FINAL ANSWER KEY

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Exam: Junior Instructor (Electronic Mechanic)

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Department Industrial Training

Question1:-Two resistors of the same value are connected in parallel and a 100V supply is connected across the terminals. If the total current taken is 10A, what is the value of each resistor?

A:-5Ω

B:-10Ω

C:-20Ω

D:-40Ω

Correct Answer:- Option-C

Question2:-Select the colour code for a resistor of value 680kΩ with ±5% tolerance from the given options.

A:-Green, Blue, Orange and Silver

B:-Green, White, Yellow and Gold

C:-Blue, Violet, Orange and Silver

D:-Blue, Grey, Yellow and Gold

Correct Answer:- Option-D

Question3:-The reactance of a capacitor _____ with increase in frequency of the current flowing through it.

A:-increases

B:-decreases

C:-remains the same

D:-None of the above

Correct Answer:- Option-B

Question4:-The quality factor 'Q' of a coil at resonance is 100. If the resistance of the coil is 10Ω, what is the value of it's reactance at resonance?

A:-10Ω

B:-1kΩ

C:-10kΩ

D:-1000kΩ

Correct Answer:- Option-B

Question5:-Two capacitors 100μF each, connected in parallel are then connected in series with a third capacitor of value 200μF. What is the effective capacitance of the entire combination?

    A:-400μF

    B:-250μF

    C:-100μF

    D:-300μF

    Correct Answer:- Option-C

Question6:-Which of the following devices exhibits negative resistance?

    A:-Zener diode

    B:-Varactor diode

    C:-Light emitting diode

    D:-Tunnel diode

    Correct Answer:- Option-D

Question7:-Which breakdown mechanism is likely to take place in a heavily doped PN junction diode?

    A:-Avalanche breakdown

    B:-Zener breakdown

    C:-Both avalanche and zener breakdowns

    D:-Neither avalanche nor zener breakdowns

    Correct Answer:- Option-B

Question8:-Which of the following statements are not correct for a JFET?
(i)   It is a bipolar device
(ii)   It has high input impedance
(iii)   It is a current controlled device
(iv)   Small in size compared to BJT

    A:-(i) and (ii)

    B:-(ii) and (iv)

    C:-(iii) and (iv)

    D:-(i) and (iii)

    Correct Answer:- Option-D

Question9:-The arrow pointer on a transistor symbol indicates

    A:-direction of minority carrier current

    B:-direction of majority carrier current

    C:-direction of hole current

    D:-direction of electron current

    Correct Answer:- Option-C

Question10:-For the operation of n-channel E-MOSFET, the gate voltage must be

A:-low positive

B:-low negative

C:-high positive

D:-high negative

Correct Answer:- Option-C

Question11:-Which of the following is an adjustable voltage regulator IC?

A:-LM7805

B:-LM317

C:-LM320

D:-LM340

Correct Answer:- Option-B

Question12:-The forbidden energy gap of Silicon at room temperature is

A:-1.12 eV

B:-5 eV

C:-0.72 eV

D:-0.5 eV

Correct Answer:- Option-A

Question13:-A heavily doped p-type semiconductor material is

A:-positively charged

B:-negatively charged

C:-electrically neutral

D:-None of the above

Correct Answer:- Option-C

Question14:-At a PN-junction, electrons diffuse from the N-region to the P-region because of the

A:-difference in carrier concentration

B:-attraction of holes in the P-region

C:-potential difference at the junction

D:-None of the above

Correct Answer:- Option-A

Question15:-Which of the following statements about the leakage current in a semiconductor diode are correct?
(i)   Created due to the flow of majority carriers.
(ii) Remains the same irrespective of the changes in biasing voltage.
(iii) Varies with variation in temperature.
(iv) Of the order of microamperes in silicon and nanoamperes in germanium

A:-(i) and (iv)

B:-(iii) and (iv)

C:-(ii) and (iii)

D:-(i) and (iii)

Correct Answer:- Option-C

Question16:-Which of the following defines base transportation factor of an NPN transistor?

A:-The ratio of the number of electrons arriving at collector to the number of emitted electrons

B:-The ratio of the electron current to the total emitter current

C:-Ratio of the collector current to the emitter current

D:-Ratio of collector current to base current

Correct Answer:- Option-A

Question17:-Which transistor configuration has very high input resistance and very low output resistance?

A:-Common Base

B:-Common Emitter

C:-Common Collector

D:-Both CB and CE

Correct Answer:- Option-C

Question18:-The current gain α of a transistor is 0.99. What is the value of its β?

A:-0.5

B:-99

C:-9.9

D:-198

Correct Answer:- Option-B

Question19:-In a BJT amplifier, the Q-point is stabilized by

A:-Keeping the temperature constant

B:-Keeping the base current constant

C:-Changing the base current to keep I_C and V_{CE} constant

D:-Changing the emitter current to keep I_B and V_{BE} constant

Correct Answer:- Option-C

Question20:-Factors that affect the lower cut-off frequency of a RC coupled CE amplifier are
(i)   Ineffective bypassing of emitter bypass capacitors
(ii) Bypassing effect of junction capacitances
(iii) Signal loss across coupling capacitors
(iv) Loading effect of subsequent stages

A:-(i) and (ii)

B:-(ii) and (iii)

C:-(ii) and (iv)

D:-(i) and (iii)

Correct Answer:- Option-D

Question21:-Which coupling scheme is preferred for a multistage amplifier used to amplify signals below 10 Hz?

A:-Direct coupling

B:-Transformer coupling

C:-RC coupling

D:-All of the above

Correct Answer:- Option-A

Question22:-Which of the following oscillator circuits is suitable to generate audio frequency signals?

A:-Hartley oscillator

B:-Crystal oscillator

C:-Colpitts oscillator

D:-Wien bridge oscillator

Correct Answer:- Option-D

Question23:-Which of the following circuit can be used as a memory element?

A:-Monostable Multivibrator

B:-Bistable Multivibrator

C:-Astable Multivibrator

D:-All of the above

Correct Answer:- Option-B

Question24:-The differential mode gain of an op-amp is 10^5 . If the common mode gain is 0.1, what is its CMRR?

A:-10^{-6}

B:-10^4

C:-10^5

D:-10^6

Correct Answer:- Option-D

Question25:-Which of the following is not the characteristic of an ideal op-amp?

A:-Infinite input resistance

B:-Infinite output resistance

C:-Infinite voltage gain
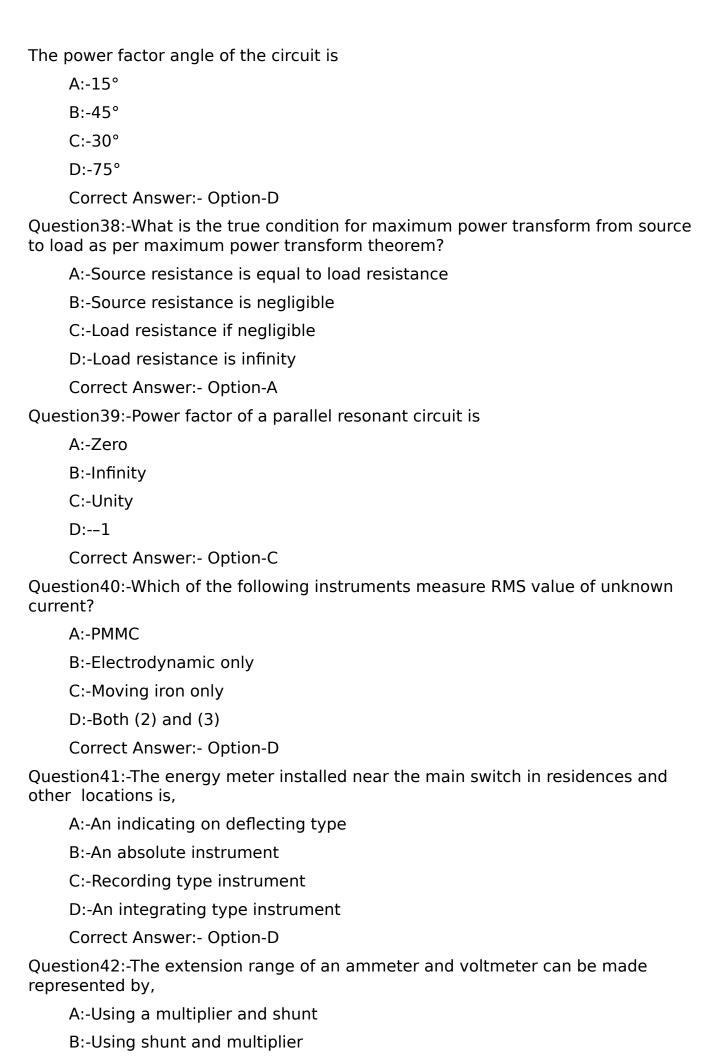
D:-Infinite bandwidth

Correct Answer:- Option-B

Question26:-The electrolyte used in dry cell?

A:-Ammonium chloride

B:-Nitric acid

C:-Manganese dioxide

D:-Sulphuric acid

Correct Answer:-Question Cancelled

Question27:-The specific gravity of the electrolyte in a lead acid battery can be measured using _____.

A:-Ammeter

B:-Barometer

C:-Hydrometer

D:-Voltmeter

Correct Answer:- Option-C

Question28:-Conventionally the energy stored in a battery is measured in _____.

A:-Ampere - Volt

B:-Ampere - Hour

C:-Ampere/Hour

D:-Ampere/Volt

Correct Answer:- Option-B

Question29:-In a full wave rectifier if the input signal frequency is 50 Hz, find the output signal frequency?

A:-25 Hz

B:-50 Hz

C:-100 Hz

D:-150 Hz

Correct Answer:- Option-C

Question30:-Based on the input cycles utilized, the rectifiers can be classified as _____.

A:-Full wave rectifier

B:-Half wave rectifier

C:-Positive rectifier

D:-Both (1) and (2)

Correct Answer:- Option-D

Question31:-The following symbol represents _____ in an electrical system.

A:-Rectifier

B:-Inverter

C:-Chopper

D:-UPS

Correct Answer:-Question Cancelled

Question32:-Choose the disadvantage of SMPS:

A:-Low efficiency

B:-Noise exist due to high frequency switching

C:-High power dissipation

D:-None of the above

Correct Answer:- Option-B

Question33:-The regulated DC power supply consists of _____.

A:-Rectifier

B:-Filter

C:-Voltage regulator

D:-All the above

Correct Answer:- Option-D

Question34:-The instruments used for critical load during temporary power failure occur is _____.

A:-UPS

B:-SMPS

C:-MPS

D:-RCCP

Correct Answer:- Option-A

Question35:-What is used to neutralize a spilled electrolyte from a lead acid battery?

A:-Boric acid

B:-Water

C:-Sulphuric acid

D:-Baking soda

Correct Answer:- Option-D

Question36:-The self inductance of two coils is 16 mH and 4 mH respectively. If the coefficient of coupling is 0.7, the mutual inductance between the coils is,

A:-8 mH

B:-5.6 mH

C:-4.2 mH

D:-4 mH

Correct Answer:- Option-B

Question37:-The voltage and current in ac circuit is represented by $v = v_m$ $Sin(\omega t+30°)$ and $i = I_m$ $Sin(\omega t–45°)$.

The power factor angle of the circuit is

A:-15°

B:-45°

C:-30°

D:-75°

Correct Answer:- Option-D

Question38:-What is the true condition for maximum power transform from source to load as per maximum power transform theorem?

A:-Source resistance is equal to load resistance

B:-Source resistance is negligible

C:-Load resistance if negligible

D:-Load resistance is infinity

Correct Answer:- Option-A

Question39:-Power factor of a parallel resonant circuit is

A:-Zero

B:-Infinity

C:-Unity

D:--1

Correct Answer:- Option-C

Question40:-Which of the following instruments measure RMS value of unknown current?

A:-PMMC

B:-Electrodynamic only

C:-Moving iron only

D:-Both (2) and (3)

Correct Answer:- Option-D

Question41:-The energy meter installed near the main switch in residences and other locations is,

A:-An indicating on deflecting type

B:-An absolute instrument

C:-Recording type instrument

D:-An integrating type instrument

Correct Answer:- Option-D

Question42:-The extension range of an ammeter and voltmeter can be made represented by,

A:-Using a multiplier and shunt

B:-Using shunt and multiplier

C:-Using series capacitor and series inductor

D:-Using series inductor and series capacitor

Correct Answer:- Option-B

Question43:-In a moving iron instrument which is spring controlled, a current of 5A produces a deflection of 60°. What will be the deflection when a current of 2A is flowing through the coil of the instrument?

A:-9.6°

B:-4°

C:-14°

D:-10°

Correct Answer:- Option-A

Question44:-According to Faraday's law of electromagnetic induction,

A:-Magnetic field is produced by time varying electric flux

B:-Magnetic field is associated with a moving charge

C:-Electric field is produced by time varying magnetic flux

D:-Electric field is produced by magnetic flux linked

Correct Answer:- Option-C

Question45:-Which of the following is not the unit of energy?

A:-kWh

B:-Joules/second

C:-Watt hour

D:-Joules

Correct Answer:- Option-B

Question46:-The rise time 't' of a signal applied to CRO and bandwidth 'B' of the CRO are related as

A:-$t \times B = 0.35$

B:-$t \times B = 1$

C:-$t/B = 0.35$

D:-$t/B = 1$

Correct Answer:- Option-A

Question47:-An oscilloscope is used to measure the phase difference or the frequency relationship between two unknown signals, it is used in the

A:-CHOP mode

B:-ALT mode

C:-Trigger mode

D:-X-Y mode

Correct Answer:- Option-D

Question48:-A triangular wave shape is obtained in a function generator

    A:-by differentiating a square wave

    B:-by integrating a square wave

    C:-by integrating a sine wave

    D:-by differentiating a sine wave

    Correct Answer:- Option-B

Question49:-In a digital multimeter resistance is measured by using

    A:-Variable current source

    B:-Variable voltage source

    C:-Constant current source

    D:-Constant voltage source

    Correct Answer:- Option-C

Question50:-The delay line in CRO is placed after

    A:-Horizontal Amplifier

    B:-Vertical amplifier

    C:-Trigger circuit

    D:-Power supply

    Correct Answer:- Option-B

Question51:-The recommended configuration for soldering is

    A:-Wave joint

    B:-Butt joint

    C:-Lap joint

    D:-Scarf joint

    Correct Answer:- Option-C

Question52:-Addition of _____ increases the mechanical property of a tin-lead solder.

    A:-Antimony

    B:-Bismuth

    C:-Molybdenum

    D:-Cerium

    Correct Answer:- Option-A

Question53:-The purpose of using flux in soldering is

    A:-Increase the fluidity of solder metal

    B:-Fed up gaps in a bad joint carbon steel

    C:-Prevents oxides forming

    D:-Wash any surplus solder

Correct Answer:- Option-C

Question54:-Heat for soldering process is supplied by

A:-Soldering iron

B:-Induction furnace

C:-Electric resistance method

D:-Any of the above

Correct Answer:- Option-A

Question55:-Temperature range in soldering process is

A:-40°C - 100°C

B:-180°C - 250°C

C:-600°C - 900°C

D:-1000°C - 2000°C

Correct Answer:- Option-B

Question56:-Tropospheric scatter is used with frequency in the following range

A:-UHF

B:-VHF

C:-HF

D:-VLF

Correct Answer:- Option-A

Question57:-The maximum power of single side band waves under distortionless condition is

A:-1.5 Pc

B:-Pc/2

C:-Pc/4

D:-Pc/3

Correct Answer:- Option-C

Question58:-Wide band FM is the case where the modulation index is

A:-around unity

B:-much greater than unity

C:-much less than unity

D:-around zero

Correct Answer:- Option-B

Question59:-In a super heterodyne receiver the frequency of local oscillator is

A:-half that of incoming signal

B:-slightly less than that of incoming signal

C:-higher than that of incoming signal

D:-equal to that of incoming signal

Correct Answer:- Option-C

Question60:-In a line of sight system the receiving and transmitting antenna heights are 10m and 100m respectively above the surface of the earth. The range of the system will be approximately

A:-32 km

B:-82 km

C:-25 km

D:-52 km

Correct Answer:- Option-D

Question61:-QPSK system uses a phase shift of

A:-$\pi/2$

B:-$\pi/4$

C:-2π

D:-3π

Correct Answer:- Option-A

Question62:-FDM uses _____ to prevent modulated signal from overlapping.

A:-Guard band

B:-Physical hardware device

C:-Carrier frequencies

D:-De-Multiplexers

Correct Answer:- Option-A

Question63:-A 500W carrier is amplitude modulated to a depth of 60%. What is the total power of the transmitted wave.

A:-250W

B:-520W

C:-950W

D:-590W

Correct Answer:- Option-D

Question64:-Which fiber is preferred for long distance communication

A:-Graded index

B:-Step index single mode

C:-Step index multimode

D:-Graded index multimode

Correct Answer:- Option-B

Question65:-Optical Time Domain Reflectometer is used to measure

A:-Wavelength

B:-Eye pattern

C:-Losses in optical fibre communication

D:-Time of reflection

Correct Answer:- Option-C

Question66:-Which of the following is the feature of mobile communication?

A:-High load balancing capacity

B:-Highly scalable

C:-Good network management system

D:-All of the above

Correct Answer:- Option-D

Question67:-The process of converting the analog sample into discrete form is called

A:-Sampling

B:-Quantization

C:-Multiplexing

D:-Modulation

Correct Answer:- Option-B

Question68:-If physical quantities like force, tension, or pressure are to be measured, then LVDT acts as a

A:-Primary transducer

B:-Secondary transducer

C:-Both are correct

D:-Both are wrong

Correct Answer:- Option-B

Question69:-Identify the incorrect statement
1.   LVDT gives high output value so that there is no need for any amplifier circuit for the
      amplification process
2.   LVDT is not sensitive to stray magnetic field

A:-Only statement 1

B:-Only statement 2

C:-Both statements 1 and 2

D:-None of the statements

Correct Answer:- Option-B

Question70:-Which metal will have a large range of detection by inductive proximity sensor?

A:-Aluminium

B:-Copper

C:-Iron

D:-Lead

Correct Answer:- Option-C

Question71:-In semiconductor strain guage, when a tensile strain is applied,

A:-Resistance increases in n-type material

B:-Resistance increases in p-type material

C:-Resistance increases in both p and n type material

D:-Resistance decreases in both p and n type material

Correct Answer:- Option-B

Question72:-Thermocouple works on

A:-Seebeck effect

B:-Thomson effect

C:-Kelvin effect

D:-Peltier effect

Correct Answer:- Option-A

Question73:-The temperature of steam at around 540°C can be measured by

A:-Thermometer

B:-Thermopile

C:-Thermocouple

D:-Radiation pyrometer

Correct Answer:- Option-D

Question74:-In a thermistor, change in resistance is measured using a

A:-Wheatstone bridge

B:-Anderson's bridge

C:-Hay's bridge

D:-Maxwell's bridge

Correct Answer:- Option-A

Question75:-Capacitive transducers can be used for the measurement of liquid level. The principle of operation used to this case is

A:-Change of capacitance with change of distance between plates

B:-Change of dielectric strength

C:-Change of area of plates

D:-None of the above

Correct Answer:- Option-B

Question76:-Inductive transducers are mainly used for the measurement of

A:-Temperature

B:-Velocity

C:-Force

D:-Displacement

Correct Answer:- Option-D

Question77:-Which device provides electrical isolation between input circuit and output circuit?

A:-Optical sensor

B:-Photo diode

C:-Photo transistor

D:-Opto coupler

Correct Answer:- Option-D

Question78:-An OR gate is equivalent to two switches connected in _____.

A:-Series

B:-Parallel

C:-Inverted

D:-Directly

Correct Answer:- Option-B

Question79:-The carry output of a two-input half-adder can be realised by using a _____ logic gate.

A:-NOT

B:-OR

C:-AND

D:-XOR

Correct Answer:- Option-C

Question80:-The Gray code equivalent of a 4-bit binary number 1010 is _____.

A:-1011

B:-1111

C:-1001

D:-10101

Correct Answer:- Option-B

Question81:-The XNOR gate gives a high output when inputs are _____.

A:-1 and 0

B:-0 and 1

C:-equal

D:-inverted

Correct Answer:- Option-C

Question82:-Ripple counters are _____ counters

   A:-Synchronous

   B:-Asynchronous

   C:-Random

   D:-Johnson

   Correct Answer:- Option-B

Question83:-Decade counter counts up to _____ states.

   A:-2

   B:-100

   C:-10

   D:-1000

   Correct Answer:- Option-C

Question84:-According to De Morgan's theorem NAND gate is equivalent to _____ gate.

   A:-OR

   B:-AND

   C:-Bubbled OR

   D:-Bubbled AND

   Correct Answer:- Option-C

Question85:-The number of select lines required to design an 8×1 multiplexer.

   A:-2

   B:-3

   C:-4

   D:-8

   Correct Answer:- Option-B

Question86:-A flip flop can _____ one bit of information.

   A:-Store

   B:-Complement

   C:-Add

   D:-Subtract

   Correct Answer:- Option-A

Question87:-A _____ shift register can convert serial to parallel data.

   A:-SISO

   B:-SIPO

   C:-PISO

   D:-PIPO

Correct Answer:- Option-B

Question88:-Which one is an Analog to Digital converter?

A:-Counter type

B:-Flash type

C:-R-2R ladder type

D:-Dual Slope

Correct Answer:-Question Cancelled

Question89:-A decade counter requires _____.

A:-4 flip flops

B:-2 flip flops

C:-8 flip flops

D:-16 flip flops

Correct Answer:- Option-A

Question90:-Three T flip flops are connected to form a counter, how many counting sequences it can count.

A:-2

B:-4

C:-7

D:-8

Correct Answer:- Option-D

Question91:-8086 Microprocessor is a _____ bit processor.

A:-8

B:-16

C:-32

D:-20

Correct Answer:- Option-B

Question92:-8086 Microprocessor flag register has _____ flags.

A:-8

B:-9

C:-10

D:-16

Correct Answer:- Option-B

Question93:-_____ flag is used for debugging in 8086.

A:-OF

B:-DF

C:-IF

D:-TF

Correct Answer:- Option-D

Question94:-8086 can access upto _____ memory locations.

A:-1 MB

B:-64 KB

C:-32 MB

D:-4 KB

Correct Answer:- Option-A

Question95:-MOV AX, [BX] is an example of a _____ mode of addressing.

A:-Register Addressing

B:-Direct Addressing

C:-Register Indirect Addressing

D:-Based Addressing

Correct Answer:- Option-C

Question96:-8051 is a _____ bit Microcontroller.

A:-8 bit

B:-16 bit

C:-24 bit

D:-32 bit

Correct Answer:- Option-A

Question97:-Pin number 40 of the 8051 microcontrollers is _____.

A:-Ground

B:-VCC

C:-Reset

D:-Address Latch Enable

Correct Answer:- Option-B

Question98:-Microcontrollers have no _____ flag.

A:-Carry

B:-Overflow

C:-Parity

D:-Zero

Correct Answer:- Option-D

Question99:-The Serial data communication in 8051 is controlled by _____ registers.

A:-SCON

B:-TCON

C:-SMOD

D:-TMOD

Correct Answer:- Option-A

Question100:-8051 Microcontroller have _____ interrupt signals.

A:-8

B:-7

C:-6

D:-5

Correct Answer:- Option-D