Booklet Series

A

Booklet No.

795553

AEUD

QUESTION BOOKLET

ELECTRICAL ENGINEERING

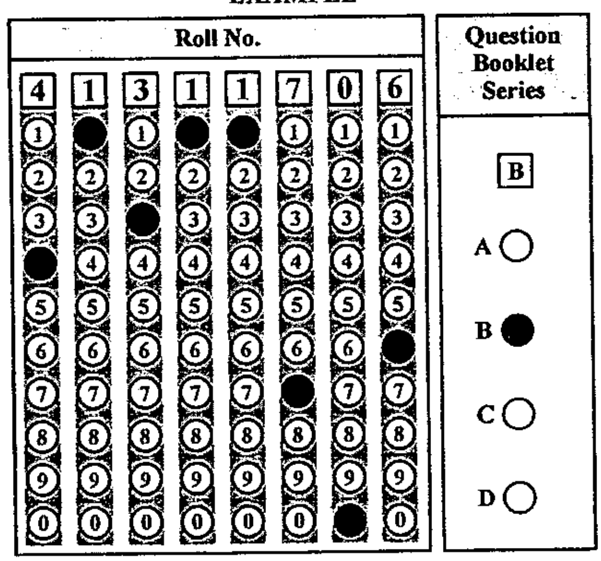
PAPER - II (07)

Time Allowed : 2 Hours **Maximum Marks : 200**

INSTRUCTIONS FOR CANDIDATES

1. Please do not open this Question Booklet until you are told to do so.
2. Candidate must fill up the necessary informations in the space provided on the OMR answer sheet before commencement of the examination.
3. Answer sheet will be processed by electronic device. Invalidation of answer sheet due to incomplete / incorrect filling of relevant circle of Roll No. and Question Booklet Series in the OMR answer sheet shall result in cancellation of candidature. Any deficiency in filling up OMR answer sheet will be the sole responsibility of the candidate.
4. An example is given below how to fill / mark (darken) Roll No. 41311706 and Question Booklet Series - B. Accordingly, you have to fill / mark (darken) the Roll No. and Question Booklet Series given to you in your OMR answer sheet.

EXAMPLE



5. For marking the correct answer, darken one circle by **BLUE BALLPOINT PEN** only.
6. Please do not mark (darken) more than one circle. Darkening more than one circle against an answer will be treated as wrong answer.
7. Do not detach any leaf from this Question Booklet. After the examination, hand over the OMR answer sheet to the Room Invigilator. You are allowed to take the Question Booklet and carbon copy of the OMR answer sheet after examination is over.
8. Each question carries 2 marks. There is no negative marking for any wrong answer.
9. Possession and use of Calculator, Mobile Phone, Pager or any other electronic gadget is strictly prohibited in the Examination Hall.
10. Please abide by the instructions above and those given on the OMR answer sheet, failure to comply these instructions will be sole responsibility of the candidates.

07 - A

1. In a 3-phase, 4 pole, 50 Hz induction motor, the rotor frequency is 1.5 Hz. What will be speed of this motor ?

   (A) 1055 rpm

   (B) 1500 rpm

   (C) 1455 rpm

   (D) 45 rpm

2. Two transformers of different KVA ratings working in parallel share the load in proportion to their ratings when

   (A) per unit leakage impedance on the same KVA base are the same

   (B) per unit leakage impedance on their respective ratings are equal

   (C) ohmic values of leakage impedance are inversely proportional to their ratings

   (D) ohmic values of magnetizing reactance are the same

3. An 8-pole, DC generator has a simplex wave-wound armature containing 32 coils of 6 turns each. Its flux per pole is 0.06 Wb. The machine is running at 250 rpm. The induced armature voltage is

   (A) 96 V

   (B) 192 V

   (C) 384 V

   (D) 768 V

4. Which of the following test is usually conducted to determine the efficiency of traction motors ?

   (A) Field's test

   (B) Swinburne's test

   (C) Hopkinson's test

   (D) Retardation test

5. A commutator is a device fitted to a generator. Its function is

   (A) to prevent sparking when the load changes

   (B) to convert the generated ac voltage into dc voltage

   (C) to convey the current to and from the windings

   (D) to generate a direct current

6. A capacitor start motor is modified by replacing the capacitor by an inductor having same reactance. The motor will

   (A) be damaged

   (B) start but run at lower speed

   (C) start and run at rated speed

   (D) Not start

7. In electrical machines, electrical torque is developed when relative speed between stator field and rotor field is

   (A) zero

   (B) equal to rotor speed

   (C) equal and opposite to rotor speed

   (D) synchronous speed

8. Electromagnetic toque in rotating electrical machinery is present when
(A) air-gap is uniform
(B) stator winding alone carries current
(C) rotor winding alone carries current
(D) both stator and rotor winding carries current

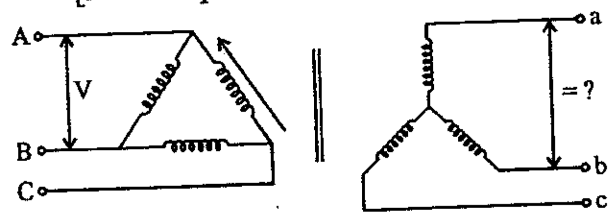
9. An autotransformer is used to step down voltage from V_1 to V_2. An open circuit develops in the winding. The maximum voltage across the load can be
(A) $2 V_1$
(B) $V_1 + V_2$
(C) V_1
(D) $2V_2$

10. The transfer function of a position servo-motor is a second order system whose performance depends on
(A) Loop gain
(B) Controller gain
(C) Time constant of load
(D) Time constant of armature field

11. A 220V, dc shunt motor is operating at a speed of 1440 rpm. The armature resistance is 1 Ω and armature current is 10 A. If the excitation of the machine is reduced to 10%, the additional resistance to be put in the armature circuit to keep the speed and torque constant will be
(A) 1.79 ohm
(B) 2.1 ohm
(C) 3.1 ohm
(D) 18.9 ohm

12. If the current drawn by a series motor is increased from 15 A to 20 A, the torque will be : (Saturation is neglected)
(A) increased by 78%
(B) decreased by 43.75%
(C) increased by 43.75%
(D) decreased by 78%

13. In the following circuit of a 3-phase transformer, the voltage across secondary terminal 'a' and 'b' is [Assume phase turns ratio is 1 : 1]



(A) V
(B) $V/\sqrt{3}$
(C) $\sqrt{3}\,V$
(D) 3 V

14. If an induction motor is run at above synchronous speed, it acts as
(A) A synchronous motor
(B) An induction generator
(C) An induction motor
(D) None of these

15. In a single-phase induction motor, the torque developed is proportional to
(A) $V^{0.5}$
(B) V
(C) $V^{1.5}$
(D) V^2

16. The surge impedance of a 500 km long overhead transmission line is 500 ohms. For a 1000 km length of same line, the surge impedance will be

(A) 1000 ohms

(B) 500 ohms

(C) 200 ohms

(D) 0

17. The power output of a nuclear power station is proportional to

(A) the rate at which fission reaction occurs

(B) square root of the rate at which fission reaction occurs

(C) square of the rate at which fission reaction occurs

(D) None

18. Which material is used in controlling chain reaction in a nuclear reactor ?

(A) Iron rods

(B) Cadmium rods

(C) Graphite rods

(D) Brass rods

19. The incremental cost characteristics of two generators delivering load of 200 MW are as follows

$$\frac{dF_1}{dt} = 2.0 + 0.02P_1, \frac{dF_2}{dt} = 1.2 + 0.04P_2$$

For economical operation, the load sharing for generators is

(A) $P_1 = 80$ MW and $P_2 = 120$ MW

(B) $P_1 = 120$ MW and $P_2 = 80$ MW

(C) $P_1 = 160$ MW and $P_2 = 40$ MW

(D) $P_1 = 40$ MW and $P_2 = 160$ MW

20. The load frequency controller uses

(A) Proportional control only

(B) Integral control only

(C) Both Proportional and Integral control

(D) Either Proportional or Integral control

21. Reactive power compensation helps in

(A) Voltage regulation and power factor improvement

(B) Voltage regulation only

(C) Power factor improvement only

(D) Either Voltage regulation or power factor improvement

22. Equal area criteria is employed to determine

(A) The steady state stability

(B) The transient stability

(C) The reactive power limit

(D) The rating of a circuit breaker

23. Corona losses are minimized when

(A) conductor size is reduced

(B) smooth conductor is used

(C) current density in conductors is reduced

(D) sharp points are provided in line hardware

24. In transmission line, series capacitors are used to

(A) Improve the stability

(B) Improve the voltage

(C) Reduce the fault level

(D) Improve the power factor

25. A hydraulic turbine having rated speed of 250 rpm is connected to asynchronous generator. In order to produce power at 50 Hz, the numbers of poles required in the generator are

(A) 6

(B) 24

(C) 12

(D) 4

26. In an inverse definite minimum time electro-magnetic type over current relay, the minimum time feature is achieved because of

(A) Saturation of magnetic circuit

(B) Proper mechanical design

(C) Appropriate time delay element

(D) Electromagnetic damping

27. The insulation resistance of a cable of length 1 km is 1 MΩ. For a length of 100 km of the same cable, what will be insulation resistance ?

(A) 0.01 MΩ

(B) 100 MΩ

(C) 1 MΩ

(D) 10 MΩ

28. Steady-state stability of a power system is the ability of the power system to

(A) Maintain voltage at the rated value

(B) Maintain frequency at rated value

(C) Maintain a spinning reserve margin all the times

(D) Maintain synchronism

29. The sequence components of the fault current are as follows : $I_{positive} = 2j$ pu, $I_{negative} = -0.5j$ pu, $I_{zero} = -1.5j$ pu. The type of fault in the system is

(A) LG

(B) LL

(C) LLLG

(D) LLG

30. For a linear electromagnetic circuit, the following statement is true:

(A) Field energy is equal to the co-energy

(B) Field energy is lesser than the co-energy

(C) Field energy is greater than the co-energy

(D) Co-energy is zero.

31. A reactance relay is

(A) Voltage restrained overcurrent relay

(B) Voltage restrained directional relay

(C) Directional restrained overcurrent relay

(D) Directional restrained overvoltage relay

32. For harnessing low variable water heads, the suitable hydraulic turbine with high percentage of reaction and runner adjustable vanes is

(A) Kaplan

(B) Francis

(C) Palton

(D) Impeller

33. Which of the following circuit breaker is preferred for capacitor bank switching considering cost and overall effectiveness ?

(A) Vacuum

(B) SF_6

(C) Oil

(D) Air blast

34. For a fixed value of complex power flow in a transmission line with sending end voltage V, the real power loss will be proportional to

(A) V^2

(B) $\frac{1}{V^2}$

(C) V

(D) $\frac{1}{V}$

35. If the fault current is 2000 A, the relay setting is 50% and CT ratio is 400 : 5, the plug setting multiplier will be

(A) 25

(B) 1

(C) 50

(D) 10

36. Diversity factor of a power system is the

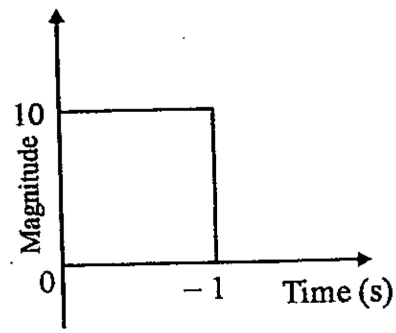
(A) Ratio of sum of consumer's maximum demands to maximum load on the station.

(B) Ratio of average demand to maximum demand.

(C) Reciprocal of (A) above.

(D) Reciprocal of (B) above.

37. The steady state error of a unity feedback linear system for a unit step input is 0.2. The steady state error of the same system, for a pulse input having a magnitude of 10 and a duration of one second, as shown in the figure is



(A) ∞

(B) 0.1

(C) 4

(D) 0

38. A linear system is described by the state-space model $dx/dt = x + 2u$ and $y = 0.5\,x + u$. The transfer function Y(s)/U(s) of the system is

(A) 1

(B) 1/(s + 1)

(C) (s + 2) / (s + 1)

(D) (s + 1) / (s + 2)

39. An open-loop system is described by the following transfer function is

$$G(s)=\frac{(s-10)}{s^3+2s^2+1}$$

(A) Unstable and minimum phase type

(B) Unstable and non-minimum phase type

(C) Stable and minimum phase type

(D) Stable and non-minimum phase type

40. For a given system, Nyquist plot never crosses the negative real axis. In this case, the gain of the system is

(A) Infinite

(B) 0

(C) finite

(D) None of these

41. The transfer function is applicable to which of the following systems

(A) Linear Time Variant systems

(B) Non-linear Time Variant systems

(C) Linear Time Invariant systems

(D) Non-linear Time Invariant systems

42. A system is defined by following state space model

$$X=\begin{bmatrix}0 & 1\\ -2 & -3\end{bmatrix}X+\begin{bmatrix}0\\ 1\end{bmatrix}U, Y=\begin{bmatrix}1 & 1\end{bmatrix}X$$

The system is

(A) Controllable and Observable

(B) Controllable but not observable

(C) Observable but not controllable

(D) Neither Controllable nor Observable

43. A unity feedback system, having a loop transfer function $G(s)H(s)=\frac{K(2-s)}{(2+s)}$ becomes stable when

(A) $|K|<1$

(B) $K>1$

(C) $|K|>1$

(D) $K<-1$

44. The transfer function of a system G(s) is given as $G(s)=\frac{100}{s^2+50s+100}$

The system G(s) is

(A) An over damped system

(B) An under damped system

(C) A critically damped system

(D) An unstable system

45. Consider the loop transfer function $\frac{K(s+2)(s+6)}{(s+1)(s+3)(s+5)}$, the centroid of the root locus will be located at :

(A) -4

(B) -1

(C) -2

(D) -3

46. The transfer function of lead compensator is given as $\frac{(s+p)}{(s+q)}$. The possible values of p and q are :

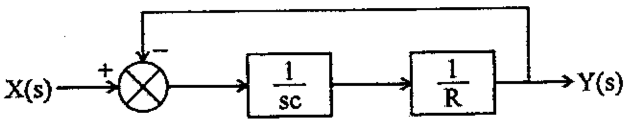
(A) $p=0.5, q=1.5$

(B) $p=1.5, q=0.5$

(C) $p=1.5, q=-0.5$

(D) $p=0.5, q=-1.5$

47. In the following block diagram find the values of R and C if the transfer function of the system is $\frac{Y(s)}{X(s)} = \frac{0.5}{s+5}$.

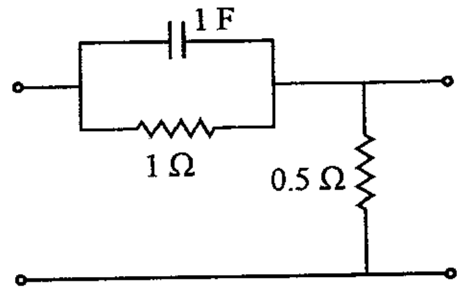


(A) $R = 5\ \Omega, C = 1F$
(B) $R = 10\ \Omega, C = 0.2\ F$
(C) $R = 1\ \Omega, C = 0.5\ F$
(D) $R = 2\ \Omega, C = 5\ F$

48. How many roots of the characteristics equation $s^5 + s^4 + 2s^3 + 2s^2 + 3s + 15 = 0$ lie in the left half of the s plane ?
(A) 2
(B) 4
(C) 5
(D) 3

49. Consider the following statements with the reference to the root loci of the characteristic equation of unity feedback control system with an open loop transfer function of $G(s) = \frac{k(s+1)(s+3)}{s(s+2)(s+4)}$
(1) Each locus starts at an open loop pole and ends either at an open loop zero or infinity.
(2) Each locus starts at an open loop pole or infinity and ends at an open loop zero.
(3) There are three separate root loci.
(4) There are five separate root loci.
Which of these statements are correct ?
(A) 2 and 3
(B) 2 and 4
(C) 1 and 3
(D) 1 and 4

50. For the given phase-lead network, the maximum possible phase lead is

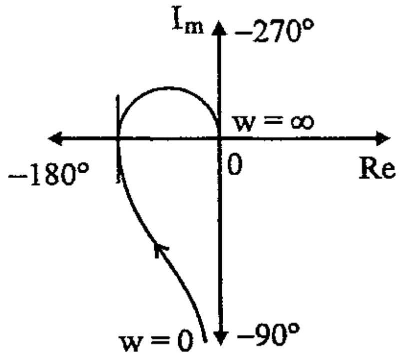


(A) 90°
(B) 60°
(C) 30°
(D) 45°

51. An open loop transfer function G(s) of a unity feedback system is $G(s) = \frac{K}{s(s+1)(s+2)}$. The breakaway point of the root loci on the real axis occurs at
(A) -0.42
(B) -1.58
(C) -0.42 and -1.58
(D) -1

52. A closed loop system is stable if and only if the gain margin is ______ and phase margin is ______.
(A) Positive, Negative
(B) Zero, Zero
(C) Negative, Positive
(D) Positive, Positive

53. The transfer function for the following polar plot is



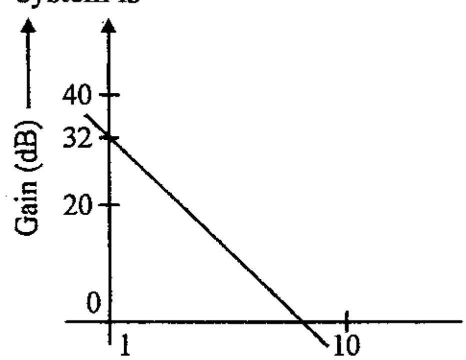
(A) $\dfrac{1}{s(s\tau_1+1)}$

(B) $\dfrac{1}{s(s\tau_1+1)(s\tau_2+1)}$

(C) $\dfrac{1}{(s\tau_1+1)(s\tau_2+1)}$

(D) $\dfrac{1}{s(s\tau_1+1)(s\tau_2+1)(s\tau_3+1)}$

54. The Bode plot of a system G(s) is given below. The transfer function of this system is



(A) $\dfrac{32}{s}$

(B) $\dfrac{39.8}{s^2}$

(C) $\dfrac{24}{s}$

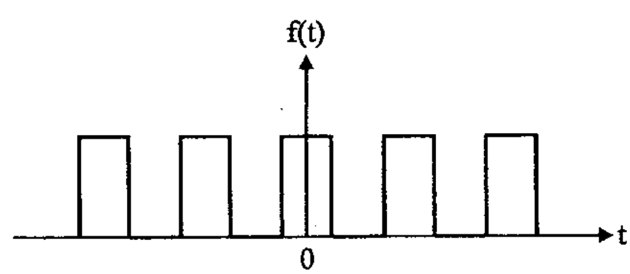
(D) $\dfrac{32}{s^2}$

55. From the List-1 and List-2 given below, match and select the correct answer :

List – 1	List – 2
i. Lag compensation	1. Exterior of unit circle (|Z|=1)
ii. Lead compensation	2. PD Control
iii. Stability	3. Non-minimum phase
iv. Instability	4. Left half of the s-plane
	5. PI control

	i	ii	iii	iv
(A)	2	3	4	1
(B)	3	1	2	5
(C)	1	2	3	4
(D)	5	2	4	1

56. The Fourier series expansion $f(t) = a_0 + \sum_{n=-\infty}^{\infty} a_n \cos n\omega t + b_n \sin n\omega t$ of the periodic signal shown below will contain the following non-zero terms



(A) a_0 and b_n $n = 1, 3, 5, ..., \infty$

(B) a_0 and a_n $n = 1, 3, 5, ..., \infty$

(C) a_0, a_n and b_n $n = 1, 2, 3, ..., \infty$

(D) a_0 and a_n $n = 1, 2, 3, ..., \infty$

57. The z-transform of a signal $x[n]$ is given by $4z^{-3} + 3z^{-1} + 2 - 6z^2 + 2z^3$. It is applied to a system, with a transfer function $H(z) = 3z^{-1} - 2$. Let the output be y[n]. Which of the following is true ?

(A) y[n] is non-causal with finite support

(B) y[n] is causal with infinite support

(C) $y[n] = 0; |n| > 3$

(D) $Re[Y(z)]_{z=e^{j\theta}} = -Re[Y(z)]_{z=e^{-j\theta}}$, $Im[Y(z)]_{z=e^{j\theta}} = Im[Y(z)]_{z=e^{-j\theta}}$; $-\pi \le \theta < \pi$

58. The Nyquist sampling interval, for the signal sinc (700 t) + sinc (500 t) is

(A) 1/350 s

(B) 1/700 s

(C) $\pi/350$ s

(D) $\pi/175$ s

59. If the impulse response of a discrete-time system is $h[n] = -0.5^n u[-n-1]$. Then the system function H(z) is equal to

(A) $\frac{-z}{z-5}$. and the system is stable

(B) $\frac{z}{z-5}$. and the system is stable

(C) $\frac{-z}{z-5}$. and the system is unstable

(D) $\frac{z}{z-5}$. and the system is unstable

60. A signal $x(n) = \sin(\omega_0 n + f)$ is the input to a linear time-invariant system having a frequency response $H(e^{j\omega})$. If the output of the system is $Ax(n - n_0)$, then the most general form of $\angle H(e^{j\omega})$ will be

(A) $-n_0\omega_0 + \beta$ for any arbitrary real β

(B) $-n_0\omega_0 + 2\pi k$ for any arbitrary integer k

(C) $n_0\omega_0 + 2\pi k$ for any arbitrary integer k

(D) $-n_0\omega_0$

61. Which of the following analog modulation scheme requires the minimum transmitted power and minimum channel bandwidth ?

(A) VSB

(B) DSB-SC

(C) SSB

(D) AM

62. For TV transmission, which modulation technique is used ?

(A) VSB

(B) SSB

(C) DSB-SC

(D) FM

63. Find the correct match between group-1 and group-2

Group-1	Group-2
P. $\{1 + km(t)\}.A\sin(\omega ct)$	W. Phase Modulation
Q. $k\,m(t)\}.A\sin(\omega ct)$	X. Frequency Modulation
R. $A\sin\{\omega ct + km(t)\}$	Y. Amplitude Modulation
S. $A\sin(\omega ct + k\int_{-\infty}^{t} m(t)\,dt)$	Z. DSB-SC modulation

(A) P-Z, Q-Y, R-X, S-W

(B) P-W, Q-X, R-Y, S-Z

(C) P-X, Q-W, R-Z, S-Y

(D) P-Y, Q-Z, R-W, S-X

64. In a super heterodyne receiver, the IF is 455 KHz. If it tuned to 1200 KHz, the image frequency will be

(A) 1655 KHz

(B) 2110 KHz

(C) 745 KHz

(D) 910 KHz

65. The modulation index of an FM wave is changed from 0 to 1. The transmitted power is

(A) Unchanged

(B) Halved

(C) Increased by 50%

(D) Quadrupled

66. A carrier is frequency modulated with a sinusoidal signal of 2 kHz resulting in a maximum frequency deviation of 5 kHz. What is the bandwidth of the modulated signal ?

(A) 7 kHz

(B) 5 kHz

(C) 14 kHz

(D) 4.5 kHz

67. When the number of quantization level is increased from 4 to 64, then the bandwidth required for the transmission of PCM signal increases by a factor of

(A) 2

(B) 3

(C) 4

(D) 1

68. In a DM system, the granular noise occurs when modulating signal

(A) increases rapidly

(B) decreases rapidly

(C) changes within the step size

(D) has high frequency component

69. Aliasing refers to

(A) Sampling of signals greater than Nyquist rate

(B) Sampling of signals less than Nyquist rate

(C) Sampling of signals at Nyquist rate

(D) None of the above

70. Analog data having highest harmonic at 30 KHz generated by a sensor has been digitized using 3-bit PCM. What will be the rate of digital signal generated ?

(A) 120 Kbps
(B) 355 Kbps
(C) 240 Kbps
(D) 180 Kbps

71. Early effect in BJT refers to

(A) Avalanche breakdown
(B) Thermal runaway
(C) Base narrowing
(D) Zener breakdown

72. An ideal Op-amp is an ideal

(A) VCVS
(B) VCCS
(C) CCCS
(D) CCVS

73. How many transistors must be used in class-B power-amplifier to obtain the output for the full cycle of the signal ?

(A) 0
(B) 1
(C) 2
(D) 3

74. In a class-C amplifier,

(A) Efficiency is maximum and distortion is minimum
(B) Efficiency is minimum and distortion is maximum
(C) Efficiency and distortion are minimum
(D) Efficiency and distortion are maximum

75. Which one of the following circuits is most suitable as an oscillator at a frequency of 100 Hz ?

(A) Hartley Oscillator
(B) Colpitts Oscillator
(C) Crystal Oscillator
(D) Twin-T Oscillator

76. For the low frequency response of a BJT amplifier the maximum gain is where

(A) $R_B = 0\ \Omega$
(B) $R_C = 0\ \Omega$
(C) $R_E = 0\ \Omega$
(D) None of these

77. An ideal sawtooth voltage waveform of frequency 500 Hz and amplitude 3 V is generated by charging a capacitor of 2 μF in every cycle. The charging requires

(A) Constant voltage source of 3 V for 1 ms
(B) Constant voltage source of 3 V for 2 ms
(C) Constant current source of 2 mA for 1 ms
(D) Constant current source of 3 mA for 2 ms

78. Using an additional NOT gate, a JK flip flop can be converted into

(A) T-Flip-Flop
(B) Master Slave Flip-Flop
(C) RS Flip-Flop
(D) D-Flip-Flop

79. A half adder performs

(A) Decimal addition for 2 decimal inputs

(B) Binary addition for 2 binary inputs

(C) Decimal addition for 2 binary inputs

(D) Binary addition for 2 decimal inputs

80. An 8-bit binary word as an integer x ranges from

(A) -128 to 128

(B) 0 to 255

(C) 0 to 256

(D) 0 to 128

81. The largest integer that can be represented in signed 2's complement representation using n bits is

(A) 2^{n-1}

(B) 2^n

(C) $2^{n-1}-1$

(D) $2^n - 1$

82. Number of min terms that a truth table of n variables has

(A) n^2

(B) $(n-1)^2$

(C) $2^n - 1$

(D) 2^n

83. The number of 256×4 bits RAM chips required to get 1 KByte of memory size is

(A) 1

(B) 8

(C) 4

(D) None

84. The accuracy of A/D conversion is generally

(A) $\pm \frac{1}{2}$ LSB

(B) $\pm$ LSB

(C) $\pm \frac{5}{4}$ LSB

(D) None

85. A NAND gate has inputs A and B. Its output is connected to both of the inputs of another NAND gate. An equivalent gate for these two NAND gates is

(A) AND gate

(B) OR Gate

(C) NOR gate

(D) XOR gate

86. In a 3-phase unbalanced star-connected load, the power consumed is measured by two wattmeter method. It is observed that one wattmeter reading is double of the other wattmeter. The power factor of the load is

(A) 1/2

(B) $1/\sqrt{3}$

(C) $\sqrt{3}/2$

(D) $\sqrt{3}$

87. Which type of EMF is induced in AC or DC generators ?

(A) Static

(B) Dynamic

(C) Both Static and Dynamic

(D) EMF is not induced

88. If the cross-sectional area of the magnetic core is doubled, the permeance of the core will be

(A) unaffected

(B) halved

(C) doubled

(D) four times

89. The field of an induction motor rotor rotates relative to the rotor at

(A) Rotor speed

(B) Synchronous speed

(C) Slip speed

(D) Very low speed

90. The starting torque of an induction motor is maximum when

(A) Rotor resistance is zero

(B) Rotor resistance is half the rotor reactance

(C) Rotor resistance is twice the rotor reactance

(D) Rotor resistance equals rotor reactance

91. The rotor output of an induction motor is 15 kW and the slip is 4%. Then the rotor copper loss is

(A) 600 watts

(B) 14.4 kW

(C) 625 watts

(D) 375 watts

92. What happens if field winding of the synchronous motor is short circuited ?

(A) First, starts as induction motor then run as synchronous motor

(B) Not start

(C) Motor will burn out

(D) Run as induction motor

93. What is the ratio of no load speed to full load speed of a 200 kVA, 12 poles, 2200 V, 3 phase, 60 Hz synchronous motor ?

(A) infinite

(B) 1

(C) 1.1

(D) 1.21

94. The synchronous motors are not self-starting because

(A) DC excitation is used

(B) The direction of torque on the rotor reverses after every half cycle

(C) Slip is not present in synchronous machine

(D) Starting winding is not present in synchronous machine

95. What happens when a synchronous motor is connected to an infinite bus while operating on leading power factor ?

(A) Excitation voltage will be independent of the supply voltage

(B) Excitation voltage will be more than the supply voltage

(C) Excitation voltage will be less than the supply voltage

(D) Excitation voltage will be equal to the supply voltage

96. The flux of the magnetic core in a practical transformer is

(A) directly proportional to the load

(B) inversely proportional to the load

(C) constant with the change in load

(D) proportional to the square of load

97. An electric motor is used to feed a Constant Power Load (CPL). The torque-speed characteristics of the motor can be described by

(A) A straight line passing through origin with positive slope

(B) A circle with origin as center

(C) A straight line with negative slope and positive intercept on torque axis

(D) A rectangular hyperbola

98. The effect of distributed and short-chorded winding in an alternator is

(A) reduction in emf and increase in harmonics

(B) increase in emf and reduction in harmonics

(C) reduction in both

(D) increase in both

99. A 1.8° step, 4-phase stepper motor has a total of 40 teeth on 8 poles of stator. The number of rotor teeth for this motor is

(A) 40

(B) 100

(C) 25

(D) 50

100. A 1100/110, 11 KVA, 50 Hz single-phase transformer has core loss of 130 W at 50 Hz and 100 W at 40 Hz. If supply frequency is 30 Hz, the corresponding core loss will be

(A) 63 W

(B) 126 W

(C) 230 W

(D) 72 W