Answer Key :Electrical Engg.

Type: Electrical Engg.

1) An RLC series circuit has R=10Ω, L=0.1 H and C=100 µF. What is the resonant frequency of the circuit?

Options:

- 1.159.15 Hz
- 2.500 Hz
- 3.1000 Hz
- 4.318.3 Hz

Correct Option: 1

Type: Electrical Engg.

2)   In a star-connected network, each branch has a resistance of 10 Ω. What is the equivalent resistance of the delta network?

Options:

- 1.10 Ω
- 2.20 Ω
- 3.30 Ω
- 4.40 Ω

Correct Option: 3

Type: Electrical Engg.

3) A load absorbs 200 W of active power and 150 VAR of reactive power. What is the power factor of the load?

Options:

- 1.0.6
- 2.0.707
- 3.0.8
- 4.1

Correct Option: 3

Type: Electrical Engg.

4) A sinusoidal voltage v(t)=50sin(100πt) is applied to a 10 mH inductor. What is the peak value of the current flowing through the inductor?

Options:

- 1.0.159 A
- 2.0.318 A
- 3.1.59 A
- 4.3.18 A

Correct Option: 2

Type: Electrical Engg.

5) The Poynting vector represents

Options:

- 1.Electric field intensity
- 2.Magnetic field intensity
- 3.Power flow per unit area
- 4.Energy stored in a field

Correct Option: 3

Type: Electrical Engg.

6) A parallel plate capacitor has a capacitance of 10μF and is charged to a potential of 100V. How much energy is stored in the capacitor?

Options:

- 1.1J
- 2.0.1J
- 3.5J
- 4.0.05J

Correct Option: 4

Type: Electrical Engg.

7) A signal x(t) is band-limited to 5 kHz. What is the minimum sampling frequency required to avoid aliasing?

Options:

- 1.2.5 kHz

- 2.5 kHz
- 3.10 kHz
- 4.15 kHz

Correct Option: 3

Type: Electrical Engg.

8) The impulse response of a system is h(t)=e^-t . u(t) Is the system stable and causal?

Options:

- 1.Stable but not causal
- 2.Causal but not stable
- 3.Both stable and causal
- 4.Neither stable nor causal

Correct Option: 3

Type: Electrical Engg.

9) The Laplace transform of x(t)=e^−2t . u(t) is

Options:

- 1. 1/S−2
- 2.1/S+2
- 3.1/S2+4
- 4.S/S+2

Correct Option: 2

Type: Electrical Engg.

10) The rotor frequency of a 3-phase induction motor operating at a slip of 4% with a supply frequency of 50 Hz is

Options:

- 1.2 Hz
- 2.0.5 Hz
- 3.4 Hz
- 4.10 Hz

Correct Option: 1

Type: Electrical Engg.

11) In a Transformer, hysteresis loss depends on

Options:

- 1.Supply frequency
- 2.Load current
- 3.Flux density and frequency
- 4.Winding resistance

Correct Option: 3

Type: Electrical Engg.

12) An auto-transformer has a voltage ratio of 400/200. The power transferred inductively is 2 kW. What is the total kVA of the auto-transformer?

Options:

- 1.6 kVA
- 2.2.5 kVA
- 3.8 kVA
- 4.4 kVA

Correct Option: 4

Type: Electrical Engg.

13) A three-phase synchronous motor draws 200A from the line at unity power factor at rated load. Considering the same line voltage and load, the line current at a power factor of 0.5 leading is

Options:

- 1.200 A
- 2.100 A
- 3.400 A
- 4.300 A

Correct Option: 3

Type: Electrical Engg.

14) The DC motor, which can provide zero speed regulation at full load without any controller is

Options:

- 1.Series
- 2.Shunt
- 3.Cumulative compound
- 4.Differential compound

Correct Option: 4

Type: Electrical Engg.

15) A generator is rated at 500 MVA, 11 kV with a reactance of 25%. If the base values are 100 MVA and 11 kV, what is the per-unit reactance of the generator on the new base?

Options:

- 1.0.05
- 2.0.2
- 3.0.25
- 4.0.5

Correct Option: 1

Type: Electrical Engg.

16) In a load flow study using the Newton-Raphson method, the size of the Jacobian matrix for a power system with N×N buses is

Options:

- 1.N×N
- 2.2N×2N
- 3.2(N−1) ×2(N−1)
- 4.(N−1) ×(N−1)

Correct Option: 3

Type: Electrical Engg.

17) A 50 Hz transmission line has a reactance of 0.5 Ω per phase. If the sending-end and receiving-end voltages are both 220 kV, what is the steady-state stability limit?

Options:

- 1.968 MW
- 2.1050 MW

- 3.1220 MW
- 4.880 MW

Correct Option: 1

Type: Electrical Engg.

18) The power factor of a 10 kW load is improved from 0.6 to 0.9 by adding a capacitor. What is the reactive power supplied by the capacitor?

Options:

- 1.3.5 kVAR
- 2.5.2 kVAR
- 3.6.8 kVAR
- 4.8.49 kVAR

Correct Option: 4

Type: Electrical Engg.

19) The surge impedance loading (SIL) of a transmission line depends 1. Line length 2. Line resistance 3. Line inductance and capacitance 4. Supply frequency

Options:

- 1.1 and 2
- 2.3 and 4
- 3.3 only
- 4.1, 3, and 4

Correct Option: 3

Type: Electrical Engg.

20) The most suitable instrument for measuring very low resistance is

Options:

- 1.Ohmmeter
- 2.Megger
- 3.Potentiometer
- 4.Kelvin's double bridge

Correct Option: 4

Type: Electrical Engg.

21) Permanent Magnet Moving Coil (PMMC) instruments are

Options:

- 1.Suitable for AC measurement
- 2.Suitable for DC measurement
- 3.Suitable for both AC and DC measurement
- 4.Used to measure energy

Correct Option: 2

Type: Electrical Engg.

22) The constant of an energy meter is 600 revolutions per kWh. If the meter makes 300 revolutions in 10 minutes, what is the load in kW?

Options:

- 1.0.5 kW
- 2.1 kW
- 3.2 kW
- 4.3 kW

Correct Option: 4

Type: Electrical Engg.

23) The Boolean expression A+A'B simplifies to

Options:

- 1.A + B
- 2.A'B
- 3.AB
- 4.A

Correct Option: 1

Type: Electrical Engg.

24)   In an ideal operational amplifier, the input impedance is

Options:

- 1.Very low
- 2.Very high
- 3.Zero
- 4.Finite

Correct Option: 2

Type: Electrical Engg.

25) A 10-bit ADC operates with a clock frequency of 1 MHz What is the conversion time for a successive approximation ADC?

Options:

- 1.10 μs
- 2.1 μs
- 3.100 μs
- 4.1024 μs

Correct Option: 1

Type: Electrical Engg.

26) For a system with a transfer function G(s)=10/s(s+1), the slope of the Bode magnitude plot at high frequencies is:

Options:

- 1.−20 dB/decade
- 2.−40 dB/decade
- 3.−60 dB/decade
- 4.−80 dB/decade

Correct Option: 2

Type: Electrical Engg.

27) The integral action in PID controller

Options:

- 1.Reduces steady-state error
- 2.Reduces oscillations
- 3.Reduces rise time
- 4.Increases bandwidth

Correct Option: 1

Type: Electrical Engg.

28) A three-phase fully-controlled rectifier is connected to a 415 V (line-to-line) AC supply. If the firing angle is 60∘, what is the average output DC voltage? Assume continuous conduction

Options:

- 1.354 V
- 2.323 V
- 3.298 V
- 4.281 V

Correct Option: 2

Type: Electrical Engg.

29) A boost converter is operating with an input voltage of 12 V, output voltage of 48 V, load resistance of 96 Ω, and a switching frequency of 25 kHz. If the converter has an efficiency of 90%, what is the input current?

Options:

- 1.4.16 A
- 2.3.75 A
- 3.2.22 A
- 4.5.17 A

Correct Option: 3

Type: Electrical Engg.

30) The purpose of a snubber circuit in power electronic devices is to

Options:

- 1.Reduce the switching losses
- 2.Increase the efficiency
- 3.Ensure zero voltage switching
- 4.Protect against high dv/dt and di/dt

Correct Option: 4

Type: Common

31) Which one of the following belongs to the category of homogeneous data

Options:

- 1.Multi-storeyed houses in a colony
- 2.Trees in a garden
- 3.Vehicular traffic on a highway
- 4.Student population in a class

Correct Option: 1

Type: Common

32) Following incomplete series is presented. Find out the number which should come at the place of question mark which will complete the series 4, 16, 36, 64,?

Options:

- 1.200
- 2.300
- 3.100
- 4.150

Correct Option: 3

Type: Common

33) In the absence of covariance among securities in the portfolio, if each security has an average standard deviation of 20%, the portfolio of 100 securities would have a standard deviation of

Options:

- 1.0.02
- 2.0.2
- 3.0.05
- 4.Zero

Correct Option: 1

Type: Common

34) In a certain code, 'bi nie pie' means 'some good jokes', 'nie bat lik' means 'some real stories', and 'pie lik tol'

means 'many good stories'. Which word in that code means 'jokes'?

Options:

- 1.bi
- 2.nie
- 3.pie
- 4.None of the above

Correct Option: 1

Type: Common

35) 'Demonstrator' is related to 'Laboratory' in the same way as 'Leader' is related to

Options:

- 1.Podium
- 2.Assembly
- 3.Country
- 4.State

Correct Option: 2

Type: Common

36) A variable that is presumed to cause a change in another variable is called

Options:

- 1.A categorical variable
- 2.A dependent variable
- 3.An independent variable
- 4.An intervening variable

Correct Option: 3

Type: Common

37) The research design is

Options:

- 1.A common method adopted by all researchers to carry out research
- 2.The final choice between using qualitative or quantitative methods.
- 3.Presentation of research findings

4.A framework for every stage of the data collection and its analysis

Correct Option: 4

Type: Common

38) A technique of building up a list or a sample of a special population by using an initial set of members as informants is called

Options:

- 1.Quota sampling
- 2.Convenience sampling
- 3.Snowball sampling,
- 4.Purposive sampling

Correct Option: 3

Type: Common

39) In the context of Data Mining, which one of the following is a method of Data Reduction?

Options:

- 1.Data Compression
- 2.Multiple Regression
- 3.Normalization
- 4.Outlier Analysis

Correct Option: 1

Type: Common

40) A hypothesis can be described as

Options:

- 1.Just as a hunch
- 2.A wild guess
- 3.A type of statement made by researchers when they are attempting to get funding for their research
- 4. A prediction of some sort regarding the possible outcomes of a study

Correct Option: 4

Type: Common

41) Which scheme on performance and credit rating has been launched by Union MSME Ministry to assess the credit worthiness and capabilities of industries in the sector?

Options:

- 1.Zero Defect Scheme
- 2.Certification Performance and Economy Rating Scheme
- 3.Performance and Credit Rating Scheme
- 4.Industrial Incentive Scheme

Correct Option: 3

Type: Common

42) Interlocking of two or more types of food chains at different trophic levels is called

Options:

- 1.Food chain
- 2.Food web
- 3.Succession
- 4.Ecological pyramid

Correct Option: 2

Type: Common

43) A by-product of fossil fuel combustion is carbon dioxide. Which of the following is the cleanest with respect to the release of carbon dioxide?

Options:

- 1.Coal
- 2.Oil
- 3.Wood
- 4.Natural gas

Correct Option: 4

Type: Common

44) Maintaining balance between fulfilment of human needs and protection of environment is termed as

Options:

- 1.Environmental development
- 2.Sustainable development
- 3.Economic development
- 4.None of the above

Correct Option: 2

Type: Common

45) Identify the main Principle on which the Parliamentary System operates.

Options:

- 1.Responsibility of Executive to Legislature
- 2.Supremacy of Parliament
- 3.Supremacy of Judiciary
- 4.Theory of Separation of Power

Correct Option: 1

Type: Common

46) A 280 m train is moving at a speed of 80 kmph. How much time will it take to pass a bridge that is 120 m long?

Options:

- 1.30 s
- 2.32 s
- 3.18 s
- 4.40 s

Correct Option: 3

Type: Common

47) A, B, C, D and E are sitting on a bench. A is sitting next to B; C is sitting next to D, and D is not sitting with E who is on the left end of the bench. C is on the second position from the right. A is to the right of B and E. A and C are sitting together. In which position A is sitting?

Options:

- 1.Between B and D
- 2.Between B and C
- 3.Between E and D
- 4.Between C and E

Correct Option: 2

Type: Common

48) If all the letters in the word 'ARGUMENT' are rearranged in alphabetical order and substituted by the letter immediately following it in English alphabet, then what will be the new arrangement of letters?

Options:

- 1.BFHNOSUV
- 2.BFHONSWV
- 3.BFHNOUSV
- 4.BFHNOQUV

Correct Option: 1

Type: Common

49) Find the odd pair of words

Options:

- 1.Room : House
- 2.Atom : Electron
- 3.Car : Engine
- 4.Milk : Water

Correct Option: 1

Type: Common

50) Vinita, who is the sister-in-law of Amit, is the daughter-in-law of Kamni. Deepak is the father of Sandy who is the only brother of Amit. How is Kalyani related to Ashok?

Options:

- 1.Mother-in-law
- 2.Aunt
- 3.Wife
- 4.None of the above

Correct Option: 4