PROVISIONAL ANSWER KEY

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Question1:-The relation between various electrical quantities in a dc circuit is given below. Choose the correct option.
(i) I = V/R
(ii) I = P/V

A:-(i) only

B:-(ii) only

C:-Both (i) and (ii)

D:-None of the above

Correct Answer:- Option-C

Question2:-SI units of electric power is

A:-Watts

B:-Joule

C:-Watts/sec

D:-Kilowatt-hour

Correct Answer:- Option-A

Question3:-Two lamps 220 V, 100 watts and 220 V, 40 watts are connected in series. When connected to a 220 V supply which lamp will glow more brightly?

A:-220 V, 100 W

B:-220 V, 40 W

C:-Both lamps will glow with equal brightness

D:-None will glow

Correct Answer:- Option-B

Question4:-Which of the following properties does not hold good for a parallel circuit?

A:-Voltages are additive

B:-Powers are additive

C:-Branch currents are additive

D:-Conductances are additive

Correct Answer:- Option-A

Question5:-Two bulbs 250 V, 100 watts and 250 V, 60 watts are connected in parallel to 250 volts supply. Total energy consumed by this circuit for 5 hours continuous operation for one day is

A:-800 kWh

B:-80 kWh

C:-8 kWh

D:-0.8 kWh

Correct Answer:- Option-D

Question6:-N number of resistors each of value R are connected in series. When these resistances are connected in parallel, the equivalent resistance is decreased by

A:-2 N

B:-N

C:-$1/N^2$

D:-N/2

Correct Answer:- Option-C

Question7:-A Nichrome wire with a uniform cross-section has a resistance R ohm. What will be the resistance of another wire with the same material but length and cross-section both doubled?

A:-R

B:-2R

C:-4R

D:-R/4

Correct Answer:- Option-A

Question8:-A 5Ω resistance is connected across a battery of 6V having an internal resistance of 1Ω. What is the current through the resistance?

A:-1.2 A

B:-1 A

C:-7.2 A

D:-5 A

Correct Answer:- Option-B

Question9:-An unknown resistance is connected in series with a combination of 60 Ω and 30 Ω in parallel. When a voltage of 220 V is applied across the whole circuit it is found that the circuit current is 10 A. What is the value of unknown resistance?

A:-2 Ω

B:-1 Ω

C:-3 Ω

D:-4 Ω

Correct Answer:- Option-A

Question10:-250V, 200 W incandescent lamp connected to a 250 V variable dc supply is made to verify Ohm's law. The lamp is turned on by applying variable voltage and its resistance is measured. The result obtained indicates that "Ohm's law is not satisfied". The reason may be :

A:-Variable voltage applied

B:-Temperature is not constant

C:-Both (1) and (2)

D:-None of these

Correct Answer:- Option-B

Question11:-Force between two charged bodies are represented by _____ law.

A:-Lenz's law

B:-Biot Savart law

C:-Coulomb's law

D:-None of these

Correct Answer:- Option-C

Question12:-The term analogous to resistance in magnetic circuit is

A:-MMF

B:-Flux

C:-Reluctance

D:-None of these

Correct Answer:- Option-C

Question13:-Direction of force on a current carrying conductor placed in a magnetic field can be determined by

A:-Right-Hand Thumb Rule

B:-Flemings Right Hand Rule

C:-Flemings Left Hand Rule

D:-All of these

Correct Answer:- Option-C

Question14:-Calculate the energy stored in a parallel plate capacitor of capacitance 30 μF when connected to a 100 V dc supply

A:-$30\times10^{-3}J$

B:-$15\times10^{-2}J$

C:-$15\times10^{-3}J$

D:-$30\times10^{-2}J$

Correct Answer:- Option-B

Question15:-Three equal capacitors are provided. In which of the following combinations maximum equivalent capacitance value will be obtained?

A:-When all in parallel

B:-When all in series

C:-Two in series and third one in parallel with the combination

D:-Two in parallel and third one in series with the combination

Correct Answer:- Option-A

Question16:-The relative permeability of Vacuum is _____ H/m

A:-$4\pi \times 10^{-7}$

B:-8.854×10^{-12}

C:-infinity

D:-1

Correct Answer:- Option-D

Question17:-Three equal capacitances C are connected as follows. Two in series and this combination is connected in parallel with the third one. What is the equivalent capacitance?

A:-3 C

B:-C/3

C:-3C/2

D:-2C/3

Correct Answer:- Option-C

Question18:-Two magnetically coupled coils have a mutual inductance of 30 mH. If the current through one coil changes from 3A to 15 mA in 3 microseconds what is the average value of induced emf in the other coil

A:-$150mV$

B:-150 V

C:-120 mV

D:-120 V

Correct Answer:- Option-D

Question19:-SI unit of magnetic flux is

A:-AT/Wb

B:-Weber

C:-Wb/S

D:-Tesla

Correct Answer:- Option-B

Question20:-Two coils of equal inductance L are placed adjacent to each other such that magnetic f flux in coil 1 completely links with coil 2. The mutual inductance between the coil is

A:-L

B:-2L

C:-1

D:-$\sqrt{L}$

Correct Answer:- Option-A

Question21:-The maximum value of sinusiodal alternating current is 20A. Find the instantaneous value of current at 1/12th of a cycle.

A:-5A

B:-7.5A

C:-10A

D:-15A

Correct Answer:- Option-C

Question22:-Instantaneous voltage waveform is represented by $v = V_m \cos\theta$. Average voltage is given by

A:-$\frac{V_m}{\pi}$

B:-$\frac{2V_m}{\pi}$

C:-$\frac{V_m}{2}$

D:-$\frac{V_m}{\sqrt{2}}$

Correct Answer:- Option-B

Question23:-Voltage and current waveforms in an AC circuit is given by v = 100 sin (*w*t+15°) and i = 10 sin (*w*t+60°). Which of the following statement is true?

A:-Voltage leads current by 45°

B:-Current leads voltage by 45°

C:-Current leads voltage by 60°

D:-Voltage leads current by 15°

Correct Answer:- Option-B

Question24:-The equation for instantaneous current in a circuit with resistance carrying a current of 10 A_{rms} from 230 V, 50 Hz AC supply is given by

A:-10 sin 100 πt

B:-$\frac{10}{\sqrt{2}} \sin 100\pi t$

C:-$10\sqrt{2} \sin 50\pi t$

D:-$10\sqrt{2} \sin(100\pi t)$

Correct Answer:- Option-D

Question25:-Three identical resistors of 3Ω are connected in star configuration. Find the equivalent resistances in delts connected configuration

A:-1Ω

B:-1.5Ω

C:-6Ω

D:-9Ω

Correct Answer:- Option-A

Question26:-Three identical resistors of 1Ω are connected in star configuration. Find the equivalent resistances in delta connected configuration

A:-$\frac{1}{2}$ Ω

B:-2Ω

C:-3Ω

D:-$\frac{1}{3}$ Ω

Correct Answer:- Option-C

Question27:-Reactance offered by a capacitor of capacitance 1F in 230 V 50 Hz supply is

A:-100π

B:-$\frac{1}{100\pi}$

C:-$\frac{50}{2\pi}$

D:-$\frac{2\pi}{50}$

Correct Answer:- Option-B

Question28:-In a 3φ star connected system

i. Line voltage = phase voltage
ii. Line current = phase current
iii. Line voltage = $\sqrt{3}$phase voltage.
iv. Line current = phase current/$\sqrt{3}$

A:-i and ii

B:-ii and iii

C:-iii and iv

D:-i and iv

Correct Answer:- Option-B

Question29:-In a 3φ delta connected system

A:-Line currents are 30° behind the respective phase currents

B:-Line voltages are 30° ahead of their respective phase voltages

C:-Current in line and phase are same

D:-All the above

Correct Answer:- Option-A

Question30:-For a voltage waveform, form factor is given by

A:-Maximum voltage / RMS voltage

B:-RMS voltage / maximum voltage

C:-RMS voltage/Average voltage

D:-Maximum voltage/Average voltage

Correct Answer:- Option-C

Question31:-Compared to ordinary electrodynamometer type wattmeter, in low

power factor electrodynamometer type wattmeter which of the following statement are true?

i. Pressure coil has low value of resistance
ii. Pressure coil has high value of resistance
iii. High value of control torque
iv. Small value of control torque

A:-i and ii

B:-ii and iii

C:-i and iii

D:-i and iv

Correct Answer:- Option-C

Question32:-A 1 mA ammeter has a resistance of 100 ohm. It is to be converted to 500 mA ammeter. The value of shunt resistance is

A:-$\frac{100}{500}$ohm

B:-$\frac{100}{499}$ ohm

C:-5 ohm

D:-4.99 ohm

Correct Answer:- Option-B

Question33:-Which of the following statements are correct regarding power measurement in a 3 phase system with balanced load and unity power factor using 2 wattmeter method

A:-Each wattmeter reads half of the total power

B:-One wattmeter reads zero and other reads total power

C:-Readings of two wattmeter are equal but opposite sign

D:-All of the above

Correct Answer:- Option-A

Question34:-Different methods to measure high resistance includes :

i. Direct deflection method.
ii. Meggar
iii. Kelvin's Double Bridge
iv. Ammeter-voltmeter method

A:-ii only

B:-i and ii

C:-i and iv

D:-iii and iv

Correct Answer:- Option-B

Question35:-Maxwell's inductance capacitance bridge is used for measurement of inductance of

A:-Low Q coils (Q<1)

B:-Medium Q coils (1<Q<10)

C:-High Q coils (Q>10)

D:-Low and medium Q coils

Correct Answer:- Option-B

Question36:-Which of the following statements are true when two sinusoidal voltages of same frequency are applied to CRO?

A:-A straight line inclined at 45° with horizontal is obtained when the two voltages are equal and in phase

B:-A circle is obtained when the voltages are equal with a phase displacement of 90°

C:-An ellipse is obtained when voltages are equal but with a phase shift (not equal to 0° or 90°)

D:-All the above

Correct Answer:- Option-D

Question37:-A CT is installed in a system to measure current. The primary current in CT depends on

A:-Load connected to the system

B:-Load connected to the secondary of the CT

C:-Both 1 and 2

D:-None of the above

Correct Answer:- Option-A

Question38:-In PT, if we increase secondary burden,

A:-Primary current increases

B:-Ratio error increases

C:-Both 1 and 2

D:-Primary current increases and ratio error decreases

Correct Answer:- Option-C

Question39:-In single phase power factor meter, which of the following statements are true

A:-Control torque is provided by spring control

B:-When power factor meter is disconnected from the circuit, the pointer remains at the position which it occupied at the instant of disconnection

C:-2 only

D:-both 1 and 2

Correct Answer:- Option-C

Question40:-Creeping in single phase induction type energy meter is due to

A:-Overcompensation for friction

B:-Excessive voltage across potential coil

C:-Stray magnetic field

D:-All the above

Correct Answer:- Option-D

Question41:-Which material is used as negative plates in Lead acid battery?

A:-Sponge lead

B:-Lead peroxide

C:-Lead sulphate

D:-Lead dioxide

Correct Answer:- Option-A

Question42:-Which part is loosing its weight during electrolysis?

A:-Cathode

B:-Anode

C:-Electrolyte

D:-Seperator

Correct Answer:- Option-B

Question43:-Which is used as a top layer of a solar cell?

A:-Silver

B:-Copper

C:-Silicon

D:-Aluminium

Correct Answer:- Option-C

Question44:-The electrolyte used in Carbon Zinc dry cell is

A:-Dilute sulphuric acid

B:-Ammonium chloride

C:-Potassium hydroxide

D:-Concentrated hydrochloric acid

Correct Answer:- Option-B

Question45:-What is the purpose of seperator in Lead acid battery?

A:-To provides a path for electrolyte

B:-To hold positive and negative plates firmly

C:-To avoid short circuit between negative and positive plates

D:-To keep positive and negative plates in a sequence array

Correct Answer:- Option-C

Question46:-What is the electro chemical equivalent (ECE) of copper?

A:-0.329 mg/coloumb

B:-0.329 g/coloumb

C:-1.1182 mg/coloumb

D:-1.1182 g/coloumb

Correct Answer:- Option-A

Question47:-Which type of the fire extinguisher is used for fire on electrical equipment?

A:-Halon type

B:-Foam type

C:-Gas catridge water type

D:-Stored pressure water type

Correct Answer:- Option-A

Question48:-What is starving in extinguishing of fire?

A:-Adding fuel to the fire

B:-Using water to cool the fire

C:-Removing fuel element from the fire

D:-Preventing oxygen supply to the fire

Correct Answer:- Option-C

Question49:-Cause of buckling effect in Lead acid battery

A:-Over charging or over discharging

B:-Charging with low rate for short period

C:-Formation of sediments falling from the plate

D:-Battery is kept in discharged condition for long period

Correct Answer:- Option-A

Question50:-Fire on electrical equipments comes under

A:-Class A

B:-Class C

C:-Class D

D:-Class B

Correct Answer:- Option-C

Question51:-Fusing factor of a fuse is defined as

A:-Ratio of current rating of fusing element to the minimum fusing current

B:-Ratio of minimum fusing current to the current rating of fusing element

C:-Ratio of current rating to the diameter of fusing element

D:-Ratio of current rating to the breaking capacity of the fuse

Correct Answer:- Option-B

Question52:-The protection offered by RCCB is

A:-Protection from over voltage

B:-Protection from short circuit

C:-Protection from over load

D:-Protection from electric shock

Correct Answer:- Option-D

Question53:-What is the advantage of the concealed wiring?

A:-Easy to maintain

B:-Less voltage drop

C:-High insulation resistance

D:-Protection against moisture

Correct Answer:- Option-D

Question54:-Which type of accessories are used to tap supply for a portable appliance?

A:-Safety accessories

B:-Holding accessories

C:-Controlling accessories

D:-Outlet accessories

Correct Answer:- Option-D

Question55:-Maximum load allowed on light and fan sub circuit as BIS?

A:- 3000 W

B:-2000 W

C:-800 W

D:-600 W

Correct Answer:- Option-C

Question56:-The factor deciding the thickness of the insulation of a cable?

A:-Current

B:-Temperature

C:-Power factor

D:-Voltage

Correct Answer:- Option-D

Question57:-What is the unit of luminous intensity?

A:-Lux

B:-Lumen

C:-Candela

D:-Steradian

Correct Answer:- Option-C

Question58:-Which is the cold cathode lamp?

A:-Halogen lamp

B:-Neon sign lamp

C:-Fluroscent lamp

D:-Mercury vapour lamp

Correct Answer:- Option-B

Question59:-The unit of luminous efficiency is

A:-Lux

B:-Lumen

C:-Lumens/m^2

D:-Lumens/Watt

Correct Answer:- Option-D

Question60:-The minimum diameter of G I pipe used in pipe earthing is

A:-28 mm

B:-28 cm

C:-38 mm

D:-38 cm

Correct Answer:- Option-C

Question61:-The induced voltage in the armature of a separately exited dc generator is characterized as

A:-Unidirectional but discontinuous

B:-Unidirectional but continuous

C:-Alternating and pulsating

D:-None of the above

Correct Answer:- Option-C

Question62:-In a DC electrical machine, the armature laminations are perforated for air ducts to

A:-Enable frictionless movement of armature rotor

B:-Reduce the hysteresis losses

C:-Reduce the eddy current losses

D:-Enable cooling and air ventilation

Correct Answer:- Option-D

Question63:-Determine the armature power developed by a 200 V DC shunt motor taking a power input of 20 kW. Armature and field resistances are 0.05 Ω and 100 Ω respectively.

A:-17.32 kW

B:-19.12 kW

C:-20.63 kW

D:-16.54 kW

Correct Answer:- Option-B

Question64:-In a DC machine pole shoes are designed with larger cross section than pole core. It improves

A:-Magnetizing field strength

B:-Current flow through the field winding

C:-Flux per pole entering the armature

D:-All of the above

Correct Answer:- Option-C

Question65:-The direction of rotation of a DC shunt motor can be reversed by

A:-Reversing the current through either armature or field coils

B:-Reversing the current through armature and field coils at the same time

C:-Reversing the motor input terminals

D:-None of the above

Correct Answer:- Option-A

Question66:-If two identical traction motors are available in pair, then their efficiency can be determined by

A:-Hopkinsons test

B:-Field test

C:-Sumpners test

D:-Swinburnes test

Correct Answer:- Option-B

Question67:-In a wave wound DC machine, the mechanical balance of armature can be achieved by using

A:-Equalizer connection

B:-Split rings

C:-High mica insulation between commutator segments

D:-Dummy coils

Correct Answer:- Option-D

Question68:-A 230 V DC shunt generator has a maximum efficiency of 82%. When delivering an output power of 41 kW. Determine the magnitude of constant losses in the machine

A:-4.5 kW

B:-50 kW

C:-8 kW

D:-20.5 kW

Correct Answer:- Option-A

Question69:-A 240 V DC series motor has an armature resistance of 0.4Ω and series field resistance of 0.1Ω and takes 40 A at rated load. Calculate the value external

starting resistance required to limit the starting current of 120% of rated load current. (Neglect the brush drop)

A:-4.5 Ω

B:-0.5 Ω

C:-10 Ω

D:-5 Ω

Correct Answer:- Option-A

Question70:-A DC series motor undergoes an open circuit fault in the field winding while driving a mechanical load. The motor will

A:-Stop

B:-Attain dangerously high speed

C:-Operate at a lower speed

D:-Operate at lower efficiency

Correct Answer:- Option-A

Question71:-The energy efficiency of a single phase distribution transformer is determined as

A:-output in kWh/Input in kWh

B:-output in KVA/Input in kVA

C:-Output in KW/Output in kW+losses

D:-1−losses/output in kW

Correct Answer:- Option-A

Question72:-When the insulating oil in a transformer cools down, it contracts and air drawn in to the transformer from atmosphere. This is termed as

A:-Breathing

B:-Magnetostriction

C:-Co-efficient of thermal expansion

D:-Sludging

Correct Answer:- Option-A

Question73:-Among the following three phase transformer connections, which one is best suited to maintain service continuity even during a fault in one phase

A:-Delta-Delta

B:-Star-Star

C:-Delta-Star

D:-Star-Delta

Correct Answer:- Option-A

Question74:-Consider following facts about short pitch winding of an alternator
i. It increases magnitude of generated emf
ii. It improves induced emf waveform
iii. It reduces eddy current and hysteresis losses

iv. Increases the power rating of machine
v. It helps to save winding copper

Which among the statements are correct?

A:-i, ii, iii, iv

B:-ii, iii,v

C:-i, iii, iv, v

D:-ii,iii,iv

Correct Answer:- Option-B

Question75:-The output power delivered from an alternator can be increased by

A:-Increasing the field current

B:-Increasing the prime mover output

C:-Decreasing the rotor speed

D:-Decreasing the armature voltage

Correct Answer:- Option-B

Question76:-A synchronous motor running under constant excitation meet the increased load demand by an increase in armature current. This increase in armature current is due to

A:-Drop in power factor

B:-Decrease in motor speed

C:-Increase in supply voltage

D:-Rise in resultant voltage across the armature

Correct Answer:- Option-D

Question77:-Ratio of starting current to full load current of a three phase induction motor is 5 : 2. If the full load slip is 4%, determine the ratio of starting torque to full load torque

A:-5 : 2

B:-1 : 10

C:-1 : 4

D:-3 : 1

Correct Answer:- Option-C

Question78:-In the case of an induction motor, the purpose of stator frame is to

A:-Complete the stator magnetic flux path

B:-Provide mechanical support to stator

C:-Provide natural ventilation

D:-Maintain a rotating magnetic field of constant magnitude

Correct Answer:- Option-B

Question79:-Operating speed of an universal motor:

A:-Increase with increase in supply frequency

B:-Decrease with increase in supply frequency

C:-Increases for frequencies beyond 50 Hz

D:-Independent of supply frequency

Correct Answer:- Option-D

Question80:-The mechanism for disconnecting the capacitor in a capacitor start induction motor failed to operate when the motor picks up the speed. Then

A:-The motor will revolve in reverse direction

B:-The capacitor will be damaged

C:-The main winding will get damaged

D:-The motor rotate in dangerously high speed

Correct Answer:- Option-B

Question81:-What is the hexadecimal equivalent of the binary number 010 1110

A:-2 E

B:-1 E

C:-5 C

D:-2 F

Correct Answer:- Option-A

Question82:-Which of the following is the binary value of the hexadecimal number 9A

A:-10101001

B:-10001000

C:-10011010

D:-10101010

Correct Answer:- Option-C

Question83:-Which of the following term represents logic high level in positive logic system?

A:-true

B:-off

C:-open

D:-no

Correct Answer:- Option-A

Question84:-How many outputs are in a half-adder circuit?

A:-one

B:-three

C:-two

D:-none

Correct Answer:- Option-C

Question85:-Name the flip-flop which gives valid output when both its inputs are high

A:-J-K flip-flop

B:-D-flip flop

C:-R-S flip-flop

D:-Clocked-RS flip-flop

Correct Answer:- Option-A

Question86:-How many clock pulses are required for an 8-bit serial-in-parallel out shift register

A:-4

B:-16

C:-12

D:-8

Correct Answer:- Option-D

Question87:-Which of the following concept is for a digital to analog converter

A:-Dual slop

B:-Binary weighted resistors

C:-Stair step-ramp

D:-Successive approximation

Correct Answer:- Option-B

Question88:-The terminal count of a typical modulus-10 binary counter is

A:-0000

B:-1010

C:-1001

D:-1111

Correct Answer:- Option-C

Question89:-_____ solders are used for glass-to-glass and glass-to-metal soldering.

A:-Tin-zinc

B:-Indium-tin

C:-Lead-silver

D:-Cadmium-Zinc

Correct Answer:- Option-B

Question90:-A serial-in-parallel out 4 bit from shift register initially contains all 1's. The data 0111 is waiting to enter. After four clock pulses the register contains

A:-0000

B:-1111

C:-0111

D:-1000

Correct Answer:- Option-C

Question91:-Ripple factor of half-wave rectifier is

A:-1.21

B:-1.3

C:-0.48

D:-1.414

Correct Answer:- Option-A

Question92:-The basic purpose of filter in a rectifier is to

A:-Minimize variations in ac input signal

B:-Suppress harmonics in rectified output

C:-Stabilize dc output voltage

D:-Remove ripples from the rectified output

Correct Answer:- Option-D

Question93:-A voltage controlled oscillator is

A:-Leading oscillator

B:-Relaxation oscillator

C:-Ticker oscillator

D:-Wein bridge oscillator

Correct Answer:- Option-B

Question94:-If the reverse bias on the gate of a JFET is increased, then width of the conducting channel

A:-is increased

B:-is decreased

C:-remains the same

D:-none of the three

Correct Answer:- Option-B

Question95:-What are the three terminals of a TRIAC?

A:-emitter, base 1 and base 2

B:-gate, source and sink

C:-base, emitter and collector

D:-gate, anode 1 and anode 2

Correct Answer:- Option-D

Question96:-In IGBT, the P^+layer connected to the collector terminal is called as the

A:-drift layer

B:-injection layer

C:-body layer

D:-collector layer

Correct Answer:- Option-B

Question97:-An SCR combines the features of

A:-a rectifier and resistance

B:-a rectifier and capacitor

C:-a rectifier and transistor

D:-a rectifier and inductor

Correct Answer:- Option-C

Question98:-A voltage source inverter is used when source and load inductances are respectively

A:-Small and small

B:-Large and large

C:-Large and small

D:-Small and large

Correct Answer:- Option-D

Question99:-An ideal regulated power supply is one which has voltage regulation of

A:-5%

B:-0%

C:-10%

D:-1%

Correct Answer:- Option-B

Question100:-What is the effect in internal resistance of a discharged cell?

A:-Increase

B:-Decrease

C:-Becomes zero

D:-Remain same

Correct Answer:- Option-A