D) Purvachal
83. Where is India's only active volcano 'Barren' situated?
(A) Lakshadweep (B) Andaman and Nicobar Islands
(C) Dadra and Nagarhaveli (D) Daman and Diu
84. Pick out the name of a Peninsular river of India from the following :
(A) Tapti (B) Nubra
(C) Shyok (D) Hooghly
85. Which is the most populated island among the islands of Lakshadweep?
(A) Agatti (B) Minicoy
(C) Kavaratti (D) Andrott
86. Choose the name of the wind that causes rain and thunderstorm in West Bengal and Assam during summer season :
(A) Loo (B) Chinook
(C) Mango shower (D) Kaal Baisakhi
87. Find out the most populated state in India :
(A) West Bengal (B) Uttar Pradesh
(C) Maharashtra (D) Bihar
88. Name the state in India which has the lowest literacy rate in India :
(A) Arunachal Pradesh (B) Jammu and Kashmir
(C) Bihar (D) Jharkhand
89. World Water day is celebrated every year on :
(A) March 22 (B) March 21
(C) March 20 (D) March 23
90. In which year the Kerala State Civil Supplies Corporation (KSCSC) was established ?
(A) 1978 (B) 1976
(C) 1972 (D) 1974
91. Name the author of 'Ashtangahridaya' :
(A) Vagbhatta (B) Kumara Guru
(C) Vaikundar (D) Dr. Palpu

92. On which day was Ayyankali, the social reformer born?
(A) 1863 July 28 (B) 1863 September 28
(C) 1863 June 28 (D) 1863 August 28
93. The historic Quit India resolution was passed by All India Congress Committee on :
(A) 1942 August 15 (B) 1942 August 8
(C) 1942 September 15 (D) 1942 September 8
94. Who was the founder of Forward Block?
(A) Bhagath Singh (B) Subash Chandra Bose
(C) C.R. Das (D) Rajguru
95. Name the person who led the Ezhava memorial of 1896:
(A) Kumaran Asan (B) Narayana Guru
(C) Dr. Palpu (D) Pandit Karuppan
96. Which is the longest river in Kerala?
(A) Pampa (B) Chaliyar
(C) Periyar (D) Bharathapuzha
97. The Malayali actor who got best actor award in 51st National Film Awards is :
(A) Suresh Gopi (B) Balachandra Menon
(C) Suraj Venjarammud (D) Salim kumar
98. The venue of the world cup football 2014 is :
(A) Spain (B) Brazil
(C) France (D) Argentina
99. The Present Secretary General of U.N.O is from :
(A) Vietnam (B) Indonesia
(C) Thailand (D) South Korea
100. The first Indian talkie feature film was screened on 14 March 1931. The name of that film was :
(A) Alam Ara (B) Bhakta Prahlada
(C) Kalidas (D) Indra Sabha