

**TECHNICAL**

1. Location of centre of gravity (e.g) of any electrical distribution system is determined as

$$(A) \text{ c.g.} = \frac{\text{total loading (electrical)}}{\text{Sum of moments about two axes}}$$
$$(B) \text{ c.g.} = \frac{\text{Sum of moments about two axes}}{\text{total loading}}$$

$$(C) \text{ c.g.} = \text{sum of moments} \times 1 \text{ total loading}$$

$$(D) \text{ c.g.} = \text{sum of moments} \times (\text{total loading})^2$$

2. A synchronous motor which works on a leading power factor and does not drive a mechanical load is called as

- (A) Static condenser (B) condenser  
(C) synchronous (D) none of the above

3. In the circuit shown in Fig. TP-1.1, the voltage function  $v(t) = \sin \omega t = 200 \sin \omega t$  and  $R = 200 \Omega$ . The average power is given by

- (A) 20 W (B) 50 W  
(C) 100 W (D) 200 W

4. In the circuit shown in Fig. TP -1.2 maximum power will be transferred when

- (A)  $Z_L = 13 - j9$  (B)  $Z_L = 13 + j9$   
(C)  $Z_L = 9 - j13$  (D)  $Z_L = 9 + j13$

5. If residual magnetism of a shunt generator is destroyed accidentally, it may be restored by connecting its shunt field

- (A) in reverse (B) to a battery  
(C) to earth (D) to an alternator

6. The advantage of cables over overhead transmission lines is

- (A) easy maintenance  
(B) low cost  
(C) can be used in congested areas  
(D) can be used in high voltage areas

7. The tungsten filament lamps when compared with fluorescent tubes, have all the following advantages except

- (A) Simple installation (B) longer life  
(C) less costly (D) More brightness

8. Increasing voltage or current by means of instrument transformers

- (A) Only ratio errors need be considered  
(B) both ratio as well as phase angle errors need to be considered  
(C) either of the above  
(D) none of the above

9. If the complex poles of a system have greater real parts, then overshoot is

- (A) More (B) less  
(C) not affected (D) none of the above

10. Persons preparing electrolyte should wear

- (A) goggles or other face shield (B) rubber  
(C) rubber boots and gloves (D) all above safety devices

11. Shelf life of a small dry cell is

- (A) Equal to that of large dry cell  
(B) less than that of large dry cell  
(C) more than that of large dry cell  
(D) None of the above

12. The least number of 1- $\phi$  watt meters required to measure total power consumed by an unbalanced load fed from a 3- $\phi$ , 4-wire system is

- (A) 1 (B) 2  
(C) 3 (D) 4

13. A crack in the magnetic path of an inductor will result in

- (A) unchanged inductance (B) increased inductance  
(C) zero inductance (D) reduced inductance

14. Excessive charging a battery tends to

- (A) produce gassing  
(B) increase the internal resistance of the battery  
(C) to corrode the positive plates into lead peroxide thereby weakening them physically  
(D) bring about all above changes

15. The current drawn from 4 V battery in the network shown in the Fig. TP-1.3 will be

- (A) 1.4 A (B) 0.9 A  
(C) 0.6 A (D) 0.39 A

16. When a fluorescent lamp is to be operated on D.C which of the following additional devices must be incorporated in the circuit?

- (A) Inductance (B) Transformer  
(C) Resistance (D) Condenser

17. When a bar magnet is bent at its centre to form the shape of L, its magnetic moment, will be

- (A) 2 times its original (B)  $\frac{1}{\sqrt{2}}$   
(C)  $\frac{1}{2}$  times its original value (D)  $\frac{1}{3\sqrt{3}}$  times its original value

18. The charging current in the cables

- (A) leads the voltage by  $180^\circ$  (B) leads the voltage by  $90^\circ$   
(C) lags the voltage by  $90^\circ$  (D) lags the voltage by  $180^\circ$

19. The short-circuit voltage of a transformer mainly depends on the

- (A) magnitude  
(B) ohmic resistance of primary winding  
(C) ohmic resistance of secondary winding  
(D) cross-sectional area of the iron core

20. If the voltage is increased x times, the size of the conductor would be

- (A) reduced to  $1/x^2$  times (B) reduced to  $1/x$  times  
(C) increased to x times (D) increased to  $x^2$  times  
(E) none of the above

21. Strength of an electromagnetic can be increased by

- (A) increasing the cross sectional area  
(B) increasing the number of turns  
(C) increasing current supply  
(D) all above methods

22. A series motor is started without load. The effect is that

- (A) the back e.m.f decreases  
(B) the torque increases rapidly  
(C) the speed increases rapidly  
(D) the current drawn increases rapidly

23. The area under daily load curve divided by 24 hours gives

- (A) average load (B) least load  
(C) peak demand (D) total kWh generated

24. The rotor copper losses, in a synchronous motor, are met by

- (A) d.c. source (B) armature input  
(C) motor input (D) Supply lines

25. A wire of ..... will have least diameter.

- (A) 2 SWG (B) 10 SWG  
(C) 20 SWG (D) 30 SWG
26. The unit of reluctance is  
(A) metre/henry (B) henry/metre  
(C) henry (D) 1/henry
27. If a circuit does not contain any source of energy or e.m.f., it is known as  
(A) unilateral circuit (B) bilateral circuit  
(C) passive network (D) active network
28. Primary air is that air which is used to  
(A) reduce the flame length  
(B) increase the flame length  
(C) transport the dry coal  
(D) provide air around burners for getting optimum combustion
29. In a mercury arc rectifier characteristic blue luminosity is due to  
(A) colour of mercury (B) ionization  
(C) high temperature (D) electron streams
30. Capacity of turbine and generator are related as  
(A) Turbine kW =  $\frac{\text{generator kW}}{\text{generator efficiency}}$   
(B) Turbine kW = generator kW  $\times$  generator efficiency  
(C) Turbine kW = generator kW  
(D) Turbine kW = (generator kW)<sup>2</sup>
31. Maximum wind energy available is proportional to  
(A) Square of the diameter of rotor (B) air density  
(C) NLP (D) YWA
32. Cost of wind energy generator compared to conventional power plants for the same power output is  
(A) equal (B) lower  
(C) higher
33. Which of the following motors is used for unity power factor?  
(A) Hysteresis motor (B) scharge motor  
(C) Universal motor (D) Reluctance motor
34. When a dielectric slab is introduced in a parallel plate capacitor, the potential difference between plates will  
(A) remain unchanged (B) decrease  
(C) increase (D) become zero
35. A single-phase capacitor-start motor will take starting current nearly  
(A) Four to six times the full load current  
(B) three times the full load current  
(C) twice the full load current  
(D) same as full load current
36. Dielectrics have  
(A) a few free electrons (B) many free electrons  
(C) no free electrons (D) none of the above
37. The level of illumination on a surface least depends on  
(A) ambient temperature  
(B) candle power of the source  
(C) distance of the source  
(D) type of reflector used
38. The advantage of salient poles in an alternator is  
(A) reduced windage loss  
(B) reduced bearing loads and noise  
(C) reduced noise  
(D) adaptability of low and medium speed operation
39. In case of electrical machines, the intermittent rating as compared to its continuous rating is  
(A) same (B) less  
(C) more (D) any of the above
40. The slight curvature at the lower end of the O.C.C. of a self-excited D.C. generator is due to  
(A) high armature speed  
(B) high field circuit resistance  
(C) residual pole flux  
(D) Magnetic inertia  
(E) none of the above
41. The resistance between points A and B (FIG. TP-1.4) is  
(A) 4  $\Omega$  (B) 6  $\Omega$   
(C) 8  $\Omega$  (D) 12  $\Omega$
42. What will happen if supply terminals of D.C. shunt motor are interchanged?  
(A) The direction of rotation will reverse  
(B) Motor will stop  
(C) Motor will run at speed lower than the normal speed in the same direction  
(D) Motor will run at its normal speed in the same direction as it was running
43. If a 3-phase supply is given to the stator and rotor is short-circuited rotor will move  
(A) in the opposite direction as the direction of the rotating field  
(B) in the same direction as the direction of the field  
(C) in any direction depending upon phase sequence of supply
44. Which of the following equipment, for regulating the voltage in distribution feeder, will be most economical?  
(A) Static condenser (B) Synchronous condenser  
(C) Tap Changing transformer (D) Booster transformer
45. The ratio of magnetizing current to ideal short-circuit current is called  
(A) leakage co-efficient (B) dispersion co-efficient  
(C) either of the above (D) none of the above
46. Air will not be the working substance in which of the following?  
(A) Closed cycle gas turbine (B) Open cycle gas turbine  
(C) Diesel engine (D) Petrol engine
47. In case of phase wound induction motors the full load rotor m.m.f. is taken as..... Of stator m.m.f.  
(A) 40 percent (B) 60 percent  
(C) 85 percent (D) 95 percent
48. Armature reaction of an unsaturated machine is  
(A) cross magnetising (B) demagnetising  
(C) magnetising (D) none of above
49. A capacitor consists of  
(A) two insulators separated by a conductor  
(B) two conductors separated by an insulator  
(C) two insulators only  
(D) none of above
50. In a lead-acid cell, lead is called as  
(A) Positive active material (B) negative active material  
(C) passive material (D) none of the above
51. For blowers which of the following motors is preferred?  
(A) D.C. series motor  
(B) D.C. shunt motor  
(C) Squirrel cage induction motor

- (D) Wound rotor induction motor
52. A synchronous motor running with normal excitation adjusts to load increases essentially by increase in  
(A) back e.m.f (B) armature current  
(C) power factor (D) torque angle
53. In some transformers, the topplings are provided on  
(A) L.V. side (B) H.V. side  
(C) L.V. as well as on H.V. side  
(D) in the middle of both windings
54. Which of the following protective devices can be used against lightning surges?  
(A) Lightning arrestors (B) Horn gap  
(C) Surge diverters (D) Any of the above
55. In an induction motor the pulsation losses and noise can be reduced by using  
(A) large number of very deep slots  
(B) large number of narrow slots  
(C) less number of narrow slots  
(D) none of the above
56. The maximum power developed in a synchronous motor will depend on  
(A) the rotor excitation only  
(B) the supply voltage only  
(C) the rotor excitation and supply voltage both  
(D) the rotor excitation
57. In cables the charging current  
(A) lags the voltage by  $90^\circ$  (B) leads the voltage by  $90^\circ$   
(C) lags the voltage by  $180^\circ$  (D) leads the voltage by  $180^\circ$
58. A large value of short-circuit current indicates  
(A) a poor power factor (B) a good power factor  
(C) zero power factor (D) none of the above
59. Series motor is not suited for traction duty due to which of the following account?  
(A) Less current drain on the heavy load torque  
(B) Current surges after temporary switching off supply  
(C) Self relieving property  
(D) Commutating property at heavy load
60. Locomotive having monometer bogies  
(A) has better co-efficient of adhesion  
(B) is suited both for passenger as well as freight service  
(C) has better riding qualities due to the reduction of lateral forces  
(D) has all above qualities
61. An electrolytic capacitor is generally made to provide  
(A) low capacitance (B) fixed capacitance  
(C) variable capacitance (D) large value of capacitance
63. .... Power plant is expected to have the longest life.  
(A) Steam (B) diesel  
(C) Hydroelectric (D) Any of the above
64. Which of the following conditions go a long way in causing the electro-thermal breakdown of the dielectric?  
(A) Large thickness of the dielectric  
(B) High temperature of both the dielectric and the surrounding medium  
(C) Continuous application of high voltage  
(D) Large dielectric loss  
(E) All of the above
65. In a cable the voltage stress is maximum at  
(A) Sheath (B) insulator  
(C) surface of the conductor (D) Core of the conductor
66. When a universal motor is operated on no-load, its speed is limited by  
(A) supply voltage frequency (B) armature reaction  
(C) windage and friction (D) weight of the armature
67. Following will occur if level of electrolyte falls below plates :  
(A) Capacity of the cell is reduced  
(B) Life of the cell is reduced  
(C) Open plates are converted to lead sulphate  
(D) All above
68. Internal resistance of a cell is due to  
(A) resistance of electrolyte  
(B) electrode resistance  
(C) surface contact resistance between electrode and electrolyte  
(D) all above
69. The Potier's triangle separates the  
(A) Stator voltage and rotor voltage  
(B) field m.m.f. and armature m.m.f  
(C) armature leakage reactance and armature reaction m.m.f  
(D) iron losses and copper losses
70. Which of the following statements is correct?  
(A) The conductivity of ferrites is better than ferromagnetic  
(B) The conductivity of ferromagnetic materials is better than ferrites  
(C) The conductivity of ferrites is very high  
(D) The conductivity of ferrites is same as that of ferromagnetic material

**NON TECHNICAL**

**DIRECTION (71-73):- In these questions, four alternatives are given for the idiom/phrase given in bold in the sentence. Choose the alternative which best expresses the meaning of the idiom/phrase given in bold.**

71. His works seems to be a **Penelope's web**.  
(A) declining (B) in his best forms  
(C) endless (D) difficult
72. Suddenly **the balloon goes up** in the middle of the conversation.  
(A) the situation turns unpleasant or serious  
(B) a sudden shift in the topic of conversation  
(C) the conversation takes a lighter note  
(D) an abrupt silence takes place
73. Your behavior is **beyond the pale**.  
(A) beyond correction  
(B) Beyond sorrow  
(C) Rude  
(D) outside commonly acceptable standards

**DIRECTION (74-75):- In these questions, out of the four alternatives, choose the one which best expresses the meaning of the word given in bold.**

74. **Reel**  
(A) Waver (B) Fish  
(C) Mistake (D) Hit

**75. Reside**

- (A) Remain (B) Home  
(C) Dwell (D) Sediment

**DIRECTION (76-77):- In these questions, out of the four alternatives choose the word opposite in meaning to the word given in bold.**

**76. Impecunious**

- (A) Wealthy (B) Cautious  
(C) Hungry (D) Tardy

**77. Colossal**

- (A) Easy (B) Tiny  
(C) Graceful (D) Roof

**DIRECTION (78-79):- In the following questions, out of the four alternatives choose the one which can be substituted for the given words/sentence.**

**78. To free anything from germs**

- (A) Sterilize (B) Antiseptic  
(C) Antibody (D) Cauterize

**79. Instrument that magnifies object**

- (A) Stethoscope (B) Telescope  
(C) Microscope (D) Periscope

**80. In these questions, sentences are given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four alternatives.**

**We have talked a lot, now let us \_\_\_\_\_ to work.**

- (A) get down (B) set off  
(C) take off (D) sit up

**81. The bilateral naval exercise 'Konkan 18' has started between India and which country?**

- (A) Japan (B) Mongolia  
(C) Indonesia (D) United Kingdom

**82. Who has become the first Indian to climb Mt Giluwe in Papua New Guinea?**

- (A) Taka Tamut (B) Sivangi Pathak  
(C) Raj Singh Dharmshaktu (D) Satyarup Siddhanta

**83. Who was the founder of Sunga dynasty?**

- (A) Pushyagupta (B) Pushyamitra  
(C) Pushparaja (D) Pravarsena

**84. Who of the following was the author of Meghadootam?**

- (A) Vishakhadatta (B) Vishnusharma  
(C) Kalidas (D) Bhashkar

**85. At the second Round Table Conference, the Indian National Congress was represented by \_\_\_\_\_**

- (A) Jawahar Lal Nehru  
(B) Mohandas Karamchand Gandhi  
(C) Rajendra Prasad  
(D) Vallabh Bhai Patel

**86. Monoculture is a distinct characteristic of -**

- (A) Commercial grain farming (B) Shifting cultivation  
(C) Subsistence farming (D) Organic farming

**87. The clouds of the highest altitude are**

- (A) Altocumulus (B) Altostratus  
(C) Cumulus (D) Cirrostratus

**88. The Black Mountains are located in**

- (A) Canada (B) Norway  
(C) Switzerland (D) U.S.A.

**89. Who has the power to prorogue the Lok Sabha?**

- (A) The Speaker  
(B) The Prime Minister  
(C) The Minister for Parliamentary Affairs  
(D) The President

**90. Who has the right to decide whether a Bill is a money bill or not?**

- (A) Speaker of Lok Sabha (B) Prime Minister  
(C) President (D) Finance Minister

**91. In each of the following questions select the related letters/word/number from the given alternatives.**

BEHK : YVSP :: DGJM : ?

- (A) JGDA (B) ROLI  
(C) WTQN (D) ZWTQ

**92. Two statements are given followed by two conclusions I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You are to decide which of the given conclusions, if any, follow from the given statements. Indicate your answer.**

**Statements :** Every bottle with a red label contains fruit juice, Fruit juice is safe to drink

**Conclusions :**

I. It is safe to drink the contents of bottles with red label.

II. It is not safe to drink from bottles with green label.

- (A) Only I follows (B) Only II follows  
(C) Neither I nor II follows (D) Both I and II follow

**93. In each of the following questions, select the one which is different from the other three responses.**

- (A) Teach (B) Instruct  
(C) Educate (D) Explain

**94. In each of the following questions, select the one which is different from the other three responses.**

- (A) Day (B) Fortnight  
(C) Month (D) Calendar

**95. In each of the following questions, select the one which is different from the other three responses.**

- (A) 23 (B) 37  
(C) 9 (D) 17

**96. If TALENT is written as LATENT, how EXOTIC can be written in that code ?**

- (A) OXOTIC (B) TEXTIC  
(C) OXETIC (D) EXOTIC

**97. Five boys A, B, C, D, E are sitting in a circle facing inside. A is facing South-West, D is facing South-East, B and E are right opposite A and D respectively and C is neighbor of both D and B. Which direction is C facing?**

- (A) West (B) South  
(C) North (D) East

**98. Which one-set of letters when sequentially placed at the gaps in the given letter series shall complete it?**

\_\_cb\_\_cab\_\_baca\_\_cba\_\_ab

- (A) cabcb (B) abccb  
(C) bacbc (D) bcaba

**99. Arrange the following words as per order in the dictionary.**

1. Dissident
2. Dissolve
3. Dissent

4. Dissolute

5. Dissolution

(A) 3, 1, 4, 5, 2

(B) 3, 2, 1, 4, 5

(C) 3, 1, 4, 2, 5

(D) 3, 2, 4, 5, 1

100. Choose the alternative which closely resembles the mirror image of the given combination.

**ANS 4 3 Q 1 2**

(A) A N 2 4 3 0 1 2 (B) 2 1 0 3 4 2 N A

(C) 2 N A 3 4 0 2 1 (D) 1 2 0 4 3 A N 2

IBT INSTITUTE