TNEB ECE Model Question Paper 2

1. What is disadvantage of linear integrated circuits?
   a)Parameter within the IC cannot be modified
   b)Low power requirement
   c)Ics are considered to use minimum number of external connections
   d)None of the mentioned
2. The phenomenon employed in the waveguide operation is
   a)Reflection
   b)Refraction
   c)Total internal reflection
   d)None
3. In uniform quantization process
   a)The step size remain the same
   b)Step size varies according to the values of the input signal
   c)The quantizer has linear characteristics
   d)Both a and c are correct
4. The modulation techniques used to convert analog signal in to digital signal are
   a)Pulse code modulation
   b)Delta modulation
   c)Adaptive delta modulation
   d)All of the above
5. In adaptive Delta Modulation, the slope error reduces and
   a)quantization error decreases
   b)Quantization error increases
   c)Quantization error remains same
   d)None of the above
6. The number of voice channels that can be accommodated for transmission in T1 carrier system is
   a)24 b)32
   c)56 d)64
7. Instantaneous power in inductor is proportional to the
   a)Product of the instantaneous current and rate of change of current
   b)Square of instantaneous current
   c)square of the rate of change of current
   d)Temperature of the indicator
8. The waveguides increase the transmission of the electromagnetic waves. State true or false
   a)True b)False
9. The main objectives of electrical power transmission is/are
   a)Transmission system must be more efficient with minimum line losses
   b)Voltage regulation of the transmission line must be zero or minimum
   c)Both 1 and 2
   d)Neither 1 nor 2
10. Magnetic flux has the unit of
    a)Newton b)Ampere turn
    c)Weber d)Tesla

11. If all the elements in a particular network are linear, then the superposition theorem would hold when the excitation is
    a)DC only b)AC only
    c)Either AC and DC d)An impulse
12. In balanced bridge, if the positions of detector and source are interchanged, the bridge will still remain balanced. This can be explained from which theorem
    a)Reciprocity theorem
    b)Thevinin's theorem
    c)Norton's theorem
    d)Compensation theorem
13. If P is the power of a star connected system then what will be power of an equivalent delta connected system?
    a)P b)3P
    c)P/3 d)None of the above
14. Which of the following are the passive elements?
    a)Resistor b)Bulb
    c)Both d)None of these
15. Which of the following has no units?
    a)Permeability
    b)Moment of a magnet
    c)Magnetic susceptibility
    d)Permittivity
16. Which of the following quantities consists of SI unit WATT?
    a)Force b)Charge
    c)Current **d)Power**
17. KVL works on the principle of
    a)Law of conservation of charge
    b)law of conservation of energy
    c)Both
    d)None of the above
18. Super mesh analysis is used in case of
    a)Current source branch is common for two meshes
    b)Ideal voltage source is connected between two non reference nodes
    c)Both
    d)Either 1 or 2
19. For symmetrical wave form average value of one cycle is
    a)1 b)1.11
    c)2.22 **d)0**
20. In parallel RC circuit total current is 5A and current through resistor is 3A. What is the current through the capacitor?
    a)5A b)2A
    c)3A **d)4A**
21. Commutator pitches of duplex and simplex lap windings are respectively
    a)4 and 2 **b)2 and 1**
    c)1 and 1 d)2 and 2
22. The emf induced in the DC generator armature winding is
    a)AC b)DC
    c)AC and DC d)None of the above

23. In differential pulse code modulation techniques, the decoding is performed by
a)Accumulator b)Sampler
c)PLL d)Quantizer
24. A DC generator without commutator is a
a)AC generator b)DC motor
c)DC generator d)Induction motor
25. In a DC machine 72 number of coils are used. Find the number of commutator segments required?
a)36 b)37 **c)72** d)74
26. Which of the following bearings and their uses are correct
a)Ball bearings -> small machines
b)Roller bearings-> large machines
c)Neither 1 nor 2
d)Both a and b
27. Which among the following is/are not present in free space?
a)Solid bodies
b)Ionized particles
c)Interference of normal radiation & radio wave propagation
d)All of the above
28. Which of the following windings are necessary in case of all DC machines?
a)Closed winding b)Lap winding
c)Wave winding d)Opentype winding
29. Which of the following logic families has the highest maximum clock frequency?
a)S-TTL **b)AS-TTL**
c)HS-TTL d)HCMOS
30. The primary parameter is uniformly distributed along the length of the conductor?
a)G b)C c)L **d)R**
31. Which of the following statements is/are correct?
a)Inter pole winding will act in inter pole region
b)Compensating winding will act under the pole
c)Both A and B
d)None of the above
32. If terminal voltage of one 1000 rpm shunt is reduced to half the speed of the motor will be
a)500 rpm b)250 rpm
c)1000 rpm d)2000 rpm
33. The lines having R,L,C distributed along the circuit are called
a)Lumped **b)Distributed**
c)Parallel d)Paired
34. Galvanised steel is generally used as
a)Stray wire b)Earth wire
c)Structural components **d)All of the above**
35. Objectives of power system is/are
a)Cost of electrical energy per KWh is to be minimum
b)Rated voltage and frequency has to be supplied to the consumers
c)Both 1 and 2
d)Neither 1 nor 2
36. For flat voltage profile system, voltage regulation is

a)0% b)100% c)50% d)None

37. Advantages of shunt compensation is/are

a)Single unit can be both capacitance and inductor by adjusting the excitation

a)Singe unit can be used as both capacitance and inductor by adjusting the excitation

b)Smooth voltage regulation is possible by controlling excitation

c)it requires less maintenance

d)All of the above

38. In a bus 4*4 Y bus matrix the number of non zero elements are 12. Find the number of transmission lines?

a)8 **b)4** c)2 d)5

39. Range of accelerating factor is

a)50 to 100 b)1 to 10

c)1.6 to 1.8 d)10.8 to 11.2

40. A network containing 100 buses in which 10 are the voltage control buses, 5 are fixed shunt capacitor buses,20 are the reactive power support buses, 6 are the generator buses. Find the size of the Jacobian matrix?

a)163*163 b)164*164

c)165*165 d)162*162

41. A control system in which the control action is somehow dependent on the output is known as

a)closed loop system

b)Semi closed loop system

c)Open system

d)None of the above

42. A car is rtyininig at a constant speed of 50 km/h. which of the following is the feedback element for the driver?

a)Clutch b)Eyes

c)Needle of Speedometer **d)Steering wheel**

43. The output of a feedback control system must be a function of

a)Reference and output

b)Reference and input

c)Input and feedback signal

d)Output and feedback signal

44. A control system with excessive noise, is likely to suffer from

a)Saturation in amplifying stages

b)Loss of gain

c)Vibrations

d)Oscillations

45. The temperature under thermal and electrical system analogy, is considered analogous to

a)Voltage b)Current

c)Capacitance d)Charge

46. The transfer function is applicable to which of the following?

a)Linear and time in variant systems

b)Linear and time variant systems

c)Linear systems

d)Non linear systems

47. Which type of logic is produced by case statements?

a)Serial logic

b)Parallel logic

c)Priority encoded logic

d)Priority decoded logic

48. Power dissipation in ideal inductor is

a)Maximum b)Minimum

c)Zero d)A finite value

49. Which components play a significant role in the formation of a dynamic RAM?

a)Two MOSFETs

b)Two capacitors

c)One MOSFET and one capacitor

d)One MOSFET and two capacitors

50. With the availability of 16*4 memory size, hoe many ICs (memory chips) will be required for the expansion of its word size in order to obtain 16*8 memory?

a)2 b)4 c)8 d)16

51. 8085 microprocessor has how many pins

a)30 b)39 **c)40** d)41

52. In 8085 name of the 16 bit registers is

a)stack pointer b)Program counter

c)Both a and b d)none of these

53. The ROM programmed during the manufacturing process is called as

a)MROM b)PROM

c)EPROM d)EEPROM

54. An automatic toaster is a ____loop control system

a)Open b)Closed

c)Partially closed d)Any of the above

55. Which one of the following is not correct?

a)Bus is group of wires

b)Bootstrap is a technique or device for loading first instruction

c)An instruction is a set of bits that defines a computer operation

d)An interrupt signal is required at the start of every program

56. What are the sets of commands in a program which are not translated in to machine instructions during assembly process, called?

a)Mnemonics **b)Directives**

c)Identifiers d)Operands

57. In an Intel 8085A,which is the first machine cycle of an instruction?

a)An op-code fetch cycle

b)A memory read cycle

c)A memory write cycle

d)An I/O read cycle

58. The dual slope analog to digital converter finds extensive use in___

a)Digital voltmeters

b)Function generators

c)Frequency counters

d)All of the above

59. In trouble shooting a DAC, we check its performance characteristics such as

a)Non monotonicity

b)Differential nonlinearity

c)Low and high gain

d)All of the above

60. In a digital reproduction of an analog curve, accuracy can be increased by__

a)Sampling the curve more often

b)Sampling the curve less often

c)Decreasing the number of bits used to represent each sampled value

d)All of the above

61. Which is a typical application of digital signal processing

a)Noise elimination

b)Music signal processing

c)Image processing

d)All of the above

62. Newton's first l.aw of motion gives the concept of

1) energy 2) work

3)Mass **4)Inertia**

63. A marble block of mass 2kg lying on ice when given a velocity of 6 m/s is stopped by friction in 10s. Then the coefficient of friction is

1) 0.02 2) 0.03 3)0.04 **4) 0.06**

64. The force acting on a body of mass 10kg is $(\vec{2i} + \vec{j} - \vec{k})$. If the body is initially at rest, then velocity at the end of 20 seconds will be

1) $3\sqrt{2}$ 2) $6\sqrt{2}$

3) $2\sqrt{6}$ 4) $2\sqrt{3}$

65. An athelete runs some distance before taking a long jump. He does so

1) to acquire larges inertia of motion

2) to over come inertia of rest

3) to get inertia of direction

66. An object is thrown along a direction inclined at an angle 45° with the horizontal. The horizontal range of the object is

1) vertical height

2) twice the vertical height

3) thrice the vertical height

4) four times the vertical height

67. Rate determining step in a reaction consisting of a number of steps in series is the

1) fastest step

2) slowest step

3) intermediate step

4) data insufficient, can't predict

68. The half-life period of a first order reaction is given by

1) 15 k 2) 2.5 k **3) 0.693 k** 4) 6.93 k

Where, k = rate constant

69. A good quality coal should have

1) low fusion point of ash

2) high ash content

3) high sulphur

4) none of these

70. Given: $E°Ag^{+}/Ag$ = 0.799V and $E°Zn^{2}+/Zn$ = -0.763V then

1) Ag+ can be reduced by H_2(g)

2) Ag can oxidize H_2 to H^{+}

3) Zn^{2+} can be reduced by H_2

4) Ag can reduced Zn^{2+}

71. In the electrochemical series, elements are arranged in the

1) decreasing order of standard reduction potential

2) increasing order of standard reduction potential

3) increasing order of oxdiation potential

4) increasing order of equivalent weights

72. A solid can be resist of the following stresses.

1) Tensil 2) Shear

3) Compressive **4) All of the above**

73. The height of the free surface above any point is known as

1) static head

2) intensity of pressure

3) either of the above

4) none of the above

74. To determine kinematic viscosity of liquids by
    1) Newton viscometer
    2) Red wood viscometer
    3) Engles viscometer
    4) Say bolt universal viscometer
75. A pitot - tube is used for measuring
    1) total energy 2) pressure of flow
    3) flow rate **4) velocity of flow**
76. Cavitation will begin when
    1) Flow is increase
    2) Flow is decreased
    3) The pressure at any location reaches an absolute pressure equal to the saturated vapour pressure of the liquid
    4) None of the above
77. EDVAC means
    1) Embedded Dynamic Variable Automatic Computer
    2) Electronic Dynamic Variable Automatic Computer
    3) Electronic Discrete Variable Automatic Control
    4) Electronic Discrete Variable Automatic Computer
78. A typical Memory hierarchy starts with a small, expensive and relatively fast unit called
    1) Main Memory 2) Storage Memory
    3) Cache 4) Virtual Memory
79. .....is an inorganic mineral compound of silicates of aluminium, magnesia and soda potash.
    1) Mica 2) Ceramic material
    3) Porcelain 4) Asbestos
80. The band gap (Eg) of Germanium is about
    1) 1.1 eV **2) 0.8 eV**
    3) 0.2 eV 4) 2 eV
81. Ferromagnetic materials have
    1) Low permeability and zero susceptibility
    2) Zero permeability and low susceptibility
    3) High permeability and high susceptibility
    4) Low permeability and low susceptibility
82. Sum of the eigen values of A
    1) trace of A 2) |A|
    3) A^{-1} 4) 0
83. By Green's theorem the area of a closed region in polar coordinates is
    1) $\int d\theta$ **2)** $\boldsymbol{\frac{1}{2}\int r^2\, d\theta}$
    3) r 4) $\frac{r\theta}{2}$
84. A die and a coin are thrown. The probability of obtaining an odd number on the die and head on the coin is
    1) $\frac{1}{2}$ **2)** $\boldsymbol{\frac{1}{4}}$
    3) $\frac{1}{3}$ 4) $\frac{3}{4}$
85. For a 2×2 matrix A. sum of eigen values is 10 and the product of eigen values of A = -25. Then the eigen values are
    1) +5 2) ±10 3) ± 7 4) ± 1
86. In a square matrix A of order 3,
    a_1 = Sum of its leading diagonals
    a_2 = Sum of the minors of its leading diagonals.
    a_3 = |A| = determinant of A.
    Then the characteristic equation of A =
    1) $\boldsymbol{\lambda^3 - a_1\lambda^2 + a_2\lambda - a_3 = 0}$
    2) $\lambda^2 + a_1\lambda^2 + a_2\lambda + a_3 = 0$
    3) $\lambda^3 - a_3\lambda^2 + a_2\lambda - a_1 = 0$
    4) $\lambda^3 + \lambda^4 + (a_1 + a_2 + a_3)\lambda = 0$
87. Find the nature of the Q.F
    Q = 2xy + 2yz + 2zx
    1) indefinite 2) positive definite
    3) positive semifinite 4) none of these
88. The quadratic form $2x^2 + 3y^2 + 2z^2 + 2xy$ is
    1) indefinite
    2) positive definite
    3) positive semi-finite
    4) positive infinity
89. If $\bar{r} = x\bar{i} + y\bar{j} + z\bar{k}$, $r = |\bar{r}|$ then ∇r =
    1) $\bar{r}$ **2)** $\boldsymbol{\hat{r}}$
    3) $2\bar{r}$ 4) $|\bar{r}|$

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90. If $\bar{r} = x\bar{i} + y\bar{j} + z\bar{k}$ and $\bar{r} = |\bar{r}|$ then, ∇r^n is equal to
    1) r^{2n} 2) nr^n
    3) $nr^{n-1}\bar{r}$ **4) $nr^{n-2}\bar{r}$**
91. If $\bar{r} = x\bar{i} + y\bar{j} + zk$ and $|\bar{r}| = r$, then $\nabla \times (r^n\bar{r})$ =
    1) 0 2)1
    3) 2 4) $\bar{r}$
92. The area bounded by a simple closed cur C is
    1) $\int_C xdy + ydx$ **2) $\frac{1}{2}\int_C xdy - ydx$**
    3) $\int_C dxdy + dz$ 4) $\int_C dx + dy$
93. The modified Euler method is based on
    1) the average of points
    2) square of points
    3) cube of points
    4) none of these
94. Find the polynomial that takes the following values:

x	0	1	3
y	1	2	1

    1) $x^2 + x + 1$ 2) $x^2 + 2x + 3$
    3) $1 + 2x - x^2$ 4) $1 - 2x + x^2$
95. When solving AX = B, in Gauss - Jordan method, the co-efficient matrix is transformed into
    1) Upper triangular matrix **2) Diagonal matrix**
    3) Unit matrix 4) Conjugate matrix
96. What is the rate of convergence in Newton Rophson (N.R.) method?
    1) 1 **2) 2**
    3) 3 4) 4
97. A bag contains 8 white and 10 black balls. Two balls ore drawn in succession. What is the probability that first is white and second is black?
    1) $\frac{20}{81}$ **2) $\frac{30}{81}$**
    3) $\frac{40}{81}$ 4) $\frac{50}{81}$
98. From 21 tickets, marked with 20 to 40 numerals, one is drawn at random. Find the chance that it is a multiple of 5.
    1) $\frac{4}{20}$ **2) $\frac{5}{21}$**
    3) $\frac{5}{20}$ 4) $\frac{6}{21}$
99. If X has a poisson distribution and P(X = 0) = P(X=l)=k then k is
    1) e **2) $\frac{1}{e}$**
    3) e^2 4) 1
100. For a Poisson Distribution, the second moment of X about the origin $E(X^3)$ is
    1) λ^2 2) λ
    3) $\lambda^2 + \lambda$ 4) 0