

## TNEB EEE Model Question Paper 1

1. Internal resistance of ideal current source is
  - a) Zero
  - b) Infinite**
  - c) Finite
  - d) 100 ohms
2. Stability of a transmission line can be increased by
  - a) Shunt capacitor
  - b) Series capacitor
  - c) Shunt capacitor
  - d) Both 1 & 2**
3. Nodal analysis can be applied for
  - a) Planar networks
  - b) Non planar networks
  - c) Both planar and non planar networks**
  - d) Neither planar and non planar networks
4. A D-flip-flop is said to be transparent when
  - a) The output is LOW
  - b) The output is HIGH
  - c) The output follows clock
  - d) The output follow input**
5. If a pure inductor is connected across the ac source, the average power taken by the inductor
  - a) A few watt
  - b) 100 watt
  - c) Zero watt**
  - d) Maximum power
6. Bundled conductors in EHV transmission lines
  - a) Increase inductance
  - b) Increase capacitance
  - c) Decrease inductance**
  - d) Decrease capacitance
7. The alternative names for active power is/are
  - a) Real power
  - b) Average power
  - c) True power
  - d) All of the above**
8. What is the mechanical power developed by a DC series motor is maximum?
  - a) Back emf is equal to half the applied voltage**
  - b) Back emf is equal to applied voltage
  - c) Back emf is equal to zero
  - d) None of the above
9. Hysteresis loop represents the area of
  - a) Copper loss
  - b) Eddy current loss
  - c) Hysteresis loss**
  - d) Total iron losses
10. DC machine windings are
  - a) Full pitched**
  - b) Short pitched
  - c) Either of these
  - d) None of the above
11. In a lap winding dc machine number of conductors are 100 and number of parallel paths are 10. Find the average pitch
  - a) 10**
  - b) 100
  - c) 50
  - d) 1
12. India's largest thermal power station is located at
  - a) Kota
  - b) Sarni
  - c) Chandrapur**
  - d) Neyveli
13. What should be the minimum depth (in metre) of cable trench to dug for laying of 1.1kV?
  - a) 0.75**
  - b) 0.90
  - c) 1.05
  - d) 1.20
14. The filter that may not be realized by approximation of derivatives techniques are
  - 1) Band pass filters
  - 2) High pass filters
  - 3) Low pass filters
  - 4) Band reject filters



- c) **Infinite**                      d) Average value
27. Which type of node comprises incoming as well as outgoing branches?  
a) Source node                      b) Sink node  
c) **Chain node**                      d) Main node
28. On the basis of an output response, in to how many parts can the s-plane be divided?  
a) 2                                      b) **3**  
c) 4                                      d) 6
29. Dynamic equalizing circuit is useful  
a) To limit  $di/dt$  of SCR  
b) To limit  $dV/dt$  of SCR  
c) For Voltage equalization  
d) **Both B & C**
30. For Carrier Sense Multiple Access/ Collision Detection(CSMA/CD), we need a restriction on the  
a) Collision Size                      b) Signal size  
c) **Frame size**                      d) Station size
31. An SCR has cycle surge current rating of 3000 A for 50Hz supply. One cycle surge current will be  
a) 1500A                                b) 6000A  
c) **2121.32A**                        d) 2131.43A
32. If holding current of a thyristor is 2 mA then latching current should be  
a) 0.01A                                b) 0.002A  
c) 0.009A                                d) **0.004A**
33. Which layer 4 protocol is used for a telnet connection?  
a) IP                                      b) **TCP**
- c) TCP/IP                                d) UDP
34. Power transistor are type of  
a) BJT<sub>s</sub>                                    b) MOSFET<sub>s</sub>  
c) IGBT<sub>s</sub>                                    d) **All of the above**
35. If the anode current is 800 A, then the amount of current required to turn off the GTO is about  
a) 20A                                    b) 600A  
c) 400A                                    d) **200A**
36. Which semi conductor device acts like a diode and two transistor?  
a) UJT                                      b) Diac  
c) **Triac**                                    d) SCR
37. Which quantity consists of a unit 1Kwh?  
a) **Energy**                                b) Time  
c) Power                                    d) Charge
38. Which number system has a base of 16  
a) Decimal                                b) Octal  
c) **Hexadecimal**                        d) None
39. In ward-Leonard system, the lower limit of the speed imposed by  
a) Field resistance  
b) Armature resistance  
c) **Residual magnetism of the generator**  
d) None of the above
40. A latch is \_\_\_\_sensitive  
a) Both level and edge                b) Edge  
c) **Level**                                    d) None
41. Which logic family provide minimum power dissipation  
a) TTL                                      b) **CMOS**

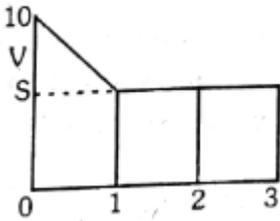




- 3) greater than 3                      4) 32
62. The eigen values of an orthogonal matrix A are positive. What is the value of |A|?  
1) 1    2) -1  
3) 2    4) 3
63. At the point (4, 0) the function  $f(x, y) = x^3 + 3xy^2 - 15x^2 - 15y^2 + 72x$  attains  
1) Maximupi                                      2) Minimum  
3) Saddle                                        4) None of these
64. The minimum value of  $x^2 + y^2 + 6x + 12$  is  
1) 2    2) 3  
3) 20    4) 25
65. Stationary points of  $x^2 + y^2 + 6x + 12$  is  
1) (1, 2)                                        2) (3, 4)  
3) (-3, 0)                                      4) (-4, -3)
66. If  $\vec{V} = \vec{w} \times \vec{r}$ ,  $\vec{w}$  is a constant vector and  $\vec{r} = x\vec{i} + y\vec{j} + z\vec{k}$  then  $\vec{w}$  is  
1) 0    2)  $\frac{1}{2} \text{curl } \vec{v}$   
3)  $\text{div } \vec{r}$                                       4) 1
67. If  $\vec{r} = x\vec{i} + y\vec{j} + z\vec{k}$ , then  $\nabla \times (\nabla r^n) =$   
1) 0    2) 1  
3) 2    4) 3
68. The vector  $\vec{F} = yz\vec{i} + zx\vec{j} + xy\vec{k}$   
1) If rotational                                2) solenoidal  
3) 0    4) 1
69. Complete integral of  $p = e^q$  is  
1)  $z = ax + e^a y + c$   
2)  $z = ax + 2y + c$   
3)  $z = ax + y \log a + c$   
4) None of these
70. Form the partial differential equation from  $\log(az - 1) = x + ay + b$   
1)  $(p + 1)(q + 1) = zp$   
2)  $p(q + 1) = zq$   
3)  $q(p + 1) = zp$   
4)  $pq(p + 1) = zp$
71. Particular integral for  $(D^2 - 4D + 4)y = \cos 2x$  is  
1)  $\frac{\sin 2x}{4}$                                       2)  $\frac{-\sin 2x}{8}$
- 3)  $\frac{\cos 2x}{8}$                                       4) 0
72. Find the particular Integral for  $(D^3 - 1)y = x^{2x}$   
1)  $\frac{e^{2x}}{5}$     2)  $\frac{e^{2x}}{6}$   
3)  $\frac{e^{2x}}{7}$     4)  $\frac{e^{2x}}{9}$
73. A square matrix A is nilpotent of order n if  
1)  $A^n = 0$                                         2)  $A^{n+1} = 0$   
3)  $A^n = A$                                       4)  $A^{2n} = 1$
74. If  $A = \begin{bmatrix} 3 & 5 & 3 \\ 0 & 4 & 6 \\ 0 & 0 & 1 \end{bmatrix}$  then the eigen values of  $A^{-1}$   
1)  $\frac{1}{3}, \frac{1}{4}, 1$                                       2)  $\frac{1}{5}, \frac{1}{4}, 1$   
3)  $\frac{1}{6}, \frac{1}{5}, \frac{1}{3}$                                       4) None of these
75. The moment generating function of the poisson distribution about  $x=0$  is  
1)  $e^t$     2)  $e^{\lambda(e^t - 1)}$   
3) 1    4) 0
76. If X is a poisson variate such that  $P(X=1)=0.3$  and  $P(X=2) = 0.2$ . Then  $E(X^2)$   
1)  $\frac{28}{9}$     2)  $\frac{4}{3}$   
3)  $\frac{16}{9}$     4) 0.63
77. The "three sigma" ( $3\sigma$ ) value associated with the random variable X with normal distribution implies that the probability for X to be between  $-3\sigma$  and  $+3\sigma$  is  
1) 0.683    2) 0.965  
3) 0.511    4) 0.997
78. Solution of  $(D^2 + 4)y = \sin 3x$   
1)  $y = A \cos 2x + B \sin 2x$   
2)  $y = A \cos x + B \sin x + \frac{\sin 3x}{5}$   
3)  $y = A \cos 2x + B \sin 2x - \frac{\sin 3x}{5}$   
4)  $y = \frac{\sin 3x}{5} + A \cos x + B \sin 3x$
79. Particular Integral of  $(D^2 + D + 1)y = \sin 2x$  is  
1)  $\frac{3 \sin 2x}{15}$                                       2)  $\frac{-2 \cos 2x}{13}$   
3)  $\frac{-2 \cos 2x}{13} - \frac{3 \sin 2x}{13}$                       4)  $\frac{e^{4x}}{2}$



94. If the temperature of a conductor is decreased below its critical temperature  $T_c$ , the value of critical magnetic field  $H_c$  will
- 1) decrease
  - 2) **increase**
  - 3) remain constant
  - 4) may increase (or) decrease
95. Dielectric loss in ferrites is
- 1) very high
  - 2) **very low**
  - 3) zero
  - 4) none of these
96. The given figure shows the variation of force in an elementary system which undergoes a process during which the plunger position changes from 0 to 3m. If the internal energy of the system at the end of the process is 2.53 higher then the heat absorbed during the process is



- 1) 15J
- 2) **20J**

- 3) 5J
  - 4) 30J
97. A diesel engine theoretically operates on
- 1) constant volume cycle
  - 2) **constant pressure cycle**
  - 3) constant temperature cycle
  - 4) constant entropy cycle
98. In all reversible process, entropy of the system
- 1) **increases**
  - 2) decreases
  - 3) remains the same
  - 4) none of the above
99. The time duration for which a sound persists even after the source of sound is cut off is called
- 1) **Reverberation time**
  - 2) Standard reverberation time
  - 3) Decibel
  - 4) bel
100. The ratio of velocity of sound in air at 4 atmosphere pressure and that at one 1 atmosphere pressure would be
- 1) **1:1**
  - 2) 4:1
  - 3) 1:4
  - 4) 3:1

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