18EES101J – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
MULTIPLE CHOICE QUESTION - QUESTION BANK

NOTE:
This question bank has 180 questions
Out of which 18 easy questions (blooms level: Remembering, understanding) in each unit 18*5=90
12 moderate questions (blooms level: Applying, Analyzing) in each unit 12*5=60
6 tough questions (blooms level: Evaluating, Creating) in each unit 6*5=30)

UNIT 1 - ELECTRICAL CIRCUITS

EASY QUESTIONS

1) Thevenin resistance is found by _____
A. Shorting all voltage sources
B. Opening all current sources
C. Shorting all voltage sources and opening all current sources
D. Opening all voltage sources and shorting all current sources
ANSWER: C

2) In a star connected system, the current flowing through the line is
A. Greater than the phase current
B. Equal to the phase current
C. Lesser than the phase current
D. zero
ANSWER: B

3) The 2ohm and 3-ohm resistor are in series the equivalent resistance is
A. 1.2
B. 5
C. 4.2
D. 1.4
ANSWER: B

4) The internal resistance for the maximum transfer of power should be
A. equal to load resistance
B. greater than load resistance
C. zero
D. lesser than load resistance
ANSWER: A

5) If the voltage frequency applied to a series RC circuit is increased, then the phase angle will
A. Increases
B. reduces
C. remains the same
D. zero
ANSWER:A

6) In an RLC circuit above the resonant frequency, the current will
A. lags the applied voltage
B. leads the applied voltage
C. is in phase with the applied voltages
D. is zero
ANSWER: A

7) The equation for ohms law is
A. V=IR, at constant temperature
B. V=IC
C. V=IL
D. V=I/R
ANSWER: A

8) A 6 kHz sinusoidal voltage is applied to a series *RC* circuit. The frequency of the voltage across the resistor is
A. 6Khz
B. 12Khz
C. 13Khz
D. 14Khz
ANSWER: A

9) In a certain load, the actual power is 150 W and the reactive power is 125 VAR. What is the apparent power?
A. 19.52W
B. 195.2W
C. 375W
D. 24W
ANSWER: B

10) What is the unit of power?
A. Watt
B. Newton
C. Joule
D. Henry
ANSWER: A

11) Mesh analysis employs the method of
A. KVL
B. KCL
C. Both KVL and KCL
D. Neither KVL or KCL
ANSWER: A

12) If there are 10 nodes in a circuit, how many equations do we get?
A. 10
B. 9
C. 8
D. 7
ANSWER: B

13) Superposition theorem can only be used for circuits
A. Element resistive
B. Element passive
C. Linear bilateral elements
D. Non-linear elements
ANSWER: C

14) Each phase of a three-phase alternator delta connected produces a voltage of 11KV and a current of 1000A at pf 0.9. Find line voltage and line current.
A. 11KV,1732A
B. 11KV,1632A
C. 3.33KV,1732A
D. 3.33V,1000A
ANSWER: A

15) In a balanced three phase system three voltages differ in ____ electrical from each other in a sequence and have equal magnitude.
A. 240
B. 120
C. 360
D. 0
ANSWER: A

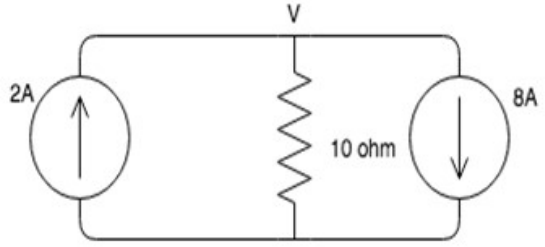
16) For series circuit the equivalent resistance is ___ the greatest resistance connected in series circuit.
A. lesser than
B. greater than
C. equal to
D. not equal to
ANSWER: A

17) The non-linear circuit parameters are?
A. Inductance
B. Capacitance
C. Resistance
D. Transistor
ANSWER: A

18) In a series *RC* circuit, find the RMS voltage where the voltage across resistor is 12 $V_{(rms)}$ and voltage across capacitor is 15 $V_{(rms)}$. The rms source voltage is
A. 3
B. 27
C. 19.2
D. 40
ANSWER: C

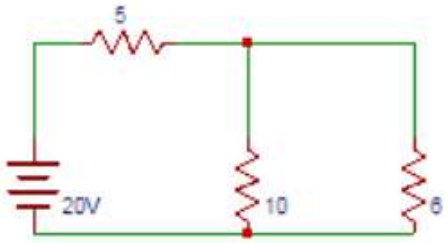
MODERATE QUESTIONS

1) The voltage V using nodal analysis



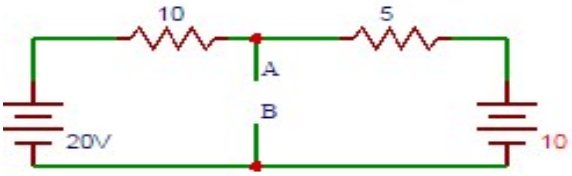
A. -60V
B. 60V
C. -40V
D. 40V
ANSWER: A

2) Find the current flowing between terminals A and B of the circuit shown below.



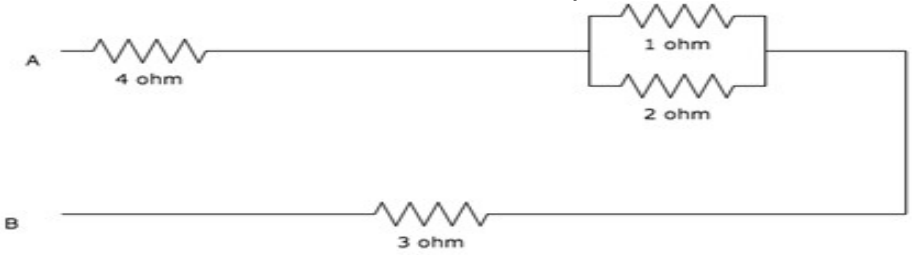
A. 1
B. 2
C. 3
D. 4
ANSWER: D

3) Find the current flowing between terminals A and B.



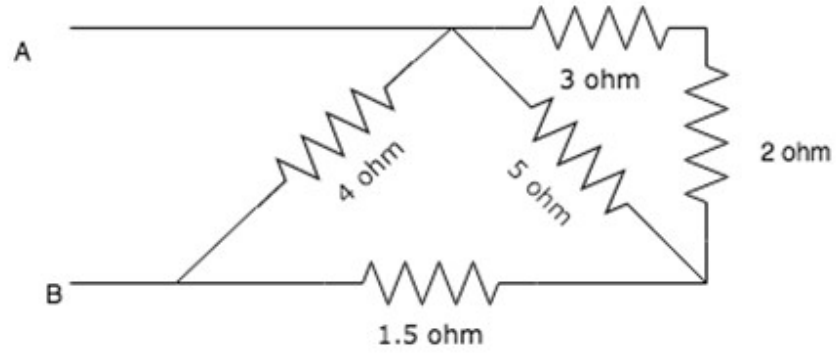
A. 1
B. 2
C. 3
D. 4
ANSWER: D

4) Calculate the total resistance between the points A and B.



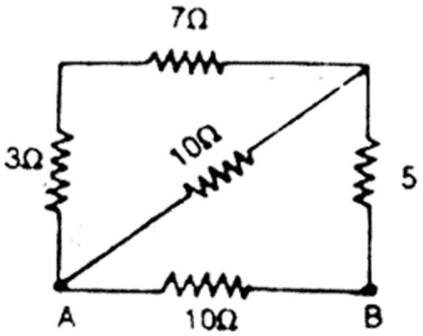
A. 7 ohm
B. 4 ohm
C. 7.6 ohm
D. 0.48 ohm
ANSWER: C

5) Calculate the equivalent resistance between A and B.



A. 2
B. 4
C. 6
D. 8
ANSWER: B

6) The resistance is connected in series. Find the equivalent resistance



A. 35
B. 25
C. 15
D. 5
ANSWER: D

7) An electric kettle has a resistance of 30ohm.What current will flow when it is connected to 240Vsupply.Also find the power.
A. 8A,1.92Kw
B. 9A,3Kw
C. 10A,4Kw
D. 12A,5Kw
ANSWER: A

8) An ideal voltage source has
A. Zero internal resistance
B. Open circuit voltage equal to the voltage on full load
C. Terminal voltage in proportion to current
D. Terminal voltage in proportion to load
ANSWER: A

9) To find impedance in Thevenin's theorem.
A. All independent current sources are short circuited and independent voltage sources are open circuited
B. All independent voltage sources are open circuited and all independent current sources are short circuited
C.All independent voltage and current sources are short circuited
D. All independent voltage sources are short circuited and all independent current sources are open circuited
ANSWER: A

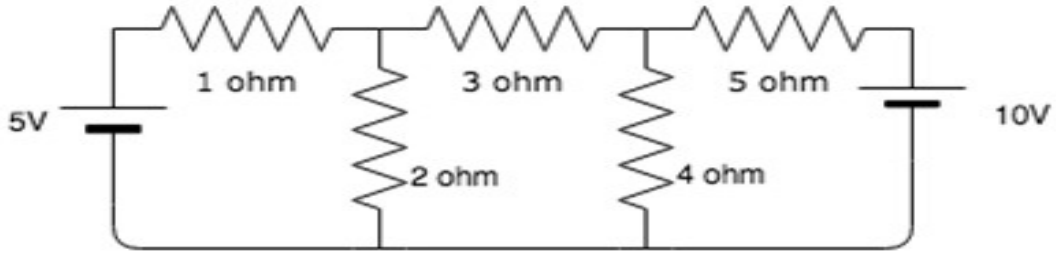
10) Application of Norton's theorem to a circuit yield
A. Equivalent current source and impedance in series
B. Equivalent current source and impedance in parallel
C.Equivalent impedance
D. Equivalent current source
ANSWER: A

11) What will be the resistance of the wire which has 0.14 mm diameter and specific resistance 9.6 micro-ohm-cm is 440 cm long. The resistance of the wire will be
A.9.6 ohm
B. 11.3 ohm
C. 13.7 ohm
D. 27.4 ohm
ANSWER: D

12) In Superposition theorem, while considering a source, all other voltage sources are?
A. open circuited
B. short circuited
C. change its position
D. removed from the circuit
ANSWER: B

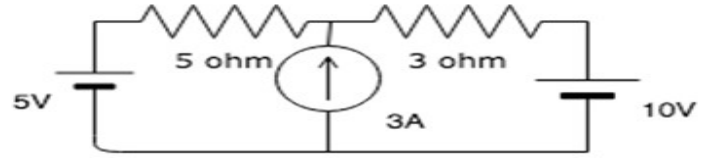
TOUGH QUESTIONS

1) Find the value of the currents I1, I2 and I3 flowing clockwise in the first, second and third mesh respectively.



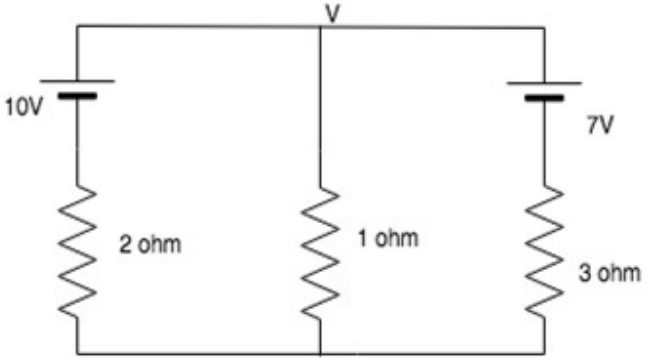
A. 1.54A, -0.189A, -1.195A
B. 2.34A, -3.53A, -2.23A
C. 4.33A, 0.55A, 6.02A
D. -1.18A, -1.17A, -1.16A
ANSWER: A

2) Calculate the mesh currents I1 and I2 flowing in the first and second meshes respectively



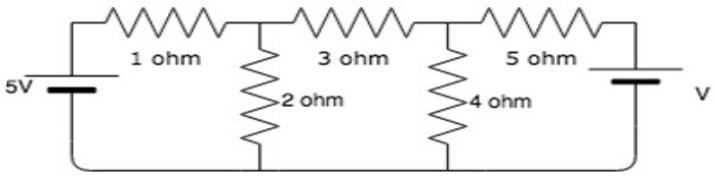
A. 1.75A, 1.25A
B. 0.5A, 2.5A
C. 2.3A, 0.3A
D. 3.2A, 6.5A
ANSWER: A

3) Find the node voltage V.



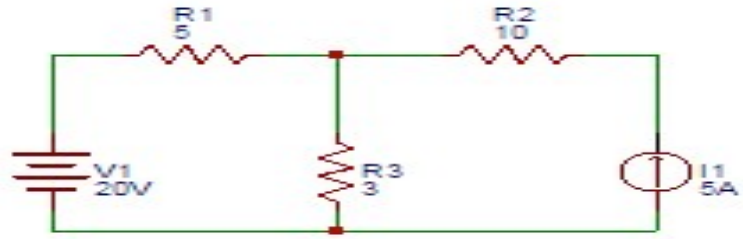
A. 1V B. 2V C. 3V D. 4V
ANSWER: D

4) Find the value of V if the current in the 3-ohm resistor=0.



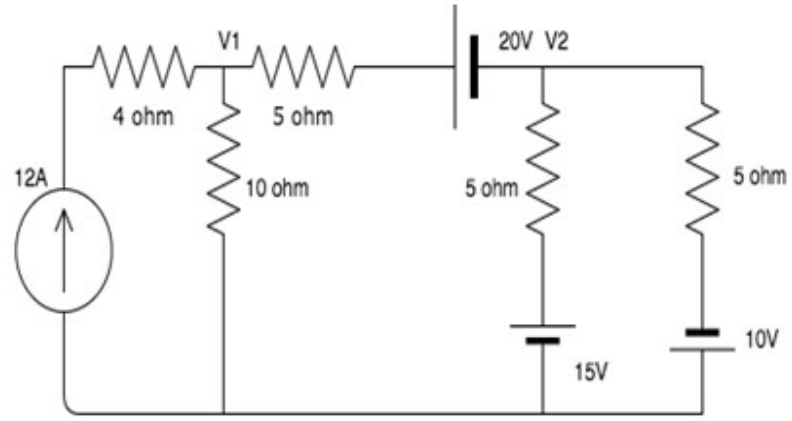
A. 3.5V
B. 6.5V
C. 7.5V
D. 8.5V
ANSWER: B

5) In the circuit shown, find the current through 4Ω resistor using Superposition theorem.



A. 4
B. 5
C. 6
D. 7
ANSWER: B

6) Find the value of V1 and V2.



A. 87.23V, 29.23V
B. 23.32V, 46.45V
C. 64.28V, 16.42V
D. 56.32V, 78, 87V
ANSWER: C

UNIT 2 - D.C MACHINES & A.C MACHINES

EASY QUESTIONS

1.Power factor of Zero indicates

a)Purely resistive element
b)Purely inductive element
c)combination of both (A) and (B)
d)Purely capacitive element

Answer: B

2.No load speed of which of the following motor will be highest

a)Shunt motor
b)Cumulatively compound motor
c)Differentially compound motor
d)Series motor

Answer: D

3.Which of the following is the most economical method of starting a single-phase motor?

a)Resistance start method
b)Inductance start method
c)Capacitance start method
d)Split phase method

Answer: C

4.Material used for the construction of transformer core is usually

a)wood b)copper c)Aluminum d)Silicon steel

Answer: D

5.The power factor in resistive circuit is

a)0.6pf lagging b)0.8pf lagging c)0.8pf lagging d)1

Answer: D

6.DC generator works on the principle of

a)Fleming 's right hand rule
b)Fleming's left-hand rule
c)Faraday's law
d)Lenz's law

Answer: A

7.Two winding of a transformer are ------coupled

A)Magnetically
b)Electrically
c)Both electrically and magnetically
d)Resistively

Answer: A

8.The synchronous speed of a4 pole induction motor for 50hz power supply is ------rpm.

a)1500 b)1000 c)750 d)1440

Answer: A

9.Power factor is the ratio of

a)Impedance to resistance
b)Resistance to reactance
c)Resistance to impedance
d)Reactance to impedance

Answer: C

10.Form factor is the ratio of

a)Maximum to RMS Value
b)Maximum to average value
c)RMS to average value
d)RMS to maximum value

Answer: C

11.The unit of magnetic flux density is

a)Henry/meter
b)Tesla
c)Amp/meter
d)volt/meter

Answer: B

12.The flux is analogous to

A)Voltage in electric circuit
b)Current in electric current
c)Power in electric circuit
d)Resistance in electric current

Answer: B

13.Which motor is constant speed motor?

a)DC series motor
b)DC shunt motor
c)Dc compound motor
d)Induction motor

Answer: B

14.The primary winding of a transformer has 110v across it. What is the secondary voltage if the turns ratio is 8?

a)8.8V
b)88V
c)880V
d)8800V

Answer: C

15.A magnetizing force of 8000A/m is applied to a circular magnetic circuit of mean diameter 30cm by passing a current through a coil wound on the circuit is 750 turned. If the coil is uniformly wound, calculate the current flow in the circuit.

a)10.05A
b)9.8A
c)11A
d)12A

Answer: A

16.What will be the magnetic potential difference across the air gap of 2cm length in magnetic field of 200 AT/m?

a)2AT
b)4AT
c)6AT
d)10AT

Answer: B

17.A single -winding single-phase motor has

a)Low starting torque
b)zero starting torque
c)High starting torque
d)Starting torque equal to full-load torque.

Answer: B

18.A differentially compounded motor under high-over-load conditions behave like a an

a)Shunt motor b)Series motor c)Cumulative compound motor d) Synchronous motor

Answer: B

MODERATE QUESTIONS

1. An electric motor with constant power will have a torque speed characteristic in the form of a

a)Straight line through the origin b)Straight line parallel to the speed axis
c)Circle about the origin d)Rectangular hyperbola

Answer: B

2. If load current and flux of DC motor are held constant and voltage applied across its armature is increase by 5%,then speed of motor will

a)Increase by about 5% b)Reduce by about 5% c)Remain unaltered d)Depends on other factors

Answer: A

3. The slip of an induction motor normally does not depend on

a)Rotor speed b)Synchronous speed c)Shaft torque d)Core-loss component

Answer: D

4. A 4-Point starter is used to start and control the speed of a

a)DC shunt motor with armature resistance control b)DC shunt motor with field weakening control
c)DC series motor d)DC compound motor

Answer: A

5. The dc motor ,which can provide zero speed regulation at full load without any controller, is

a)Series b)Shunt c)Cumulative compound d)Differential compound

Answer: B

6. A Solenoid is wound with a coil of 100 turns. The coil is of length 50cm and is carrying a current of 2A.Determine the magnetic field strength at the line of the solenoid.

a)450AT/m b)400AT/m c)500AT/m d)600AT/m

Answer: B

7. .If the cross-sectional area of a magnetic field increases, but the flux remains the same, the flux density

a)Increases b)Decreases c)Remains the same d)Doubles

Answer: B

8. What is the reluctance of a material that has a length of 0.07 m, a cross-sectional area of 0.014 m2, and a permeability of 4,500 Wb/At × m?

a)1111 At/Wb b)111 At/Wb c)11 At/Wb d)1 At/Wb

Answer: A

9. A 47 Ohm resistor and a capacitor with a capacitive reactance of 120 are in series across an ac source. What is the circuit impedance, Z?

a)126ohm b)127ohm c)128ohm d)129ohm

Answer: D

10.The ability of a material to remain magnetized after removal of the magnetizing force is known as

a)Permeability b)Reluctance c)Retentivity d)Hysteresis

Answer: C

11. The induced voltage across a stationary conductor in a stationary magnetic field is

a)Zero b)Increased c)Decreased d)Reversed in polarity

Answer: A

12. A DC generator is rotated at 50 revolutions/sec .how many times does the dc output voltage reach maximum in each second?

a)50 b)100 c)150 d)3000

Answer: B

TOUGH QUESTIONS

1.In a series RC circuit, 12V is measured across the resistor and 15V is measured across the capacitor .The source voltage is

a)3V b)27V c)19.2V d)12V

Answer: C

2.Each phase of a 3phase star connected alternator produces a voltage of 11000V and current of 1000A at power factor 0.9.find line voltage, line current and total capacity of the alternator.

a)VL=19053V,IL=1000A,Capacity=29.7MW b)VL=2000V, IL=1500A,Capacity=25MW

c)VL=19053V,IL=1000A, Capacity=29.7MW d)VL=2500V,IL=500A, Capacity=35MW

Answer: A

3.A DC motor takes an armature current of 110A at 480V.The armature circuit resistance is .2ohm.the machine has 6poles and the armature is lap connected with 864conductors.the flux per pole is 0.05wb .calculate speed and torque developed by the armature.

a)N=630rpm & T=750N-m
b)N=635rpm & T=786N-m
c)N=636rpm & T=756N-m
d)N=536rpm & T=856N-m

Answer: C

4.The regulation of dc generator on full load is about

a)15 to 20%
b)20 to 25%
c)10 to 15%
d)5 to 10%

Answer: D

5.For a single-phase capacitor start induction motor which of the following statements is valid?

a)The capacitor is used for power factor improvement
b)The direction of rotation can be changed by reversing the main winding terminals
c)The direction of rotation cannot be changed
d)The direction of rotation can be changed by interchanging the supply terminals

Answer: B

6.A DC series motor has linear magnetization and negligible armature resistance, the motor speed is

a)Directly proportional to $\sqrt{T}$
b)Inversely proportional to $\sqrt{T}$
c)Directly proportional to T
d)Inversely proportional to $\sqrt{T}$

Answer: B

UNIT 3 - ELECTRONIC DEVICES

EASY QUESTIONS

1.The function of choke and starter in a fluorescent lamp circuit is to
a)Reduce the power consumed by the fluorescent lamp
b)Create ahigh voltage across the tube during starting
c)Help to draw very high current during starting
d)Improve the power factor of the fluorescent lamp circuit
Answer: B

2. Moving coil instruments can be used on
a)DC only b)sinusoidal AC only c)All AC waveforms d)AC and Dc both
Answer: A

3.PMMC Instrument are used for -----quantity measurement
a)AC b)Magnetic c)DC d)Both AC and DC
Answer: C

4.Moving Parts of instruments are supported in
a)Bush bearings b)Ball bearings c)Roller Bearings d)Jeweled bearings
Answer: D

5. A single lamp controlled by two -way switches at two places are called
a)Stair case wiring b)Corridor wiring c)Cleat wiring d)Batter wiring
Answer: A

6. In a moving coil ammeter, the deflecting torque is directly proportional to the
a)Square of the current to be measured
b)Current to be measured
c)Twice the current to the measured
d)Square root of the current to be measured
Answer: B

7. Which cannot reduce the earth resistance?
a)Pouring water in the earth pit b)Decreasing plate area
c)Increasing the depth of the earth pit d)connecting electrodes in parallel
Answer: B

8. The earth plate made up of
a)copper b)aluminum c)lead d)iron
Answer: A

9. Good earthing is that which gives

a)very low resistance b)High resistance c)Equal resistance d)zero resistance

Answer: A

10. The high torque to weight ratio in an analog indicating instrument indicates

a)High friction loss b)Low friction loss

c)Nothing as regards friction loss d)Copper loss

Answer: B

11. GaAs, LED emits radiation in the

(a) UV region (b) Blue color

(c) visible region (d) infra-red region

Answer: D

12. The ripple factor of bridge rectifier is

(a) 0.482 (b) 0.812 (c) 1.11 (d) 1.21

Answer: A

13. The basic purpose of filter is to

(a) minimize variations in AC input signal (b) suppress harmonics in rectified output

(c) removes ripples from rectifier output (d) stabilize dc output voltage

Answer: C

14. If Vm is the peak value of an applied voltage in half wave rectifier with a large capacitor across load, then PIV is

(a) Vm/2 (b) Vm (c) 2Vm (d) 1.414Vm

Answer: B

15. Junction breakdown of a PN junction occurs

(a) with forward bias (b) with reverse bias

(c) because of manufacturing defect (d) None of above

Answer: B

16. In PN junction diode dynamic conductance is directly proportional to

(a) the applied voltage (b) temperature

(c) the current (d) the thermal voltage

Answer: C

17. In a full wave rectifier, the current in each of the diodes flows for

(a) complete cycle of the input signal

(b) half cycle of the input signal

(c) less than half of the input signal

(d) None of above

Answer: A

18. When the PN junction diode is forward biased
(a) the only current is hole current
(b) the only current is electron current
(c) the only current is produced by majority carriers
(d) the current is produced by both holes and electrons
Answer: C

MODERATE QUESTIONS

1. For 1N4736 Zener diode has Zz=3.5 Ω. The datasheet gives Vzt=6.8V at Izt=37mA, What is voltage across Zener terminals when the current is 50mA?
(a) 6.85V (b) 7.85V (c) 8.85V (d) 9.95V
Answer: A

2. A Si PN junction has a reverse saturation current of I0=30nA at room temperature, the junction forward voltage required to produce current of 0.1mA is
(a) 0.42V (b) 0.55V (c) 0.80V (d) 0.49V
Answer: A

3. The value of reverse bias resistance for an ideal diode is _____
(a) infinity (b) o (c) one (d) none of the above
Answer: A

4. Semiconductor material have _____ temp. coefficient
(a) Positive (b) Negative (c) Both positive and negative (d) None
Answer: B

5. A Zener diode works on the principal of
(a) tunneling of charge carriers across junction
(b) thermionic emission
(c) diffusion of charge carriers across junction
(d) hopping of charge carriers across junction
Answer: C

6. Which one of the following types of indicating instrument is an electrometer?
a)Electrodynamometer b)PMMC c)Electrostatic d)Moving iron
Answer: C

7.In cleat wiring the porcelain are very easy to erect and fixed at a distance of
a)4.5cm to 15 cm apart b)5.5cm to 20 cm apart c)6.5cm to 25 cm apart d)7.5cm to 30 cm apart
Answer: A

8. In fluorescent lamp the light output is ----lumens per watt.

a)70 b)80 c)90 d)95

Answer: A

9. The device used in series with the line wire is

a)C.B b)isolator c)Fuse d)Both C.B and isolator

Answer: C

10. The earth's potential is always

a)Zero b)one c)Lesser than one d)Greater than one

Answer: A

11. If the input supply frequency is 50Hz, the output supply frequency of a bridge wave rectifier is _____ Hz

(a) 100 (b) 75 (c) 50 (d) 25

Answer: A

12. A half wave rectifier has an input voltage of 240 V rms if the step-down transformer has turns ratio of 8:1, what is the load voltage?

(a)27.5v (b)86.5v (c)30v (d)42.5V

Answer: D

TOUGH QUESTIONS

1. Reverse saturation current in silicon PN junction diode nearly doubles for every

(a) 20°C rise in temperature (b) 50°C rise in temperature

(c) 60°C rise in temperature (d) 10°C rise in temperature

Answer: D

2. If, by mistake ac source in a bridge rectifier is connected across the dc terminals it will burn out and hence short_____diodes

(a) One (b) Two (c) Three (d) Four

Answer: D

3. A Voltage of 200V produces a deflection of 90^{o} in PMMC spring-controlled instrument. If the same instruments provided with gravity control, what would be the deflection?

a)90^{o} b) 45^{o} c) 64.2^{o} d) 98^{o}

Answer: B

4. In plate earthing the earth plate made up of copper size

a)60cm*60cm*3.18mm b)70cm*80cm*3.18mm c)80cm*65cm*3.18mm d)90cm*60cm*3.18mm

Answer: A

5. A moving coil instrument gives a full-scale detection of 20mA.When a potential difference of 50mV is applied. Calculate the series resistance to measure 500V on scale?

a)2000ohm b)3000ohm c)3500ohm d)24997.5ohm

Answer: D

6. The applied input ac power to a half wave rectifier is 100 watts. The d.c output power obtained is 40 watts. What is the rectification efficiency?

(a)10% (b)20% (c)30% (d)40%

Answer: D

UNIT – 4 TRANSDUCERS

EASY QUESTIONS

1.A transducer converting ground movement or velocity to voltage is known as _____

a) Geophone
b) Pickup
c) Hydrophone
d) Sonar transponder
Answer: A

2.Which is the example of an active transducer?
a) Strain gauge
b) Thermistor
c) LVDT
d) Thermocouple
Answer: D

3. Which transducer is known as 'self-generating transducer
a) Active transducer
b) Passive transducer
c) Secondary transducer
d) Analog transducer
Answer: A

4. What is the relation between scale factor and sensitivity of a transducer?
a) Scale factor is double of sensitivity
b) Scale factor is inverse of sensitivity
c) Sensitivity is inverse of scale factor
d) Sensitivity is equal to scale factor
Answer: B

5.Which of the following is an analog transducer?
a) Encoders
b) Strain gauge
c) Digital tachometers
d) Limit switches
Answer: B

6.What is the principle of operation of LVDT?

a) Mutual inductance
b) Self-inductance
c) Permanence
d) Reluctance
Answer: A

7.Which of the following can be measured using Piezo-electric transducer?
a) Velocity
b) Displacement
c) Force
d) Sound
Answer: C

8.Capacitive transducer are used for?
a) Static measurement
b) Dynamic measurement
c) Transient measurement
d) Both static and dynamic
Answer: B

.9. Which of the following is used in photo conductive cell?
a) Selenium
b) Quartz
c) Rochelle salt
d) Lithium sulphate
Answer: A

10.Mechanical transducers sense _____
a) electrical changes
b) physical changes
c) chemical changes
d) biological changes
Answer: B

11.Mechanical transducers generate _____
a) electrical signals
b) chemical signals
c) physical signals
d) biological signals
Answer: C

12.Electrical transducers generate _____
a) biological signals
b) chemical signals
c) physical signals
d) electrical signals
Answer: D

13.The power needs of electrical transducers is _____
a) maximum
b) minimum
c) zero
d) infinite
Answer: B

14.Electrical transducers are _____
a) small and non-portable
b) large and non-portable
c) small and compact
d) large and portable
Answer: C

15.Potentiometer transducers are used for the measurement of
A. Pressure
B. Displacement
C. Humidity
D. Both (a) and (b)
Answer: D

16.Thermistor is a transducer. Its temperature coefficient is
A. Negative
B. Positive
C. Zero
D. Unique
Answer: A

17.Strain gauge is a
A. Active device and converts mechanical displacement into a change of resistance
B. Passive device and converts electrical displacement into a change of resistance
C. Passive device and converts mechanical displacement into a change of resistance
D. Active device and converts electrical displacement into a change of resistance

Answer: C

18.The linear variable differential transformer transducer is
A. Inductive transducer
B. Non-inductive transducer
C. Capacitive transducer
D. Resistive transducer
Answer: A

MODERATE QUESTIONS

1. With the increase in the intensity of light, the resistance of a photovoltaic cell
A. Increases
B. Decreases
C. Remains same
D. Doubled
Answer:B

2. If the displacement is measured with strain gauge then the number of strain gauge normally required are
A. One
B. Two
C. Three
D. Four
Answer:D

3. LEDs fabricated from the gallium arsenide smit radiation in the
A. Visible Range
B. Infrared Region
C. Ultra violet Region
D. Ultrasonic Region
Answer:B

4. In light emitting diode, the available light emitting region is
A. Less than 2.5 mm
B. From 2.5 to 25 mm
C. Greater than 25 mm
D. Greater than 50 mm
Answer:B

5. In liquid crystal displays, the liquid crystal exhibits properties of
A. Liquid
B. Solids
C. Gases
D. Both (a) and (b)
Answer:D

6. The optical properties of liquid crystals depend on the direction of
a) Air
b) Solid
c) Light
d) Water
Answer:C

7. LCDs operate from a voltage range from
a) 3 to 15V
b) 10 to 15V
c) 10V
d) 5V
Answer: A

8. LCDs operate from a frequency ranges from
a) 10Hz to 60Hz
b) 50Hz to 70Hz
c) 30Hz to 60Hz
d) None of the Mentioned
Answer:C

9. What is backplane in LCD?
a) The ac voltage applied between segment and a common element
b) The dc voltage applied between segment and a common element
c) The amount of power consumed
Answer: A

10. In photo emissive transducers, electrons are attracted by _____
a) Cathode
b) Anode
c) Grid
d) Body
Answer:B

11.LDR's is also called_____
a) Photo voltaic cell
b) Photo resistive cell
c) Photo emissive cell
d) All of the mentioned
Answer:B

12. In dark, LDR has
A. low resistance
B. high current
C. high resistance
D. both A and B
Answer:C

TOUGH QUESTIONS

31. 1 eV is equal to
A.1.6×10^{-19} J
B. 2.0×10^{-20} J
C. 3 J
D.4 J
Answer: A

32.Solar cell works based on
(a) Laser technology (b) Photo-conduction (c) Thermal emission (c) Tyndall effect
Answer:B

33.Commonly used photo emissive material is _____
a) gold
b) opium
c) tellurium
d) cesium-antimony
Answer:D

34.Photoconductors are made of _____
a) thick layer of semiconductor
b) thin layer of semiconductor
c) capacitive substrate
d) inductive substrate

Answer:B

35.A device consists of a phototransistor and a led is

A. Photodiode

B. Optocoupler

C. opt isolator

D. Photomultiplier

Answer:B

36.A load cell is essentially a

(a) strain gauge (b) thermistor (c) resistive potentiometer (d) inductive transducer

Answer: A

UNIT – 5 DIGITAL SYSTEMS

EASY QUESTIONS

1. Communication is the transfer of meaningful information from
(a) source to destination (b) transmitter to receiver
(c) sender to receiver (d) above all
ANSWER:D

2.The basic process of information exchange between transmitter and receiver is known as....
(a) communication (b) controlling (c) signaling (d) modulating
ANSWER:A

3. The process of converting electrical equivalent of the information to a suitable form is done by....
(a) transmitter (b) receiver (c) medium (d) above all
ANSWER:A

4. The communication system with wire as conducting medium is known as .....
(a) wired communication (b) line communication
(c) guided media communication (d) above all
ANSWER:D

5.The communication system which has no wires as conducting medium is known as....
(a) wireless communication (b) radio communication
(c) unguided communication (d) above all
ANSWER:D

6. Noise is basically a.....
(a) random signal (b) unwanted electrical signal
(c) disturbance signal (d) above all
ANSWER:D

7. The process of varying amplitude of sine wave carrier signal according to the instantaneous voltage of sine wave modulating signal is known as ....
(a) Frequency Modulation (b) Phase modulation
(c) Amplitude modulation (d) PAM
ANSWER:C

8. The loss of information in AM wave is known as...
(a) under modulation (b) over modulation
(c) attenuation (d) rectification

ANSWER:B

9. Each product term of a group, a'.back' and a.b, represents the _____in that group.
a) Input
b) POS
c) Sum-of-Minterms
d) Sum of Maxterms
ANSWER:C

10. Each "1" entry in a K-map square represents:
a) A HIGH for each input truth table condition that produces a HIGH output
b) A HIGH output on the truth table for all LOW input combinations
c) A LOW output for all possible HIGH input conditions
d) A DON'T CARE condition for all possible input truth table combinations
ANSWER:A

11. Which of the following expressions is in the sum-of-products form?
a) (A + B)(C + D)
b) (A * B)(C * D)
c) A* B *(CD)
d) A * B + C * D
ANSWER:D

12. K-Map of full adder is of ------ variables
A. 2 b. 3 c.4 d.1
ANSWER:B

13. The output of a logic gate is 1 when all its inputs are at logic 1, the gate is either
(a) A NAND or a NOR
(b) An AND or an OR
(c) An OR or an X-OR
(d) An AND or a NOR
ANSWER:B

14. The output of a logic gate is 1 when all its inputs are at logic 0. The gate is either
(a) A NAND or a NOR
(b) An AND or an X-OR
(c) An OR or a NAND
(d) An X-OR or an X-NOR
ANSWER:A

15. The most suitable gate to check whether the number of 1's in a digital word is even or odd is
(a) X-OR (b) NAND (c) NOR (d) AND, OR and NOT
ANSWER:A

16. The number of rows in the truth table of a 4- input gate is,
(a) 4 (b) 8 (c) 12 (d) 16
ANSWER:D

17. For checking the parity of a digital word, it is preferable to use
(a) AND gates (b) NAND gates (c) X-OR gates (d) NOR gates
ANSWER:C

18. A+AB+ABC+ABCD+ABCDE.... =
(a) 1 (b) A (c) A+AB (d) AB
ANSWER:B

MODERATE QUESTIONS

1. A switching function F(a,b,c,d)=a'b'cd+a'bc'd+a'bcd+ab'c'd+ab'cd
a. ∑m(1,2,4,5,7) b. ∑m(3,5,7,9,13) c. ∑m(3,5,7,9,11) d. ∑m(3,7,9,11,13)
ANSWER: C

2. The function F(a,b,c,d)= ∑m(5,9,11,14) is equivalent to
a. a'bc'd+ab'c'd+ab'cd+abcd'
b. a'b'c'd+ab'c'd'+ab'cd+ab'cd'
c. a'bc'd+ab'c'd+abcd+ab'cd'
d. a'bc'd+a'b'c'd+ab'cd+a'bcd'
ANSWER:A

3. If SOP form of the function F= a'bc'd+ab'c'd+abcd+ab'cd'
a. F=(a+b'+c+d')(a'+b+c+d')(a'+b'+c'+d')(a'+b+c'+d)
b. F=(a+b'+c+d)(a'+b'+c+d')(a'+b'+c'+d')(a'+b'+c'+d)
c. F=(a'+b'+c+d')(a'+b+c+d')(a+b'+c'+d')(a'+b+c+d)
d. F=(a+b'+c'+d')(a'+b+c+d')(a'+b'+c'+d')(a'+b+c'+d')
ANSWER: A

4. If a 3 variable function is represented in POS form as πM(0, 3,6,7) then in SOP from it is represented as
a. ∑m(1,2,4,6) b. ∑m(1,3,4,5) c. ∑m(1,2,4,5) d. ∑m(1,2,4,7)
ANSWER:C

5. Q.96.A+B=B+A; AB=BA represent which laws
(a) Commutative
(b) Associative
(c) Distributive
(d) Idempotence
ANSWER:A

6. The K-map based Boolean reduction is based on the following Unifying Theorem: A + A' = 1.
a) Impact
b) Non-Impact
c) Force
d) Complementarity
ANSWER:B

7. The prime implicant which has at least one element that is not present in any other implicant is known as _____
a) Essential Prime Implicant
b) Implicant
c) Complement
d) Prime Complement
ANSWER:A

8. Product-of-Sums expressions can be implemented using _____
a) 2-level OR-AND logic circuits
b) 2-level NOR logic circuits
c) 2-level XOR logic circuits
d) Both 2-level OR-AND and NOR logic circuits
ANSWER:D

9. There are many situations in logic design in which simplification of logic expression is possible in terms of XOR and _____ operations.
a) X-NOR
b) XOR
c) NOR
d) NAND
ANSWER:A

10. These logic gates are widely used in _____ design and therefore are available in IC form.
a) Sampling
b) Digital

c) Analog
d) Systems
ANSWER:B

11. In cellular transmitter system, the carrier generated by frequency synthesizer uses following modulation by the amplified voice signal from microphone
(a) Frequency modulation (b) Phase modulation
(c) AM modulation (d) None of above
ANSWER:B

12. The modulation index corresponding to maximum deviation and maximum modulating frequency is called as...
(a) modulation index (b) deviation ratio
(c) pre-emphasis factor (d) de- emphasis factor
ANSWER:B

TOUGH QUESTIONS

1) Reduce the expression y=a'b'c'd+a'bc'd+a'bcd+a'bcd'+abc'd'+abc'd+abcd+ab'cd
a) acd+ a'cd+ab'c+a'b'c'
b) a'c'd+a'bc+abc'+acd
c) a'c'd+abc+abc'+a'c'd'
d) ac+a'bc+abc'+acd
ANSWER : B

2) simplify the function f(a,b,c)= ∑m(0,3,4,7)
a) b'c'+bc
b) a'b'+bc
c)a'b'+ab
d)ab'+bc
ANSWER: A

3) (A + B)(A' * B') = ?
a) 1
b) 0
c) AB
d) AB'
ANSWER:B

4. Simplify Y = AB' + (A' + B)C.
a) AB' + C

b) AB + AC
c) A’B + AC’
d) AB + A
ANSWER:A

5. The boolean function A + BC is a reduced form of _____
a) AB + BC
b) (A + B)(A + C)
c) A’B + AB’C
d) (A + C)B
ANSWER:B

6. The canonical sum of product form of the function y(A,B) = A + B is _____
a) AB + BB + A’A
b) AB + AB’ + A’B
c) BA + BA’ + A’B’
d) AB’ + A’B + A’B’
ANSWER:B