**Domain**

1. The type of DC motor in which an increase in load causes an increase in the speed of the motor is called:

A. shunt motor

B. cumulatively compounded motor

C. series motor

D. differentially compounded motor

Ans. D

2. In a 4-pole DC machine, number of cycles of voltage induced in one complete revolution of the armature is:

A. 8

B. 1

C. 2

D. 4

Ans. C

3. In common emitter configuration of a transistor circuit, the common emitter forward amplification factor is given by the ratio:

A. 

B. 

C. 

D. 

Ans. B

4. Which of the following instruments has the same calibration in AC and DC ?

A. Moving iron type

B. Induction type

C. Electrodynamometer type

D. Moving coil type

Ans. C

5. A slip test is conducted on a synchronous generator to determine:

A. direct and quadrature axis reactance

B. sub-transient reactance

C. positive and negative sequence reactance

D. slip

Ans. A

6. A 240-V DC series motor takes 40 A when giving its rated torque at 1500 rpm, operating in the linear region of magnetisation characteristics. If the armature and field resistance together is 0.3 Ω, then the value of resistance to be added to obtain rated torque at 1000 rpm is:

A. 2.2 Ω

B. 1.9 Ω

C. 1.6 Ω

D. 2.55 Ω

Ans. B

7. In the circuit shown, what are the values of the internal resistance across the open-circuited terminals (a and b) and of the Thevenin’s voltage between the terminals a and b?

Diagram, schematic

Description automatically generated

A. 1 Ω and 11 V

B. 1.43 Ω and 12 V

C. 7 Ω and 20 V

D. 8 Ω and 10 V

Ans. C

8. A 2000 / 1000 / 500-V, single-phase, three-winding autotransformer is to be used as an autotransformer with a supply voltage of 3000 V. Two loads, one of 1050 kVA at 3500 V and the other of 180 kVA at 1000 V, are to be energised from this autotransformer output. The currents in the three parts of the winding are:

A. 100 A, 210 A, 80 A

B. 180 A, 120 A, 410 A

C. 110 A, 70 A, 300 A

D. 80 A. 320 A, 410 A

Ans. C

9. Which of the following circuits has no transients?

A. Circuit consisting of resistance and capacitance

B. Circuit consisting of inductance and capacitance

C. Pure resistive circuit

D. Circuit consisting of resistance, inductance and capacitance

10. The maximum demand on a power-generating station is 500 MW. If the annual load factor is 50%, the total energy generated annually is:

A. 438 × 107 kWh

B. 219 × 10 kWh

C. 9125 × 105 kWh

D. 1825 × 105 kWh

Ans. B

11. Which of the following motors is not self-starting?

A. Three-phase induction motor

B. DC shunt motor

C. DC series motor

D. Single-phase induction motor

Ans. D

12. Voltage and current in a single-phase AC circuit are given by (50+ j20) V and (20+j 50) A, respectively. Power of the circuit can be expressed in complex form as:

A. (2100-j2000)

B. (2000-j2100)

C. (0-j2500)

D. (2500-j0)

Ans. B

13. A motor has to supply the following load cycle to a varying load: 20 kW for 10 seconds, 10 kW for 20 seconds, 30 kW for 10 seconds and idle for 10 seconds in one load cycle. What will be the size of the motor required?

A. 

B. 

C. 

D. 

Ans. B

14. In which of the following transformers is the secondary current of the same order as that of the magnetising current?

A. Distribution transformers

B. Potential transformers

C. Power transformers

D. Current transformers

Ans. B

15. Projection welding can be considered as a mass production form of:

A. seam welding

B. upset welding

C. spot welding

D. flash welding

Ans. C

16. Which of the following insulators is selected for HV application?

A. Suspension type

B. Strain type

C. Pin type

D. Disc type

Ans. A

17. The systematic collection of performance data as well as feedback of an individual derived from many stakeholders is called

A. Confidential reports

B. 360 degree appraisal

C. 120 degree appraisal

D. 240 degree appraisal

Ans. B

18. Two inductive reactances of 20 Ω and 5 Ω are connected in parallel across a 220 V 50 Hz sinusoidally varying voltage. Effective value of the inductive reactance seen by the source if source voltage and frequency are changed to 110 V and 25 H is:

A.2 Ω

B. 1 Ω

C. 5 Ω

D. 4 Ω

Ans. A

19. If a series resonant circuit has a resistance of 1 k Ω and half-power frequencies of 10 and 90 kHz, then the bandwidth and resonant frequency of the circuit, respectively, are:

A. 80 kHz and 30 kHz

B. 40 kHz and 10 kHz

C. 100 kHz and 9 kHz

D. 9kHz and 40 kHz

Ans. A

20. The mean spherical candle power of a lamp that emits a total flux of light of 1500 lumen is:

A. 1500/2π

B. 1500 × 2π

C. 1500/4π

D. 1500 × 4π

Ans. C

21. In a tank circuit, where V is the initial voltage to which the capacitor is charged, C is the capacitance of the tank circuit and L is the inductance of the tank circuit, the peak value of the circulating current is given by which of the following expressions?

A. 

B. 

C. 

D. 

Ans. C

22. A coil having a resistance of 8Ω and inductance of 2H is switched across a 48-V DC supply. The time constant of the circuit and the final value of the current in the circuit, respectively, are:

A. 0.25 and 6A

B. 025 and 8A

C. 0.4 and 24A

D. 0.2 and 4.8A

Ans. A

23. An RLC series circuit has a resistance of 2Ω, inductive reactance of 2Ω and capacitive reactance of 1Ω when connected across a 200-V, 50-Hz supply. If the frequency of the supply is now changed to 25 Hz, then power factor of the circuit will be:

A. 

B. 

C. 

D. 

Ans. C

24. If a delta-connected 6-pole 50-Hz induction motor has a rotor resistance of 0.15 Ω per phase and exerts the maximum torque at 880 rpm, then the percentage maximum torque that will be exerted at standstill is:

A. 33.43 %

B. 23.66%

C. 11.83%

D. 47.32%

Ans. B

25. A 200 CP lamp is hung 4 metre above the centre of a circular area of diameter 5 m. The illumination at the centre of the area will be:

A. 12.5 lux

B. 12.73 lux

C.15.92 lux

D. 8 lux

Ans. A

26. Identify from the options given below, which one is NOT a source of business ethics?

A. Legal system

B. Culture

C. Religion

D. Political system

Ans. D

27. The speed of a three-phase induction motor is controlled by using a VSI. The voltage supplied by the VSI contains harmonics. Which among the following is the positive-sequence harmonic?

A. Seventh

B. Seventeenth

C. Third

D. Fifth

Ans. A

28. Dielectric heating is used for heating:

A. zinc cells

B. wood

C. furnaces

D. steel sheets

Ans. B

29. A squirrel-cage induction motor has a starting current of 6 times the full-load current and a full-load slip of 0.05. If it is started using a star-delta starter, the values of the starting line current and the starting torque, respectively, are:

A. 4 pu and 1.2 pu

B. 1.15 pu and 0.35 pu

3. 2 pu and 0.6 pu

4. 3.46 pu and 0.17 pu

Ans. C

30. A two-wire 1000-m-long DC distributor cable is loaded with 0.5 A/m. Resistance of each of the conductors is 0.05 Ω/km. If the distributor is fed from both ends with equal voltages of 220 V, the maximum voltage drop will be:

A. 6.25 V

B. 5.2 V

C. 4.8 V

D. 2.4 V

Ans. A

31. The dielectric loss of an electrical system is 100 W when operating with a particular voltage. If the voltage of the system is doubled, then the dielectric loss will be:

A. 100 W

B. 400 W

C. 50 W

D. 200 W

Ans. B

32. A 24-V, 600-mW Zener diode is to be used for providing a 24-V stabilised supply to a variable load. If the input voltage 32 V, the value of the series resistance required is:

A. 1280 Ω

B. 320 Ω

C. 426 Ω

D. 960 Ω

Ans. B

33. What is the equivalent resistance between terminals x and y for the given circuit?

Diagram, schematic

Description automatically generated

A. 0.5 Ω

B. 2 Ω

C. 1 Ω

D. 0 Ω

Ans. D

34. For the transmission of a given amount of power, if the transmission voltage is increased, then the volume of conductor material required:

A. remains the same

B. increases

C. decreases

D. increases in proportion with the increase in voltage

Ans. C

35. The solid angle subtended by a sphere at its centre is:

A. 4π steradians

B. 6π steradians

C. π steradians

D. 2π steradians

Ans. A

36. The stator of a three-phase, 4-pole alternator accommodates a single-layer three-phase winding in 36 slots. If the coil span of the winding is 120 electrical degrees, then the distribution factor is:

A. 

B. 

C. 

D. 

Ans. C

37. In an electric drive using a three-phase induction motor, it is intended to apply regenerative braking. This is possible only if:

A. the rotor speed is equal to the speed of the magnetic field produced by stator currents, both rotating in the same direction.

B. the rotor speed is less than the speed of the magnetic field produced by stator currents, both rotating in the same direction.

C. the rotor speed is greater than the speed of the magnetic field produced by stator currents, both rotating in the same direction.

D. the rotor speed is greater than the speed of the magnetic field produced by stator currents, both rotating in opposite directions.

38. If the secondary winding of a current transformer is opened when the primary winding is carrying current, then the following event occurs:

A. Transformer will burn immediately.

B. High induced EMF is produced in the secondary winding.

C. High current is produced in the secondary winding.

D. Flux density in the core gets weakened.

Ans. B

39. A distribution transformer is usually a:

A. delta/star transformer

B. star/delta transformer

C. star/star transformer

D. delta/delta transformer

Ans. A

40. In a 6-pole DC machine, with lap winding, the number of parallel paths in the armature will be:

A. 4

B. 2

C. 3

D. 6

Ans. D

41. A generating station supplies the following loads to various consumers: industrial consumer, 750 MW; commercial establishment, 350 MW domestic power, 10 MW and domestic light, 50 MW. If the maximum demand on the station is 1000 MW, the diversity factor is:

A.1 .1

B.1.16

C. 0.91

D. 0.86

Ans. B

42. The Bill on the Sexual Harassment at the Workplace [The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Bill, 2012 ] got passed in the year 2012 in:

A. Only Lok Sabha

B. Rajya Sabha and Lok Sabha

C. Only Rajya Sabha

D. President Approval

Ans. A

43. A wattmeter having a range of 4000 W has an error of ±2% of full-scale deflection. If the true power is 2000 W, what would be the range of the reading?

A. 1920-2000 W

B. 1920-2040 W

C. 2000-2080 W

D. 1920-2080 W

Ans. D

44. A moving coil ammeter can be used to measure:

A. high-frequency alternating current

B. direct and alternating currents

C. low-frequency alternating current

D. DC current

Ans. D

45. A series RLC circuit resonates at 1.5 kHz and consumes 50 W from a 50-V AC source operating at resonant frequency. If the bandwidth is 0.75 kHz, then what are the values of the circuit elements R and L?

A. 50 Ω and 10.6 mH

B. 5 Ω and 1.06 mH

C. 25 Ω and 5.31 mH

D. 50 Ω and 16.6 mH

Ans. A

46. If the voltage and current in an AC circuit are represented as v = 240 sin  and i = 40 sin, then the power factor of the circuit is:

A. 30° leading

B. zero lagging

C. zero leading

D. unity

Ans. C

47. A 220-V DC machine has an armature resistance of 1Ω. If the full-load current is 20A, the difference between the induced voltage when the machine runs as motor and as generator is:

A. 20 V

B. 10 V

C. 40 V

D. 0 V

Ans. C

48. The maximum operating frequency for a diode with a reverse recovery time of 4 ns is approximately:

A. 25 MHz

B. 10 MHz

C. 50 MHz

D. 30 MHz

Ans. A

49. The voltage applied to a transformer is increased by 20 % and the frequency is reduced by 20%. Assuming the magnetic circuit is unsaturated, the maximum core density will be:

A. 4 times the original value

B. 3 times the original value

C. 0.67 times the original value

D. 1.5 times the original value

Ans. D

50. A Murray loop test is conducted on a 400-m-long faulty cable. At balance, the resistance connected to the faulty core was set to 40 Ω and the resistance of the resistor connected to the sound core was 60 Ω. What is the distance of the fault from the test end?

A. 320 m

B. 160 m

C. 267 m

D. 217 m

Ans. A

51. The current through an inductor of inductance 6 H varies linearly at a rate of 0.5 A/s. What will be the flux linkage in the system after the current has flown for 2 seconds?

A. 3 Wb-turn

B. 6 Wb-turn

C. 24 Wb-turn

D. 12 Wb-turn

Ans. B

52. The material used for a fuse must have:

A. low melting point and low conductivity

B. high melting point and high conductivity

C. high melting point and low conductivity

D. low melting point and high conductivity

Ans. D

53. Which of the following gives the correct order (from deepest level to surface level) of the three levels of organisational culture?

A. Artifacts, Values and Assumptions

B. Values, Assumptions and Artifacts

C. Values, Artifacts and Assumptions

D. Assumptions, Values and Artifacts

Ans. D

54. Form factor of a sawtooth waveform with a period of 3 s and a peak voltage of 150 V is:

A. 2.155

B. 0.555

C. 2.555

D. 1.155

Ans. D

55. Transmission efficiency is defined as:

A. total loss in the transmission line/receiving end power

B. receiving end current/sending end current

C. receiving end voltage/sending end voltage

D. receiving end power/sending end power

Ans. D

56. In a transformer, what is the phasor relationship of the loss component of no-load current with the mutual flux?

A. Leads flux by 90°

B. In phase with the flux

C. Out of phase with the flux

D. Lags flux by 90°

Ans. A

57. Buchholz relay is used to protect the:

A. oil-immersed transformers against all internal faults

B. transmission lines against all short circuit faults

C. synchronous motors against all internal faults

D. alternators against all internal faults

Ans. A

58. A transformer rated for 5kVA, 400V/200 V, 50 Hz, has a leakage impedance of z = r + jx referred to HV side. Its voltage regulation at full load will be maximum at a power factor of:

A. x/z leading

B. r/x lagging

C. r/z lagging

D. r/z leading

Ans. C

59. A coil of 500 turns wound on a core of non-magnetic material has an inductance of 20 mH. The average value of the EMF induced when a current of 2 A is reversed in 5 ms is:

A. 6 V

B. 8 V

C. 24 V

D. 16 V

Ans. D

60. The resistance of the pressure coil and the current coil of a wattmeter are 8000 Ω and 0.03 Ω, respectively. It is connected to measure the power in a single-phase circuit with a load taking a current of 40 A at a power factor of 0.8, with a voltage of 200 V. It is connected in such a way that the pressure coil is on the load side. What will be the percentage error in the wattmeter reading?

A. 0.0078 %

B. 7.8 %

C. 0.780 %

D. 0.078 %

Ans. D

61. For C coils and P poles, the commutator pitch for simplex wave winding is:

A. 

B. 

C. 

D. 

Ans. A

62. The material used for the core of a current transformer should have:

A. low reluctance and low iron loss

B. high reluctance and low iron loss

C. low reluctance and high iron loss

D. high reluctance and high iron loss

Ans. A

63. Speed of the rotating field produced by rotor currents with respect to the rotor, in a 6 -pole, three-phase induction motor when operating at a slip of 0.05 and when supplied with a three-phase voltage of 400 V 50 Hz is:

A. 500

B. 50

C.1000

D. 100

Ans. B

64. In the circuit shown, what is the voltage V across the 10-Ω resistor?

Diagram, schematic

Description automatically generated

A. 23.34 V

B. 16.7 V

C. 10.03 V

D. 6.67 V

65. What do you understand by company's microenvironment?

A. The detailed processes needed to achieve quality control in the firm.

B. company's departments, suppliers and other publics which make up its value delivery chain and matter the most.

C. The machines and tools a company uses to make and promote the products.

D. A company's operating policies and principles.

Ans. B

66. Protection against negative sequence currents is provided for:

A. generators

B. transmission lines

C. transformers

D. motors

Ans. A

67. The surge impedance of a long transmission line is given by:

A. 

B. 

C. 

D. 

68. Two alternators A and B are operating in parallel. If the excitation of A is increased, then:

A. both real and reactive power of A are increased.

B. the reactive power of A is decreased.

C. the reactive power of A is increased while that of B is unchanged.

D. the reactive power of A is increased while that of B is decreased.

Ans. D

69. The motor best suited for DC traction is:

A. DC series motor

B. DC differentially compounded motor

C DC shunt motor

D. stepper motor

Ans. A

70. A single-phase motor takes 50 A at a power factor angle of 30° lagging from a 250-V, 50-Hz AC supply. What value of capacitance must a shunting capacitor have to raise the power factor to unity?

A. 318.3 μF

B. 636.6 μF

C. 212.3 μF

D. 838.6 μF

Ans. A

**General Knowledge**

1. When was the Pin Code system introduced in India?

A. 15 August 1971

B. 15 August 1974

C. 15 August 1972

D. 15 August 1970

Ans. C

2. 'Chholiya' is the famous dance form of which state?

A. Rajasthan

B. Himachal Pradesh

C. Uttarakhand

D. Haryana

Ans. C

3. Export-Import bank of India was established in which year?

A. 1981

B. 1984

C. 1982

D. 1980

Ans. C

4. What is the life span of RBC?

A. 80 days

B. 100 days

C. 120 days

D. 160 days

Ans. C

5. Which one of the following gases is considered to be a noble gas?

A. Hexane

B. Krypton

C. Ethane

D. Arsine

Ans. B

6. The headquarters of 'Economic Commission of Africa' (ECA) is located at which place?

A. Nairobi

B. Cairo

C. Addis Ababa

D. Harare

Ans. C

7. Which of the following are the working languages of the UNESCO?

A. French & English

B. English & Russian

C. French & German

D. English & German

Ans. A

8. Where is the headquarters of the 'International Committee of the Red Cross' situated?

A. Madrid

B. Hague

C. New York

D. Geneva

Ans. D

9. Which of the following provides resistance against diseases in the body?

A. Platelets

B. Red corpuscles

C. Vitamins

D. White corpuscles

Ans. D

10. The sea-coast of which of the following states is the longest?

A. Tamil Nadu

B. Andhra Pradesh

C. Maharashtra

D. Gujarat

Ans. D

**Reasoning**

1. In the set of letters, symbols and numbers given below, how many times does a vowel come immediately before a consonant but not immediately after a symbol?

G w @ a 0 0 2 l i P x \* e g p s 2 @ u m \* 5 $ e f n e d % f u g \* C 5 a Q v i x % N a m #

A. 8

B. 10

C. 4

D. 6

Ans. D

**Comprehension:**

The triangle represents children who play Chess, the circle represents children who play Hockey and the rectangle represents children who play Kabaddi.

Diagram

Description automatically generated

Study the diagram above and answer the given questions.

Sub Question No: 2

What is the number of children who play either Kabaddi or Hockey or both but do not play Chess?

A. 24

B. 38

C. 56

D. 50

Ans. C

**Comprehension:**

The triangle represents children who play Chess, the circle represents children who play Hockey and the rectangle represents children who play Kabaddi.

Diagram

Description automatically generated

Study the diagram above and answer the given questions.

SubQuestion No: 3

What is the number of children who play exactly two of the given games?

A. 18

B. 15

C. 21

D. 27

Ans. D

**Comprehension:**

The triangle represents children who play Chess, the circle represents children who play Hockey and the rectangle represents children who play Kabaddi.

Diagram

Description automatically generated

Study the diagram above and answer the given questions.

SubQuestion No : 4

What is the number of children who play all the three games?

A. 8

B. 6

C. 9

D. 12

**Comprehension:**

The triangle represents children who play Chess, the circle represents children who play Hockey and the rectangle represents children who play Kabaddi.

Diagram

Description automatically generated

Study the diagram above and answer the given questions.

SubQuestion No : 5

What is the number of Hockey players who play any one of the other given games?

A. 18

B. 36

C. 26

D. 35

Ans. A

6. In a cricket match, Rahul scored 67 runs. Kapil scored 16 runs more than Rahul but 3 runs less than Vishwa. Srinath scored 4 runs less than Imran, and 2 runs more than Vishwa. Who scored the highest runs in the given match?

A. Vishwa

B. Kapil

C. Imran

D. Srinath

Ans. C

7. If ‘$’ means ‘addition’, ‘@’ means ‘subtraction’, ‘#’ means ‘Multiplication’, and ‘Ⓒ’ ‘means’ ‘Division’, then 95 Ⓒ 5 # 2 $ 7 @ 4 = ?

A. 49

B. 41

C. 38

D. 48

Ans. B

8. Five friends, Raunak, Akshay, Prem, Chang, and Melissa, are sitting around a circular table. Raunak is sitti immediately next to Akshay but not sitting immediately next to Prem. Akshay is not sitting next to Chang. Melissa sitting to Raunak's immediate right. Prem is sitting to Akshay's immediate left. Chang is sitting between Prem and Melissa. Who is sitting between Akshay and Chang?

A. Melissa

B. Prem

C. Raunak

D. Cannot be determined

Ans. B

9. What will come in place of '?' in the series?

2,6,12,20, ?, 42,56

A. 28

B. 30

C. 32

D. 36

10. Which two numbers will come in place of the two '?' in the series?

7,16,25,34,43,52, ?, ?, 79

A. 59,66

B. 57, 72

C. 60,69

D. 61,70

Ans. D

**General English**

1. The following sentence is divided into three parts. Identify the part that has an error in it. If there is no error, mark the option 'No error' as your answer

Initially, the film Gandhi was rejected by many producers, / but Attenborough's perseverance / brings out a classic movie about Gandhi.

A. brings out a classic movie about Gandhi

B. Initially, the film Gandhi was rejected by many producers

C. No error

D. but Attenborough's perseverance

Ans. A

2. Select the most appropriate adverb to fill in the blank.

The minister \_\_\_\_\_\_\_ addressed the gathering to announce the death of the leader.

A. sad

B. hardly

C. sorrowful

D. solemnly

Ans. D

3. Select the most appropriate adjective to fill in the blank.

The ants are so \_\_\_\_\_\_ that people always quote them as an example for hard work.

A. industrial

B. indigenous

C. industrious

D. industry

Ans. C

4. Select the most appropriate adverb to fill in the blank.

He \_\_\_\_\_\_\_ visited the orphanage to help the children in their studies, which gave him real joy.

A. seldom

B. swiftly

C. frequently

D. quickly

Ans. C

5. Select the most appropriate adjective to fill in the blank.

The lawyer asked his subordinate to read the \_\_\_\_\_\_\_book of laws and keep the notes ready for the next case.

A. Volume

B. Voluminous

C. Volumes

D. flimsy

Ans. B

6. Select the most appropriate option to fill in the blank.

I bought a \_\_\_\_\_\_ frock for my little grand-daughter from Vietnam.

A. gorgeous pink silk

B. pink gorgeous silk

C. silk gorgeous pink

D. gorgeous silk pink

Ans. A

7. The following sentence is divided into three parts. Identify the part that has an error in it. If there is no error, mark the option 'No error' as your answer.

The government has appointed / the most acclaimed architecture company / to building the smart city.

A. No error

B. The government has appointed

C. to building the smart city

D. the most acclaimed architecture company

Ans. C

8. Select the most appropriate adjective to fill in the blank.

Dolly felt very \_\_\_\_\_\_ about leaving the US after her studies.

A. ambivalent

B. certainly

C. attitude

D. ambiguous

Ans. A

9. Select the most appropriate verb to fill in the blank.

If Ramanujam \_\_\_\_\_\_ here today, he would be amazed at the speed of the calculating ability of computer.

A. lives

B. Was

C. is living

D. Were

Ans. D

10. The following sentence is divided into three parts. Identify the part that has an error in it. If there is no error, mark the option 'No error' as your answer

On reading the hidden document, / the realisation was dawned upon him / that he has been betrayed.

A. On reading the hidden document

B. that he has been betrayed

C. the realisation was dawned upon him

D. No error

Ans. C