

024/2016

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. Unit of specific resistance is :
(A) Metre-ohm
(B) Centimeter-ohm-metre
(C) Ohm-meter
(D) Ohm-meter²
2. Find the resistance of a manganin wire with one third the length and one third the diameter of a silver wire of resistance 1Ω . The specific resistance of manganin is 30 times that of silver :
(A) 90Ω
(B) 10Ω
(C) 9Ω
(D) 1Ω
3. When resistors of different values are connected in parallel _____ across each resistor is the same.
(A) Current
(B) Potential drop
(C) Power
(D) Temperature
4. Which among the following is a linear component?
(A) Diode
(B) Varistor
(C) Thermistor
(D) Resistor
5. A short circuited path has practically _____ resistance.
(A) infinite
(B) unit
(C) medium
(D) zero
6. When two 16Ω resistors are connected in parallel to a 24V battery, find the current flowing in the circuit?
(A) 4A
(B) 3A
(C) 2A
(D) 1A
7. Which among the following is an active element?
(A) Resistors
(B) Inductor
(C) Capacitor
(D) None of these

8. A SPDT switch has _____ ON positions :
- (A) One (B) Two
(C) Three (D) None of these
9. Fuses protect the electric circuit against excessive :
- (A) Voltage (B) Temperature
(C) Current (D) (B) & (C)
10. One of the following is not associated with PCB development process :
- (A) Etching (B) Layout
(C) Soldering (D) EDA tools
11. The impurity atoms added to make a N type semiconductor are called :
- (A) Donors (B) Acceptor
(C) Trivalent atom (D) None of these
12. Example for a pentavalent impurity atom is :
- (A) Phosphorous (B) Carbon
(C) Aluminium (D) Galium
13. The barrier voltage for Ge _____ for a rise in temperature.
- (A) increases (B) remains the same
(C) decreases (D) exponentially increases
14. A Schottky diode has _____ junctions.
- (A) one (B) two
(C) three (D) none of these
15. A reverse biased diode is equivalent to an ideal diode in series with a resistance in the range of :
- (A) Ω (B) $M\Omega$
(C) $K\Omega$ (D) none of these
16. Zener diodes with breakdown voltage more than 6V operate under :
- (A) Forward breakdown (B) Reverse breakdown
(C) Zener breakdown (D) Avalanche breakdown

17. Which among the following operates in the reverse biased mode?
 (A) Photodiode (B) light emitting diode
 (C) Schottky diode (D) none of these
18. The PIV of a diode in a half wave rectifier is :
 (A) $2V_m$ (B) V_m
 (C) $V_m/2$ (D) $2V_m/\pi$
19. Find the D.C output voltage of a half wave rectifier circuit that operates at 230V, 50Hz AC supply with a transformer of turns ratio 10:1 :
 (A) 23 V (B) 32.5 V
 (C) 10.35 V (D) none of these
20. The basic application of an inductive filter is in a circuit with :
 (A) low load current (B) high load resistance
 (C) lower capacitance (D) heavy load currents
21. The % voltage regulation of a power supply which gives 95V under full load condition and 100V at no load condition is :
 (A) 0.053 (B) 0.53
 (C) 5.3 (D) 53
22. SCR is :
 (A) Silicon Content Rectifier (B) Silicon Controlled Rectifier
 (C) Silicon Conductive Rectifier (D) None of these
23. Which among the following is a bidirectional device with a gate control?
 (A) UJT (B) SCR
 (C) DIAC (D) TRIAC
24. For proper amplification, a transistor must operate in the _____ region.
 (A) Forward biased (B) Active
 (C) Reverse biased (D) Saturation
25. Thermocouple is a :
 (A) amplifier (B) oscillator
 (C) transducer (D) none of these

26. A transistor amplifier connected in _____ configuration has the highest voltage gain.
- (A) CE (B) CB
(C) CC (D) None of these
27. The power dissipation capability of a transistor can be increased by using a :
- (A) Resistor (B) Capacitor
(C) Heat Source (D) Heat sink
28. Which type of amplifier are used in the initial stages of PA system?
- (A) RC coupled (B) Transformer coupled
(C) Impedance coupled (D) Direct coupled
29. When sine wave is given to an amplifier, the output exists for less than a half cycle. This is an example for _____ amplifier.
- (A) class A (B) class B
(C) class C (D) class AB
30. In order to match a 16Ω loud speaker to an amplifier to get an effective load of 10Ω , the transformer must be with turns ratio :
- (A) 25 (B) 20
(C) 16 (D) 10
31. In a class B push pull amplifier the output signal gets distorted, with a time interval between the positive and negative half cycles. This is called _____ distortion.
- (A) Amplitude (B) Crossover
(C) Frequency (D) None of these
32. FET is a _____ controlled device.
- (A) Current (B) Voltage
(C) Voltage and Current (D) None of these
33. Type of feedback used in oscillator is :
- (A) Positive (B) Negative
(C) Both (A) & (B) (D) Indirect

34. In a Hartley oscillator, the tank circuit has a capacitance of $0.01 \mu\text{F}$ and an inductance of 50mH . Determine the frequency of oscillation :
- (A) 0.7 Hz (B) 7 Hz
(C) 7 KHz (D) none of these
35. The oscillator generally used to generate signals in the audio frequency range is :
- (A) Hartley (B) Colpitts
(C) RC phase shift (D) Crystal
36. A single stage CE amplifier introduces a phase shift of _____ in the output signal.
- (A) 45° (B) 90°
(C) 135° (D) 180°
37. A bistable multivibrator circuit changes from one state to the other :
- (A) automatically (B) when the power turns ON & OFF
(C) when there is a trigger pulse (D) doesn't change state.
38. A circuit that generates a square wave from a sine wave is :
- (A) Integrator (B) Differentiator
(C) Clamper (D) Schmitt trigger
39. The criteria for a good differentiating circuit is that its time constant should be :
- (A) Much smaller than that of the input signal
(B) Much larger than that of input signal
(C) Equal to that of the input signal
(D) None of these
40. A circuit in which a lamp is controlled by two switches in series is equivalent to a logic gate. Identify the gate :
- (A) OR (B) AND
(C) XOR (D) NAND
41. The word 'TELE' in TELEVISION means :
- (A) to see (B) at distance
(C) to transmit (D) to receive

42. Dimension of a TV receiver is specified by _____ of the screen.
- (A) Length (B) Width
(C) Diagonal length (D) None of these
43. Which among the following is not a complimentary colour :
- (A) Yellow (B) Cyan
(C) Magenta (D) Blue
44. The dominant spectral colour of the received light is termed as :
- (A) hue (B) luminance
(C) saturation (D) none of the above
45. Grassmans law is :
- (A) $Y = 0.59R + 0.30G + 0.11B$ (B) $Y = 0.59B + 0.30G + 0.11R$
(C) $Y = 0.59G + 0.30R + 0.11B$ (D) None of these
46. Audible frequency range is :
- (A) 20 kHz to 200 kHz (B) 20 Hz to 20 kHz
(C) 200 Hz to 200 kHz (D) none of these
47. Which of the following is not related to a tape recorder?
- (A) pinch roller (B) lens
(C) supply spool (D) leaf switch
48. Highest capacity in an optical disc can be obtained by using a laser beam of _____ light.
- (A) green (B) IR
(C) red (D) blue
49. Microwave frequencies are used for satellite communication because :
- (A) smaller antenna can be used (B) gives high directive gain
(C) gives higher bandwidth (D) all of the above
50. The duration of H sync pulse is :
- (A) $4.7 \mu s$ (B) $1.5 \mu s$
(C) $5.8 \mu s$ (D) $12 \mu s$

51. TV channels used in India are in the _____ band.
(A) UHF (B) VHF
(C) Microwave (D) None of these
52. The intercarrier frequency used for TV transmission in India is :
(A) 4.5 MHz (B) 4.5 KHz
(C) 5.5 MHz (D) 5.5 KHz
53. CCIR-B standard is popularly known as _____ system.
(A) 625 line European (B) 525 line American
(C) 625 line American (D) none of these
54. The TV programmes in America are brighter than in UK, because of :
(A) high mains frequency (B) higher mains voltage
(C) lower mains current (D) none of these
55. Vidicon camera tube is based on the principle of :
(A) Photoemission (B) Photoconduction
(C) Phototropism (D) None of these
56. Night Vision camera tubes are sensitive to :
(A) Visible light (B) UV radiation
(C) Red light (D) IR radiation
57. _____ deflection is used in CRO and _____ deflection in TV tubes.
(A) electrostatic, magnetic (B) magnetic, electrostatic
(C) manual, magnetic (D) manual, electrostatic
58. PIL stands for :
(A) Primary Colours in Line (B) Phosphors in line
(C) Precision in line (D) None of these
59. When the raster gets stretched at the corners, it is called :
(A) Barrel effect (B) Pincushion effect
(C) Ghost effect (D) None of these

60. Picture tubes have high vacuum inside :
- (A) To prevent influence of external magnetic fields
 - (B) To ensure collision free movement of electrons
 - (C) To reduce the weight
 - (D) All of the above
61. Which among the following belong to the TV tuner stage?
- (A) RF amplifier
 - (B) Local oscillator
 - (C) Mixer
 - (D) All of the above
62. H — oscillator's frequency is :
- (A) 100 Hz
 - (B) 50 Hz
 - (C) 15625 Hz
 - (D) 25 Hz
63. AFC circuit is included in the :
- (A) Sound section
 - (B) Tuner section
 - (C) V-deflection section
 - (D) H-deflection section
64. H- sync pulse is separated from a V-sync pulse using a :
- (A) Trap circuit
 - (B) Integrator
 - (C) Differentiator
 - (D) Mixer
65. Which among the following is a merit of an IF stage :
- (A) high gain
 - (B) high selectivity
 - (C) high stability
 - (D) all of the above
66. Which of the following is related with the production of electromagnetic waves by an antenna?
- (A) Maxwell's equation
 - (B) Lenz's law
 - (C) Ohm's law
 - (D) None of these
67. EHT required for a 50 cm size colour picture tube is about :
- (A) 5 KV
 - (B) 10 KV
 - (C) 25 KV
 - (D) less than 5 KV

68. Identify the instrument for testing and alignment of TV receivers :
- (A) Pattern generator (B) Colour bar generator
(C) Wobulator (D) All of the above
69. The fault that occurs when the V-sweep oscillator frequency differs from that of V-sync pulse :
- (A) Picture rolling (B) Diagonal splitting
(C) Keystoning (D) Fold over
70. In order to get global coverage there can be a minimum of _____satellites in the Geostationary orbit.
- (A) 4 (B) 3
(C) 2 (D) 1
71. In HDTV system active scanning lines per frame is :
- (A) 1250 (B) 1175
(C) 1125 (D) 1080
72. For the production of EHT for picture tube, the rectifier used on the secondary side of the transformer is :
- (A) Bridge (B) Center tapped
(C) Half wave (D) Silicon controlled
73. Which among the following is not an advantage of SMPS?
- (A) High efficiency (B) High heat dissipation
(C) Usage of high frequency Transformer (D) Better regulation
74. Identify a technician control in a TV receiver :
- (A) V-hold (B) Contrast control
(C) Channel selection (D) Brightness control
75. The picture tube in which three electron guns are mounted at 120° with respect to each other is :
- (A) PIL (B) Vidicon
(C) Delta gun (D) None of the above

76. The monitor of a CCTV does not have the _____ stage.
- (A) video detector (B) picture tube
(C) sync separator (D) none of the above
77. Radiowaves move in free space with a velocity :
- (A) 3×10^8 m/s (B) 3×10^8 km/s
(C) 0.3×10^8 m/s (D) none of the above
78. Flickering can be eliminated by adopting :
- (A) Progressive scanning (B) Inter laced scanning
(C) both (A) & (B) (D) None of the above
79. AM and FM radio receivers are very similar except for the presence of :
- (A) Mixer (B) Local oscillator
(C) Limiter (D) AF amplifier
80. In TV programmes, picture is _____ modulated and sound is _____ modulated.
- (A) amplitude, amplitude (B) frequency, frequency
(C) frequency, amplitude (D) amplitude, frequency
81. The highest peak in the Eastern Ghats is called
- (A) Kanchenjunga (B) Anamudi
(C) Lakkidi (D) Ambalavayal Peak
82. Name of the plateau that lies between the Aravalli and the Vindhyan ranges
- (A) Malwa plateau (B) Deccan plateau
(C) Talaigao plateau (D) Chota Nagpur plateau
83. Who was the leader of the Kallumala Samaram?
- (A) Karuppan (B) Sahodaran Ayyappan
(C) C.K. Janu (D) Ayyankali
84. Language of the journal *Mahratta* published by Tilak
- (A) Marathi (B) Hindi
(C) English (D) Urdu

85. "No caste, no religion, and no god" : who said it?
(A) Dr. Palpu (B) Sree Narayana Guru
(C) Ayyankali (D) Sahodaran Ayyappan
86. Leader of Pattini Jadha from Malabar to Madras :
(A) P. Krishna Pillai (B) A.K. Gopalan
(C) Mannath Padmanabhan (D) K. Kelappan
87. Founder of Prathyaksha Raksha Sabha :
(A) Kumaran Gurukkal (B) Poikayil Kumaragurudevan
(C) Janu Amma (D) Yohannan Asan
88. "One communalism does not end the other, each feeds on the other and both fatten" who said it?
(A) Gandhiji (B) Jawaharlal Nehru
(C) Rabindranath Tagore (D) Jayaprakash Narayan
89. Which one of the following offered an alternative for the separate electorate (communal award) proposed by Prime Minister Ramsay MacDonald?
(A) Gandhi-Irwin Pact (B) The Act of 1935
(C) Poona Pact (D) Karachi Session of the Congress
90. Editor of the *Vivekodayam* journal :
(A) Ramakrishna Pillai (B) K.P. Kesava Menon
(C) C. Krishnan (D) Kumaran Asan
91. Which city is going to host 2022 winter Olympics hence will become the first to host winter and summer Olympics?
(A) Paris (B) Qatar
(C) Beijing (D) Montreal
92. Author of *The Long Walk to Freedom* :
(A) Booker T. Washington (B) Nelson Mandela
(C) Martin Luther King (D) Tabo Mbeki

93. Nobel Prize in Economics for 2014 was awarded to :
- (A) Jean Tirole (B) Eugene F. Fama
(C) Peter Hansen (D) R.J. Schiller
94. Post-dated cheque is a comment made by Mahatma Ghandhi on :
- (A) Cripps Mission (B) Cabinet Mission
(C) Round Table Conference (D) Act of 1935
95. Who was the founder of Khudai Khidmatgars?
- (A) Nawab Vikar-ul-Mulk (B) Bhagat Singh
(C) Khan Abdul Gafar Khan (D) M.A Jinnah
96. Who started the journal *Al-Islam*?
- (A) Shoukat Ali (B) Moulana Abul Kalam Azad
(C) Abdur Rahiman (D) Vakkom Moulavi
97. 'Safety Valve' theory is associated with one of the following :
- (A) Indian National Congress (B) Communist Party
(C) BJP (D) Muslim League
98. Formation of Thriu-Cochin (Travancorre-Cochin) State was in :
- (A) 1956 (B) 1949
(C) 1947 (D) 1946
99. Year of Vaikom Satyagrah :
- (A) 1924 (B) 1926
(C) 1930 (D) 1932
100. NITI Ayog replaces one of the following :
- (A) UGC
(B) Planning Commission
(C) Trade & Economic Relations Committee
(D) SEBI