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1. Which of the film won the National award for the best education film in 2021 ?
(A) Jackal (B) Apples and Oranges
(C) Wild Kamafaka (D) Marakkar Arabikadalinte Simham
2. Which article in the Indian constitution is related to secularism ?
(A) Article 51 (A) (B) Article 14 (C) Article 25 (D) Article 17
3. Gandhiji's concept of Sarvodaya means :
(A) Welfare for all (B) Brahmacharya (C) Ahimsa (D) Live peacefully
4. The Lokpal Lokayutas Acts, 2013 came into effect from :
(A) January - 26, 2014 (B) December - 16, 2013
(C) December - 26, 2013 (D) January - 16, 2014
5. Agasthiar falls is located in _____.
(A) Kalakkad (B) Coutralam (C) Kumararkovil (D) Papanasam
6. Who is the current CEO of NITI Ayog ?
(A) Amitab Kant (B) Shaktikanta Das
(C) Montek Sing Ahluwalia (D) N.K. Singh
7. The theme of World Environment Day 2021 is :
(A) Restore our Earths (B) Seven Billion Dreams
(C) Connecting people with nature (D) Eco-system Restoration
8. Thalolam scheme means :
(A) To provide free treatment to the children below age of eighteen
(B) Acts as a relief measure for the Endosulfan victims in the state
(C) Provide free medicines through mobiles clinics and counselling service to senior citizens
(D) Financial aid for poor people suffering from serious ailments
9. Ritty Lukose describes _____ as the "Political father of the Eahavas".
(A) Sree Narayana Guru (B) Dr. Palpu
(C) Kumaranasan (D) Nadaraja Guru
10. The present Director of Kerala Institute of Local Administration (KILA) :
(A) M.V. Govindan (B) Sarada G Muraleedharan
(C) Dr. Joy Elamon (D) Hardeep Singh Puri

11. The resistance of a parallel circuit consisting of two resistors is $12\ \Omega$. One of the resistance wires breaks and the effective resistance becomes $18\ \Omega$. The resistance of the broken wire is :
- (A) $48\ \Omega$ (B) $18\ \Omega$ (C) $36\ \Omega$ (D) $24\ \Omega$
12. When an electric current flows through a conductor, its temperature rises. This is because of :
- (A) Mutual collision of metal atoms
 (B) Mutual collision between conducting electrons
 (C) Collision between conduction electrons and atoms
 (D) Release of conduction electrons from parent atoms
13. Two lamps of $200\ \text{W}$, $220\ \text{V}$, and $100\ \text{W}$, $220\ \text{V}$ are connected in series across $220\ \text{V}$ supply. The ratio of current through them will be :
- (A) $1:2$ (B) $1:1$ (C) $2:1$ (D) $1:4$
14. A battery is connected to a resistance causing a current of $0.5\ \text{A}$ in the circuit. The current drops to $0.4\ \text{A}$ when an additional resistance of $5\ \Omega$ is connected in series. The current will drop to $0.2\ \text{A}$ when the resistance is further increased by :
- (A) $10\ \Omega$ (B) $15\ \Omega$ (C) $25\ \Omega$ (D) $40\ \Omega$
15. A voltage source of EMF E volts and internal resistance $R\ \Omega$ will supply, on short circuit, a current of :
- (A) E/R Amperes (B) Zero (C) Infinite (D) $E \times R$ Amperes
16. The nodal analysis is primarily based on the application of :
- (A) Ohm's law (B) Kirchoff's current law
 (C) Kirchoff's voltage law (D) Both (A) and (B)
17. Which of the following is a scalar quantity ?
- (A) Electric field strength (B) Electric displacement density
 (C) Electric potential (D) Force
18. A coil wound over an iron ring carries certain current and establishes flux in the ring. If the area of x-section of the ring is doubled, the flux density in the core :
- (A) is double of the previous value (B) is half of the previous value
 (C) is same as the previous value (D) is not possible to predict

19. The property of a coil by which a counter emf is induced in it when the current through the coil changes, is called the :
- (A) self-inductance (B) mutual inductance
(C) capacitance (D) None of these
20. A 50 Hz ac voltage is measured with a moving iron voltmeter and a rectifier type ac voltmeter connected in parallel. If the meter readings are V_1 and V_2 respectively and the meters are free from calibration errors, then the form factor of the ac voltage may be estimated as :
- (A) $\frac{V_1}{V_2}$ (B) $1.11 \frac{V_1}{V_2}$ (C) $2 \frac{V_1}{V_2}$ (D) $\frac{\pi}{2} \frac{V_1}{V_2}$
21. An ac source having a voltage $E=110 \sin\left(\omega t + \frac{\pi}{3}\right)$ is connected in an ac circuit. If the current drawn from the circuit varies as $I=5 \sin\left(\omega t - \frac{\pi}{3}\right)$ the impedance of the circuit will be :
- (A) 22Ω (B) 16Ω (C) 30.8Ω (D) None of these
22. A coil having a resistance of 5Ω and inductance of 0.1 H is connected in series with a condenser of capacitance $50 \mu\text{F}$. A constant alternating voltage of 200 V is applied to the circuit. The voltage across the coil at resonance is :
- (A) 200 V (B) 1788 V (C) 1800 V (D) 2000 V
23. Three equal impedances are first connected in delta across a 3-phase balanced supply. If the same impedances are connected in star across the same supply.
- (A) Phase current will be one-third
(B) Line current will be one-third
(C) Power consumed will be one-third
(D) None of the above
24. W_1 and W_2 are the readings of two-watt meters used to measure power of a 3-phase balanced load. The reactive power drawn by the load is :
- (A) $W_1 + W_2$ (B) $W_1 - W_2$ (C) $\sqrt{3}(W_1 + W_2)$ (D) $\sqrt{3}(W_1 - W_2)$

25. The lamps of 40 W, 60 W and 100 W ratings are connected in different phases of a 3-phase four wire supply. If the neutral wire breaks, then the lamp likely to fuse first will be :
- (A) 100 W (B) 60 W (C) 40 W (D) All lamps
26. The superposition theorem requires as many circuits to be solved as there are :
- (A) Nodes (B) Sources
(C) Nodes and sources (D) Meshes
27. Which of the following theorem is applicable for both linear and nonlinear circuits ?
- (A) Superposition (B) Thevenin's (C) Norton's (D) None of these
28. A 12 V source with an internal resistance of 1.2Ω is connected across a wire wound resistor. Maximum power will be dissipated in the resistor when its resistance is equal to :
- (A) Zero (B) 1.2Ω (C) 12Ω (D) ∞
29. For connecting two voltage sources in parallel, which of the parameters should be equal ?
- (A) Phase and Magnitude (B) Frequency and Magnitude
(C) Phase and Frequency (D) Frequency, Phase and Magnitude
30. When 20Ω and 30Ω connected in parallel, the parallel combination is connected in series with another parallel combination of 10Ω and 15Ω , and this series and parallel combination is connected across a dc source of 100 V. The current supplied by the source is :
- (A) 5.5 A (B) 7 A (C) 8 A (D) 10 A
31. Thevenin's resistance R_{Th} is determined :
- (A) By short circuiting the given two terminals
(B) By removing the voltage sources along with their internal resistances
(C) Between any two open terminals
(D) Between the same open terminals as for V_{Th}
32. Which of the following statement is correct ?
- (A) Norton's equivalent resistance is the same as Thevenin's equivalent resistance
(B) Norton's equivalent is the current equivalent of the network
(C) The load is connected in parallel to Norton's equivalent resistance and Norton's current source
(D) (A), (B) and (C)

33. An inductance of 8.0 mH is in series with two inductances in parallel, one of 3.0 mH and the other 6.0 mH. the equivalent inductance is _____.
- (A) 11 mH (B) 9 mH (C) 12 mH (D) 10.0 mH
34. Maximum power output is obtained from a network when the load resistance is equal to the output resistance of the network as seen from the terminals of the load. This statement is associated with _____.
- (A) Thevenin's theorem (B) Maximum power transfer theorem
(C) Superposition theorem (D) None of these
35. A network having one or more than one source of emf is known as _____ network.
- (A) passive (B) active (C) linear (D) nonlinear
36. Fleming's left-hand rule is applicable to :
- (A) dc generator (B) dc motor (C) alternator (D) transformer
37. Consider the following statements regarding speed control of dc motors :
- (i) Ward Leonard method is suitable for constant torque drive.
(ii) Field control method facilitate speed control below the base speed.
(iii) Armature resistance control method is more efficient when compared to the Ward Leonard method.
(iv) Field control method is suitable for constant power drives.
- Of the statements :
- (A) (i), (ii) and (iii) are correct (B) (i), (iii) and (iv) are correct
(C) (ii), (iii) and (iv) are correct (D) (i) and (iv) are correct
38. The emf induced in a conductor rotating in a bipolar field is :
- (A) dc (B) ac (C) both dc and ac (D) none of these
39. A 200 V dc machine has an armature resistance of 0.5. If the full load armature current is 30 A, the induced emf when the machine run (i) as a generator and (ii) as a motor will be :
- (A) 230 V, 170 V (B) 225 V, 175 V (C) 185 V, 215 V (D) 215 V, 185 V
40. A dc series motor develops a torque of 20 Nm at 3 A of load current. If the current is increased to 6 A, the torque developed will be :
- (A) 10 Nm (B) 20 Nm (C) 80 Nm (D) 40 Nm

41. A transformer is so designed that primary and secondary have :
- (A) High leakage reactance (B) Large resistance
(C) Tight magnetic coupling (D) Good electric coupling
42. A single phase 50 Hz core type transformer has square cores of 20 cm side. The permissible flux density is 1 Wb/m². If the stacking factor is 0.9, the voltage induced per turn is :
- (A) 6 (B) 11 (C) 8 (D) 14
43. A 2 kVA transformer has iron loss of 150 W and full load copper loss of 250 W. The maximum efficiency of the transformer would occur when the total loss is :
- (A) 400 W (B) 300 W (C) 600 W (D) 500 W
44. Regarding the working component I_w and magnetizing component I_m of the no load primary current of a transformer, which of the following statement is true ?
- (A) $I_w < I_m$ (B) $I_w > I_m$ (C) $I_w = I_m$ (D) $I_w/I_m = \text{constant}$
45. When a 400 Hz transformer is operated at 50 Hz its kVA rating is :
- (A) Reduced to 1/8 (B) Increased 8 times
(C) Unaffected (D) Determined by load on secondary
46. In a synchronous machine, the voltage induced by armature reaction flux acts like the voltage drop in :
- (A) Inductive reactance (B) Resistance
(C) Capacitive reactance (D) Inductive impedance
47. In which coil the harmonic component of the generated emf will be more :
- (A) full-pitch coil (B) short-pitch coil (C) long-pitch coil (D) none of these
48. The purpose of damper winding in an alternator is :
- (A) To reduce hunting (B) To reduce hunting and to help while starting
(C) To help in starting (D) All of the above
49. The load taken up by the alternator directly depends upon the driving torque and :
- (A) excitation (B) load current
(C) load speed characteristics (D) angular advance of its rotor

50. The load angle of a synchronous generator is the angle between the excitation voltage and :
 (A) bus bar voltage (B) bus bar current
 (C) bus bar impedance (D) none of these
51. A synchronous motor operates only at the synchronous speed which is determined by the :
 (A) back emf and flux
 (B) number of poles and supply frequency
 (C) supply voltage and the synchronous impedance
 (D) back emf and the supply frequency
52. A synchronous motor draws minimum current when the pf of the motor is :
 (A) zero (B) 0.6 leading (C) 0.6 lagging (D) unity
53. The speed of a synchronous motor can be varied by varying its :
 (A) excitation (B) supply voltage (C) load (D) frequency
54. The total steady state torque to drive the synchronous motor and the load at synchronous speed is known as _____ torque.
 (A) reluctance (B) pull-out (C) synchronous (D) average
55. What is the condition to obtain the maximum starting torque of an induction motor ?
 (A) $r^2 = x^2$ (B) $2r^2 = x^2$ (C) $r^2 = 3x^2$ (D) $r^2 = 4x^2$
56. The maximum induced emf in an induction motor rotor is at :
 (A) running (B) standstill
 (C) maximum torque (D) maximum efficiency
57. If the slip is 10% in an induction motor; the ratio of rotor copper loss to rotor output is :
 (A) 1 : 8 (B) 1 : 9 (C) 1 : 10 (D) 1 : 11
58. Synchronous wattage of an induction motor is the power transferred across the :
 (A) air-gap to rotor (B) rotor shaft
 (C) supply to stator (D) none of these
59. In an induction motor, if the air-gap is increased :
 (A) speed will reduce (B) efficiency will improve
 (C) pf will be lowered (D) breakdown torque will reduce

60. An increase in rotor circuit reactance of a 3-phase induction motor will :
- (A) reduce starting torque as well as maximum torque
 (B) increase starting torque as well as maximum torque
 (C) increase starting torque and reduce maximum torque
 (D) increase maximum torque and reduce starting torque
61. Which one of the following is not the example of closed loop control system ?
- (A) Auto pilot for an air-craft (B) Liquid level control system
 (C) Electric switch (D) Traffic signal system
62. Inverse Laplace Transform of $\frac{2s+4}{s^2+4s+3}$ is :
- (A) $x(t) = [e^{-t} + e^{-3t}]u(t)$ (B) $x(t) = [e^{-t} + e^{-2t}]u(t)$
 (C) $x(t) = [e^{-2t} + e^{-3t}]u(t)$ (D) $x(t) = [e^t + e^{-3t}]u(t)$
63. Zero initial conditions for a system means :
- (A) system at rest with no energy stored in any of its components
 (B) system at rest with stored energy
 (C) system having zero input
 (D) system without any storage element
64. Steady state error of a control system can be reduced by increasing :
- (A) gain constant of the system
 (B) time constant of the system
 (C) both gain constant and time constant
 (D) none of the above
65. The damping ratio of the characteristic equation $s^2 + 2s + 8 = 0$.
- (A) 0.353 (B) 0.350 (C) 0.30 (D) 0.333
66. Transistor's α and β are related by the equation :
- (A) $\beta = \frac{\alpha}{1+\alpha}$ (B) $\beta = \frac{\alpha}{1-\alpha}$ (C) $\alpha = \frac{\beta}{1+\beta}$ (D) $\alpha = \frac{\beta}{1-\beta}$
67. The arrow in the symbol of a transistor is shown going inside, the transistor is of the type :
- (A) pnp (B) npn (C) pnpn (D) none of these

68. A silicon control rectifier is made of four alternate layers of p-type and n-type of semiconductor. The number of terminals is :
 (A) four (B) five (C) three (D) two
69. In a semiconductor, the energy gap between valence and conduction bands is :
 (A) zero (B) lesser than 5 eV
 (C) more than 5 eV (D) about 15 eV
70. Which of the following diode is used for voltage stabilization ?
 (A) p-n junction (B) Zener (C) Tunnel (D) Hot carrier diode
71. Maximum efficiency of a half wave rectifier is :
 (A) 20.3% (B) 40.6% (C) 50% (D) 81.2%
72. The peak inverse voltage across the diode in a full-wave rectifier using two diodes and a central tapped transformer is :
 (A) $\frac{V_m}{\pi}$ (B) $2V_m$ (C) $\frac{V_m}{\sqrt{2}}$ (D) V_m
73. The binary and hexadecimal number systems, respectively, have radices :
 (A) 2 and 10 (B) 16 and 10 (C) 2 and 16 (D) 16 and 2
74. A logic gate with both inputs equal to 0 gives the output 0; otherwise, its output is 1. Name the logic gate.
 (A) OR gate (B) NOT gate (C) AND gate (D) ENABLE gate
75. Find the binary equivalent of the decimal number 46.
 (A) 101010 (B) 011100 (C) 100111 (D) 110100
76. Find the hexadecimal equivalent of the binary number 11000011.
 (A) CA (B) AE (C) C3 (D) None of these
77. A square wave with a period of 10 μ s drives a T flip-flop. The period of the output signal will be :
 (A) 100 μ s (B) 20 μ s (C) 10 μ s (D) 5 μ s
78. The program which translates the instructions in assembly language into the corresponding binary machine language instruction is called :
 (A) Assembler (B) Loader (C) Compiler (D) Interpreter

79. What is the function of control unit in the CPU ?
- (A) Decoding of program instructions
 - (B) Transfer of data to primary storage
 - (C) Performing logical operations
 - (D) Storage of program instructions
80. Accumulator is a :
- (A) Storage battery for supplying necessary power to the system
 - (B) Hardware which stores one of the operands to be manipulated by the ALU
 - (C) Hardware which stores memory in the memory unit
 - (D) Hardware used to link the control unit with I/O unit
81. Transmitting power remaining the same, if the supply voltage of a dc 2-wire distributor is doubled saving in copper will be :
- (A) 25%
 - (B) 50%
 - (C) 75%
 - (D) 100%
82. ACSR is used in place of copper in overhead lines because of :
- (A) higher current carrying capacity
 - (B) being lighter in weight
 - (C) Economy
 - (D) higher tensile strength
83. Which of the following statements is true regarding Corona ?
- (A) Corona takes place at a voltage lower than breakdown voltage
 - (B) Corona takes place at a voltage higher than breakdown voltage
 - (C) Corona is a current phenomenon
 - (D) Corona increase the transmission line efficiency
84. In a transmission line of negligible resistance, the surge impedance will be :
- (A) $\sqrt{\frac{L}{C}}$
 - (B) $\sqrt{\frac{C}{L}}$
 - (C) $\frac{1}{\sqrt{LC}}$
 - (D) \sqrt{LC}
85. A 6000 kVA, 50 Hz star connected alternator is connected to a 6.6 kV infinite bus bar and is running at 1000 rpm. At no load the synchronising power of alternator with 10% reactance is :
- (A) 1812 kW
 - (B) 3138 kW
 - (C) 1046 kW
 - (D) none of these
86. Thyristors is a generic name for a semiconductor switch having :
- (A) two or more layers
 - (B) four or more layers
 - (C) three or more layers
 - (D) five layers

87. DIAC and TRIAC are :
- (A) single-way switches (B) three-way switches
(C) bidirectional switches (D) none of these
88. In a GTO, the turn-OFF is _____ whereas in SCR, the turn-OFF is _____.
- (A) controlled, uncontrolled (B) uncontrolled, controlled.
(C) controlled, controlled (D) uncontrolled, uncontrolled
89. Compared to the BJT, the MOSFET drive circuit power requirement is :
- (A) higher (B) lesser (C) same as BJT (D) none of these
90. The output dc voltage of single-phase bridge rectifier is :
- (A) $\frac{2V_m \cos\alpha}{\pi}$ (B) $\frac{V_m \cos\alpha}{\pi}$ (C) $\frac{V_m}{2} \cos\alpha$ (D) $2V_m \cos\alpha$
91. Which is the final part of making an idol ?
- (A) Silachanayana (B) Manakalpna (C) Pithanyasa (D) Netronmilana
92. Which is the part in between Kurma and Napumsakasila in a Shadadharaprathishta ?
- (A) Yoganala (B) Padma (C) Nidhikumbha (D) Adharasila
93. Tantrasamuchaya was written by :
- (A) Chennas Narayanan Namboothiripad
(B) Kalpuzha Divakaran Namboothiripad
(C) Isanasivaguru
(D) Vilwamangalam Thrivikrama
94. Which of the following is the famous Tantric text written by Sree Sankaracharya ?
- (A) Vishnusamhita (B) Saradatilakam (C) Prapanchasara (D) Prayogamanjari
95. Maha Sivaratri is celebrated in :
- (A) Vaisakha Krishnapaksha Dvadasi
(B) Jyeshtha Suklapaksha Trayodasi
(C) Phalguna Krishnapaksha Chaturdasi
(D) Pausha Suklapaksha Ekadasi

96. According to 'Viswakarmya' text, which part of a temple denotes throat of a human body ?
(A) Garbhagrha (B) Mandapa (C) Prakara (D) Gopura
97. Ramanujacharya is known to be the proponent of :
(A) Dvaita philosophy (B) Nyaya philosophy
(C) Visishtadvaita philosophy (D) Sudhadvaita philosophy
98. Lalitasahasranama belongs to :
(A) Bhagavatapurana (B) Devibhagavata
(C) Padmapurana (D) Brahmandapurana
99. To which Indian architectural style, Chennakesava temple is associated ?
(A) Hoysala (B) Pallava (C) Chalukya (D) Chola
100. Which part of the Veda is meant by the word 'Vedanta' ?
(A) Samhita (B) Brahmana (C) Aranyaka (D) Upanishad

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