

परीक्षेचे नांव : सहायक प्राध्यापक, विद्युत अभियांत्रिकी,

परीक्षेचा दिनांक : 27 जुलै, 2014

अस्वायत्त शासकीय अभियांत्रिकी महाविद्यालय, महाराष्ट्र अभियांत्रिकी महाविद्यालयीन शिक्षक सेवा, गट -अ,

चाळणी परीक्षा-2014

विषय : विद्युत अभियांत्रिकी,

महाराष्ट्र लोकसेवा आयोगामार्फत सहायक प्राध्यापक, विद्युत अभियांत्रिकी, अस्वायत्त शासकीय अभियांत्रिकी महाविद्यालय, महाराष्ट्र अभियांत्रिकी महाविद्यालयीन शिक्षक सेवा, गट -अ, चाळणी परीक्षा-२०१४ या परीक्षेच्या प्रश्नपत्रिकेची उत्तरतालिका उमेदवारांच्या माहितीसाठी संकेतस्थळावर प्रसिध्द करण्यात आली आहे. सदर उत्तरतालिकेतील प्रश्न-उत्तरांसंबंधी उमेदवारांना निवेदन करावयाचे असल्यास त्यांनी अधिप्रमाणीत स्पष्टीकरण / संदर्भ देऊन तसेच विषय, परीक्षेचे नाव, प्रश्नसंच, प्रश्नक्रमांक यांच्या उल्लेखासह आपले लेखी निवेदन उपसचिव (गोपनीय), महाराष्ट्र लोकसेवा आयोग, बँक ऑफ इंडिया बिल्डिंग, ३ रा मजला, हुतात्मा चौक, मुंबई ४०० ००१ या पत्त्यावर टपालाने पाठवावे. यासंदर्भात दि. ०८ ऑगस्ट, २०१४ पर्यंत आयोगाकडे प्राप्त झालेल्या निवेदनांचीच दखल घेतली जाईल. तदनंतर आलेली निवेदने विचारात घेतली जाणार नाहीत, याची कृपया नोंद घ्यावी

उत्तरतालिका - KEY

MPSC

MPSC 27th July 2014 Shift 1

Notations :

- Options shown in green color and with ✓ icon are correct.
- Options shown in red color and with ✗ icon are incorrect.

| | |
|-----------------------------|---------------------------------------|
| Question Paper Name: | Assistant Professor Electrical ACTUAL |
| Subject Name: | Assistant Professor Electrical |
| Duration: | 60 |

| Group 1 | |
|-----------------------------|----|
| Group Maximum Duration : | 0 |
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| Revisit allowed for edit? : | No |

| Assistant Professor Electrical | |
|--------------------------------|-----------|
| Mandatory or Optional: | Mandatory |

Question Number : 1 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following is NOT a primary energy source ?

Options :

- ✗ Coal
- ✗ Biogas
- ✗ Natural gas
- ✓ Electricity

Question Number : 2 Question Type : MCQ

Correct : 2 Wrong : 0

Inexhaustible energy sources are known as

Options :

- ✗ Commercial energy sources
- ✗ Primary energy sources

3. ✓ Renewable energy sources

4. ✗ Secondary energy sources

Question Number : 3 Question Type : MCQ

Correct : 2 Wrong : 0

As per Energy conservation Act, 2001, the appointment of Bureau of Energy Efficiency Manager is mandatory for

Options :

1. ✓ Designated consumers

2. ✗ Urban local bodies

3. ✗ All captive power plants

4. ✗ Electrical distribution licensees

Question Number : 4 Question Type : MCQ

Correct : 2 Wrong : 0

Energy consumption per unit of GDP is called

Options :

1. ✗ Energy ratio

2. ✓ Energy intensity

3. ✗ Per capita consumption

4. ✗ Energy utilization

Question Number : 5 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following is NOT a designated consumer according to energy consumption Act 2001 ?

Options :

1. ✗ Fertilizers

2. ✓ Nuclear power stations

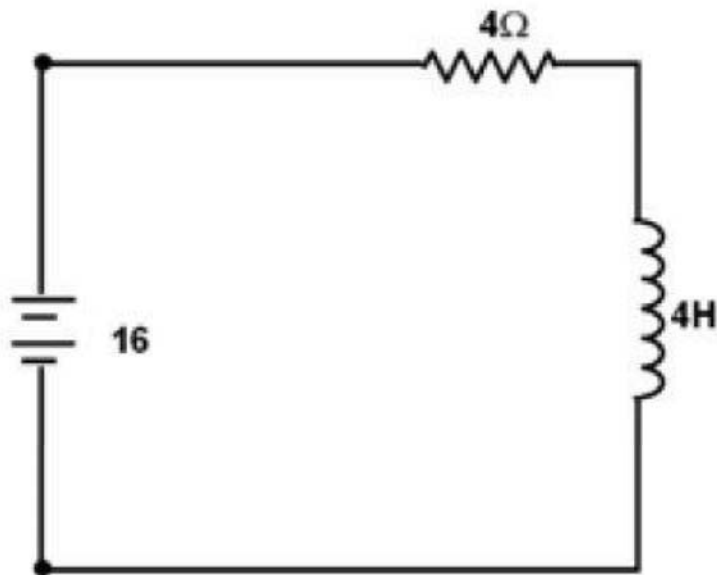
3. ✗ Cement

4. ✗ Chlor alkali

Question Number : 6 Question Type : MCQ

Correct : 2 Wrong : 0

The steady state value of the current in the given circuit is



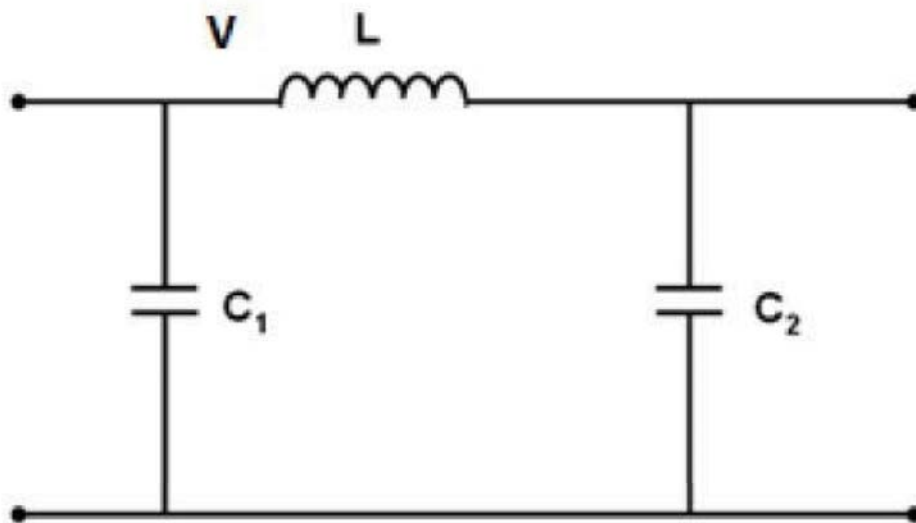
Options :

1. ✓ 4A
2. ✗ 3A
3. ✗ 2A
4. ✗ 1A

Question Number : 7 Question Type : MCQ

Correct : 2 Wrong : 0

The given circuit represents a



Options :

1. ✓ Low pass filter

2. ✘ High pass filter
3. ✘ Band pass filter
4. ✘ Band stop filter

Question Number : 8 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following statements defines the difference between an ideal constant voltage source and ideal constant current source ?

Options :

1. ✘ The ideal constant current source has zero internal resistance
2. ✔ The output voltage of ideal constant voltage source remains constant irrespective of the current drawn.
3. ✘ The output voltage of the ideal constant voltage source changes with the current drawn
4. ✘ Both can be used interchangeably without affecting the circuit performance

Question Number : 9 Question Type : MCQ

Correct : 2 Wrong : 0

According to Thevenin's theorem, a given network can be represented by a

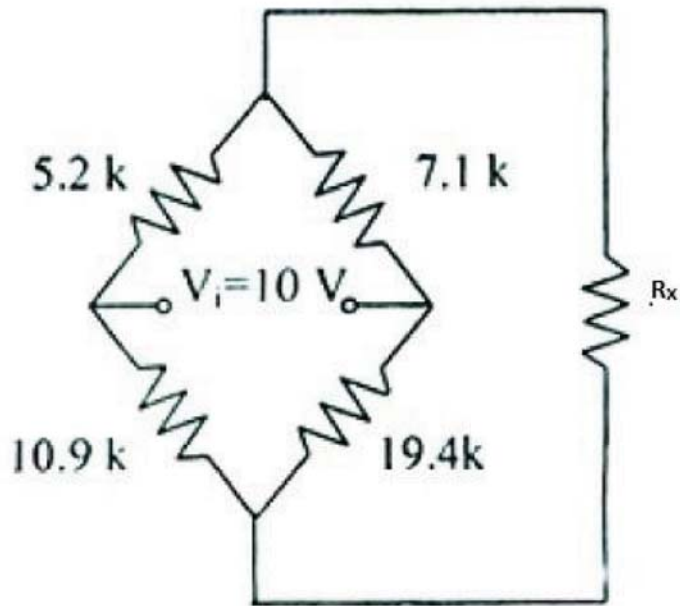
Options :

1. ✘ A single current source with a series resistance
2. ✘ A single current source with a parallel resistance
3. ✘ A single voltage source with a parallel resistance
4. ✔ A single voltage source with a series resistance

Question Number : 10 Question Type : MCQ

Correct : 2 Wrong : 0

What should be the value of R_x so that the power dissipated is maximum



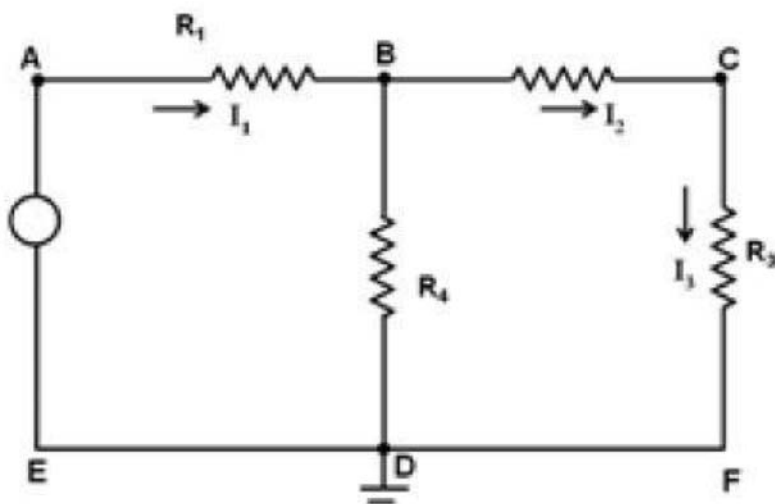
Options :

1. ✘ 33.4 K
2. ✘ 17.6 K
3. ✔ 10 K
4. ✘ 5 K

Question Number : 11 Question Type : MCQ

Correct : 2 Wrong : 0

The number of nodes and the branches in the circuit above are



Options :

1. ✘ 6 nodes, 4 branches
2. ✘ 4 nodes, 4 branches

3. ✓ 4 nodes, 3 branches

4. ✗ 5 nodes, 2 branches

Question Number : 12 Question Type : MCQ

Correct : 2 Wrong : 0

An alternating voltage $e = 200 \sin (\omega t + \pi/4)$ is applied to a circuit. The current is given by the expression $i = 10 \sin (\omega t - \pi/4)$. The impedance of the circuit is

Options :

1. ✓ $200/10 \sin 90^\circ$

2. ✗ $200/10 \tan \pi/4$

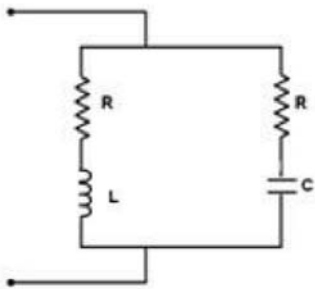
3. ✗ $200/10 \cos \pi/4$

4. ✗ $200/10 \sin \pi/4$

Question Number : 13 Question Type : MCQ

Correct : 2 Wrong : 0

A parallel circuit has 2 branches. In one branch R and L are in series and in the other branch R and C are in series. The circuit will exhibit unity power factor when



Options :

1. ✗ $R = \sqrt{Lc}$

2. ✓ $R = \sqrt{L/c}$

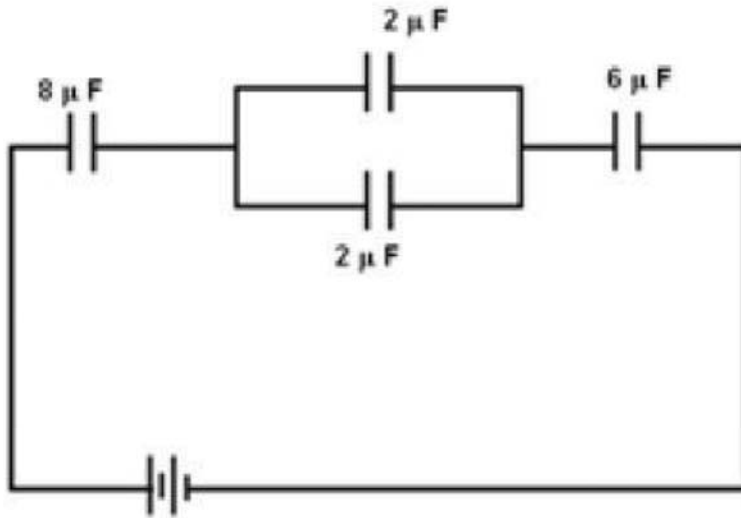
3. ✗ $R = L/c$

4. ✗ $R = \sqrt{c/L}$

Question Number : 14 Question Type : MCQ

Correct : 2 Wrong : 0

In the given circuit the total equivalent capacitance is



Options :

1. ✘ $18 \mu F$
2. ✘ $16 \mu F$
3. ✘ $15 \mu F$
4. ✔ $1.84 \mu F$

Question Number : 15 Question Type : MCQ

Correct : 2 Wrong : 0

If the area of the plates parallel plate capacitor having a capacitance of C is doubled and the distance between the plates is halved, the new capacitance will be

Options :

1. ✘ $c/2$
2. ✘ c
3. ✘ $2c$
4. ✔ $4c$

Question Number : 16 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following is most suitable to measure the resistance of a shunt for a precision grade ammeter ?

Options :

1. ✘ Wheatstone bridge

2. ✓ Kelvin's double bridge

3. ✗ Ohm meter

4. ✗ Anderson bridge

Question Number : 17 Question Type : MCQ

Correct : 2 Wrong : 0

An electronic voltmeter provides more accurate readings in a high resistance circuit as compared to a non electronic voltmeter because it has

Options :

1. ✓ High ohms/ volt rating

2. ✗ High resolution

3. ✗ Low meter resistance

4. ✗ High volts/ ohm rating

Question Number : 18 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following meters is not effected by magnetic losses ?

Options :

1. ✓ Electrostatic instruments

2. ✗ PM moving coil instruments

3. ✗ Dynamo meter type moving coil instruments

4. ✗ Moving iron instruments

Question Number : 19 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following frequency meters is suitable for measuring radio frequencies ?

Options :

1. ✗ Vibrating reed frequency meter

2. ✗ Electrical resonance frequency meter

3. ✓ Heterodyne frequency meter

4. ✗ Electro dynamic frequency meter

Question Number : 20 Question Type : MCQ

Correct : 2 Wrong : 0

The two wattmeter method of measuring 3 phase power can be used for

Options :

1. ✘ Balanced loads only
2. ✘ Balanced and unbalanced loads only
3. ✘ Both balanced, unbalanced loads and leading power factors only
4. ✔ Both balanced, unbalanced loads with all power factors

Question Number : 21 Question Type : MCQ

Correct : 2 Wrong : 0

In the two wattmeter method of measuring 3 phase power, one of the wattmeter gives a negative reading. This is because the power factor is

Options :

1. ✘ Lagging
2. ✔ Leading
3. ✘ Unity
4. ✘ 0.5

Question Number : 22 Question Type : MCQ

Correct : 2 Wrong : 0

With the help of a CRO, which of the values of an alternating quantity can be measured ?

Options :

1. ✘ Peak values only
2. ✘ RMS values only
3. ✔ Peak, RMS and Average values
4. ✘ Average values only

Question Number : 23 Question Type : MCQ

Correct : 2 Wrong : 0

The secondary of a current transformer is not left open, because leaving it open will result into

Options :

1. ✘ No current in the primary
2. ✔ Damage of transformer
3. ✘ Low flux production in the core

4. ✘ Low voltage across the secondary

Question Number : 24 Question Type : MCQ

Correct : 2 Wrong : 0

Q meter works on the principle of

Options :

1. ✘ Series resonance and measures reactance of the coil
2. ✘ Parallel resonance and measures ratio R/c of the circuit
3. ✘ Parallel resonance and measures ratio R/x of the coil
4. ✔ Series resonance and measures the ratio X/R of the coil

Question Number : 25 Question Type : MCQ

Correct : 2 Wrong : 0

In an electro dynamic power factor meter which one of the following statements is true ?

Options :

1. ✘ The moving coils carry the line current and are connected in parallel
2. ✘ The fixed coils carry the line current and are connected in parallel
3. ✘ A resistance and an inductance is connected in each fixed coil
4. ✔ The fixed coils carry the line current and are connected in series

Question Number : 26 Question Type : MCQ

Correct : 2 Wrong : 0

The hold circuit that is required sometimes in flat-top sampling is designed by using a sampler followed by

Options :

1. ✘ An envelope detector
2. ✔ A shunt capacitor
3. ✘ Series RL circuit
4. ✘ Series resistance along with parallel RC circuit in shunt

Question Number : 27 Question Type : MCQ

Correct : 2 Wrong : 0

Which modulation scheme has the characteristics of a carrier as when modulated by a digital bit stream have one of the possible phases of 0° , 90° , 180° , and 270°

Options :

1. ✘ Binary phase shift keying

2. ✘ Quadrature amplitude Modulation
3. ✘ Minimum shift keying
4. ✔ Quadrature phase shift keying

Question Number : 28 Question Type : MCQ

Correct : 2 Wrong : 0

Consider the following

1. Pulse code modulation
2. Pulse position modulation
3. Pulse width modulation

Which of the above communications are digital ?

Options :

1. ✘ 1 and 2 only
2. ✘ 1 and 3 only
3. ✔ 1 only
4. ✘ 1, 2, and 3

Question Number : 29 Question Type : MCQ

Correct : 2 Wrong : 0

The nyquist rate of the signal $x(t) = \text{sinc } 100t. \text{sinc } 200t$ is

Options :

1. ✘ 100 Hz
2. ✘ 200 Hz
3. ✔ 300 Hz
4. ✘ 600 Hz

Question Number : 30 Question Type : MCQ

Correct : 2 Wrong : 0

An AM signal given by $s(t) = A_c \cos \omega_c t + 2 \cos \omega_c t. \cos \omega_m t$. The minimum value of A_c required for envelope detection is

Options :

1. ✔ 2V
2. ✘ 0.5 V
3. ✘ 1 V
4. ✘ 1.5 V

Question Number : 31 Question Type : MCQ

Correct : 2 Wrong : 0

Which of the following is an error correcting code

Options :

1. ✘ Gray
2. ✔ Hamming
3. ✘ ASCII
4. ✘ EBCDIC

Question Number : 32 Question Type : MCQ

Correct : 2 Wrong : 0

The octal equivalent of $(0.623)_{10}$ is

Options :

1. ✔ 0.476763
2. ✘ 0.623
3. ✘ 0.077875
4. ✘ 4.984

Question Number : 33 Question Type : MCQ

Correct : 2 Wrong : 0

The maximum efficiency of AM modulator in case of the modulation is

Options :

1. ✘ 50%
2. ✘ 25%
3. ✔ 33 ½ %
4. ✘ 100%

Question Number : 34 Question Type : MCQ

Correct : 2 Wrong : 0

The carry of a full adder circuit is

Options :

1. ✔ 3-variable majority function
2. ✘ 2-variable majority function
3. ✘ 3-variable minority function
4. ✘ 2-variable minority function

Question Number : 35 Question Type : MCQ

Correct : 2 Wrong : 0

The correct sequence of subsystems in FM receiver is

Options :

1. ✘ Mixer, IF amplifier, limiter, audio amplifier, discriminator
2. ✔ RF amplifier, mixer, IF amplifier, limiter, discriminator, audio amplifier
3. ✘ RF amplifier, mixer, limiter, discriminator, IF amplifier, audio amplifier
4. ✘ Mixer, RF amplifier, limiter, IF amplifier, discriminator, audio amplifier

Question Number : 36 Question Type : MCQ

Correct : 2 Wrong : 0

A band pass signal has significant frequency components in the range of 1.5 MHz to 2 MHz. if the signal is to be reconstructed from its samples, the minimum sampling frequency will be

Options :

1. ✘ 2 MHz
2. ✘ 3.5 MHz
3. ✘ 4 MHz
4. ✔ 1 MHz

Question Number : 37 Question Type : MCQ

Correct : 2 Wrong : 0

Which of the following logic gate is also known as equivalence logic gate –

Options :

1. ✘ EX-OR
2. ✘ NOR
3. ✔ EX-NOR
4. ✘ NAND

Question Number : 38 Question Type : MCQ

Correct : 2 Wrong : 0

How many NOR gates are required to implement a half subtractor and a full subtractor respectively

Options :

1. ✘ 9,9
2. ✔ 5,9
3. ✘ 5,5

4. ✖ 9,5

Question Number : 39 Question Type : MCQ

Correct : 2 Wrong : 0

There are five Boolean variables X_1, X_2, X_3, X_4 and X_5 . The following functions are defined on sets of these

$$f(X_5, X_3, X_1) = \sum(3, 4, 5, 13)$$

$$g(X_2, X_4, X_1) = \sum(1, 9, 11, 15)$$

$$\text{and } h(X_5, X_4, X_3, X_2, X_1) = f.g$$

$$\text{then } h(X_5, X_4, X_3, X_2, X_1) = \text{is}$$

Options :

1. ✔ Zero

2. ✖ $\sum(5, 13, 11, 15)$

3. ✖ $\sum(3, 4, 5, 9)$

4. ✖ $\sum(1, 3, 4, 5, 9, 11, 13, 15)$

Question Number : 40 Question Type : MCQ

Correct : 2 Wrong : 0

The frequency range of very high frequency (VHF) is

Options :

1. ✖ 300 MHz – 3000 MHz

2. ✔ 30 MHz – 300 MHz

3. ✖ 3 MHz – 30 MHz

4. ✖ 30 THz – 3000 Hz

Question Number : 41 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the statement is incorrect

Options :

1. ✔ Master slave configuration is used in flip flops to store 2 bits of information

2. ✖ A transparent latch consists of D-type flip flops

3. ✖ A flip flop is used to store 1 bit of information

4. ✖ Race around condition occurs in J.K. flip flop when both of its input are 1

Question Number : 42 Question Type : MCQ

Correct : 2 Wrong : 0

The differential gain of op-amp is 4000 and value of CMRR is 150. Its output voltage, when the two input voltages are $200\mu\text{V}$ and $160\mu\text{V}$ respectively will be

Options :

1. ✓ 160mV

2. ✗ 16V

3. ✗ 16mV

4. ✗ 1.6mV

Question Number : 43 Question Type : MCQ

Correct : 2 Wrong : 0

$(FE35)_{16}$ XOR $(CB15)_{16}$ is equal to -

Options :

1. ✗ $(3320)_{16}$

2. ✗ $(FF35)_{16}$

3. ✗ $(FF50)_{16}$

4. ✓ $(3520)_{16}$

Question Number : 44 Question Type : MCQ

Correct : 2 Wrong : 0

Let $u[n]$ be the unit step signal and $x[n] = (1/2)^n u[n] + (-1/3)^n u[n]$

The region of convergence of Z- transform of $x(n)$ is-

Options :

1. ✗ $|z| > \frac{1}{3}$

2. ✓ $|z| > \frac{1}{2}$

3. ✗ $|z| < \frac{1}{2}$

4. ✗ $\frac{1}{3} < |z| < \frac{1}{2}$

Question Number : 45 Question Type : MCQ

Correct : 2 Wrong : 0

An LTI system is causal if and only if -

Options :

1. ✓ $h(t) = 0$ for $t < 0$

2. ✗ $h(t)$ is finite for $0 < t < \infty$

3. ✗ $h(t)$ is non zero for all t

4. ✘ $h(t)$ is finite for $t < 0$

Question Number : 46 Question Type : MCQ

Correct : 2 Wrong : 0

The early effect in bipolar junction transistor is caused by-

Options :

1. ✘ Fast turn on
2. ✘ Large emitter to base forward bias
3. ✘ Fast turn off
4. ✔ Large collector to base reverse bias

Question Number : 47 Question Type : MCQ

Correct : 2 Wrong : 0

A system is characterized by the input – output relation

$$Y(t) = x(2t) + x(3t)$$

for all t , where $y(t)$ is the output and $x(t)$ is the input. It is

Options :

1. ✘ Linear, causal, time invariant
2. ✔ Linear, non-causal, time variant
3. ✘ Linear, causal, time variant
4. ✘ Non linear, non causal, time variant

Question Number : 48 Question Type : MCQ

Correct : 2 Wrong : 0

A p-type silicon sample has an intrinsic carrier concentration of $1.5 \times 10^{10} / \text{cm}^3$ and a hole concentration of $2.25 \times 10^{15} / \text{cm}^3$. Then the electron concentration is-

Options :

1. ✔ $10^5 / \text{cm}^3$
2. ✘ $1.5 \times 10^{25} / \text{cm}^3$
3. ✘ 0
4. ✘ $10^{10} / \text{cm}^3$

Question Number : 49 Question Type : MCQ

Correct : 2 Wrong : 0

The unit impulse response of a system is $-4e^{-t} + 6e^{-2t}$. The step response of the same system for $t \geq 0$ is $Ae^{-t} + Be^{-2t} + C$, where A, B and C are respectively-

Options :

1. ✘ -4, -3 and +1
2. ✘ -4, -3 and -1
3. ✔ +4, -3 and -1
4. ✘ +4, -3 and +1

Question Number : 50 Question Type : MCQ

Correct : 2 Wrong : 0

Consider the following devices-

- (i) BJT in CB mode
- (ii) BJT in CE mode
- (iii) JFET
- (iv) MOSFET

The correct sequence of increasing order of input impedance-

Options :

1. ✔ (i), (ii), (iii) and (iv)
2. ✘ (i), (iii), (ii) and (iv)
3. ✘ (ii), (i), (iii) and (iv)
4. ✘ (ii), (i), (iv) and (iii)

Question Number : 51 Question Type : MCQ

Correct : 2 Wrong : 0

An amplifier with midband gain $|A| = 600$ has negative feedback $|B| = \frac{1}{200}$. If upper cut off frequency without feedback were at 100 KHz, then with feedback it would become-

Options :

1. ✘ 10 KHz
2. ✘ 360 KHz
3. ✘ 300 KHz
4. ✔ 400 KHz

Question Number : 52 Question Type : MCQ

Correct : 2 Wrong : 0

What will be total modulation index if a wave is amplitude modulated by three sine waves with modulation indices of 25%, 50% and 75%?

Options :

1. ✘ $M_t = 1.5$
2. ✘ 2. $M_t = 1$

3. ✓ $M_t = 0.93$

4. ✗ $M_t = 1.22$

Question Number : 53 Question Type : MCQ

Correct : 2 Wrong : 0

The Fourier transform of a rectangular pulse for period $t = -T/2$ to $t = T/2$

Options :

1. ✓ A sinc function

2. ✗ A sine function

3. ✗ A cosine function

4. ✗ A sine squared function

Question Number : 54 Question Type : MCQ

Correct : 2 Wrong : 0

Diffusion current of holes in semiconductor is proportional to (with p = concentration of holes/unit volume)

Options :

1. ✗ $\frac{dp}{dx^2}$

2. ✓ $\frac{dp}{dx}$

3. ✗ $\frac{dp}{dt}$

4. ✗ $\frac{d^2p}{dx^2}$

Question Number : 55 Question Type : MCQ

Correct : 2 Wrong : 0

An SCR remains turned on if the anode current is more than -

Options :

1. ✓ Holding current

2. ✗ Break over current

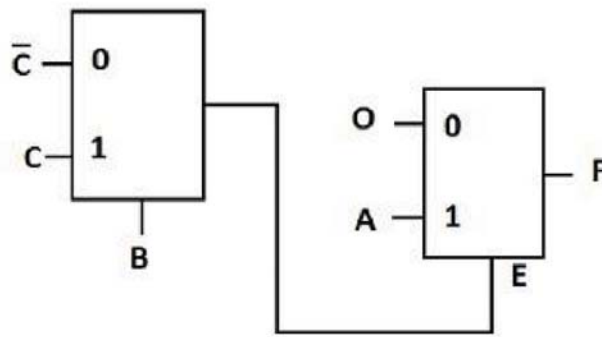
3. ✗ Trigger current

4. ✗ Threshold current

Question Number : 56 Question Type : MCQ

Correct : 2 Wrong : 0

The Boolean function 'F' implemented as shown in the figure below using two input multiplexers is



Options :

1. ✘ $\bar{A}\bar{B}C + ABC\bar{C}$
2. ✔ $ABC + \bar{A}\bar{B}\bar{C}$
3. ✘ $\bar{A}BC + ABC\bar{C}$
4. ✘ $\bar{A}\bar{B}C + \bar{A}B\bar{C}$

Question Number : 57 Question Type : MCQ

Correct : 2 Wrong : 0

An ideal voltage source is connected across a variable resistance. The variation of current as a function of resistance is given by a

Options :

1. ✘ Straight line passing through the origin
2. ✔ Rectangular hyperbola
3. ✘ Parabola
4. ✘ Ellipse

Question Number : 58 Question Type : MCQ

Correct : 2 Wrong : 0

Using Bio Savart Law which one of the following is calculated for a current carrying conductor at a point P situated at a distance r ?

Options :

1. ✘ Magnetic flux density
2. ✔ Magnetic field strength
3. ✘ Magneto motive force
4. ✘ Ampere turns x reluctance

Question Number : 59 Question Type : MCQ

Correct : 2 Wrong : 0

According to Gauss theorem, the surface integral of the normal component of electric flux density D over a closed surface containing charge Q is

Options :

1. ✓ Q
2. ✗ Q/ϵ_0
3. ✗ $Q \times \epsilon_0$
4. ✗ Q^2 / ϵ_0

Question Number : 60 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following is used to find the direction of induced emf in a coil rotating in a magnetic field ?

Options :

1. ✗ Faraday's Law
2. ✓ Fleming's right hand rule
3. ✗ Fleming's left hand rule
4. ✗ Len'z law

Question Number : 61 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following remains constant inside a conducting sphere ?

Options :

1. ✗ Electric flux
2. ✗ Electric intensity
3. ✓ Potential
4. ✗ Charge

Question Number : 62 Question Type : MCQ

Correct : 2 Wrong : 0

In a d.c. machine, if the load current is increased, which one of the following will happen ?

Options :

1. ✗ Both cross magnetizing and demagnetizing effects of the current will decrease
2. ✓ Both cross magnetizing and demagnetizing effects of current will increase
3. ✗ Cross magnetizing effect will decrease and demagnetizing effect will increase

4. ✘ Demagnetizing effect will decrease and cross magnetizing effect will increase

Question Number : 63 Question Type : MCQ

Correct : 2 Wrong : 0

The reactance voltage during the process of commutation in a d.c. machine is

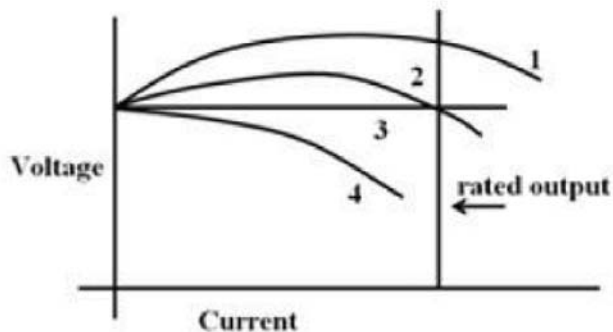
Options :

1. ✘ Inversely proportional to the self inductance of the coil
2. ✘ Inversely proportional to the rate of change of current
3. ✔ Directly proportional to the self inductance and rate of change of current
4. ✘ Directly proportional to the time of commutation

Question Number : 64 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following curve represents the Flat compounding of a d.c. compound generator ?



Options :

1. ✘ 1
2. ✔ 2
3. ✘ 3
4. ✘ 4

Question Number : 65 Question Type : MCQ

Correct : 2 Wrong : 0

A 4 pole, 3 phase induction motor is connected to a 400V 50Hz supply

The rotor speed at 4% slip and the frequency of rotor currents are respectively

Options :

1. ✘ 1200 rpm, 3%

2. ✘ 1500 rpm, 4%
3. ✔ 1440 rpm, 2%
4. ✘ 1000 rpm, 1%

Question Number : 66 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following statements about 3 phase induction motors is True ?

Options :

1. ✘ Squirrel cage motors are suitable when the motor has to start against heavy loads.
2. ✘ The starting torque of a slip ring motor is maximum.
The starting torque of the slip ring motor is not affected by the variations in supply
3. ✘ voltage.
The slip ring motor will have maximum starting torque when the rotor reactance equals
4. ✔ resistance.

Question Number : 67 Question Type : MCQ

Correct : 2 Wrong : 0

The torque developed by a split phase motor is proportional to

Options :

1. ✔ Sine of the angle between main winding current and auxiliary winding current
2. ✘ Main winding current only
3. ✘ Auxiliary winding current only
4. ✘ Cosine of the angle between two currents

Question Number : 68 Question Type : MCQ

Correct : 2 Wrong : 0

In which type of single phase motors the starting and running windings are identical

Options :

1. ✔ Single value capacitor start and run motor
2. ✘ Two value capacitor run motors
3. ✘ Repulsion motors
4. ✘ Universal motors

Question Number : 69 Question Type : MCQ

Correct : 2 Wrong : 0

Under no load conditions in a single phase transformer, the phase angle between the primary current and the applied voltage is

Options :

1. ✘ 0°
2. ✘ 90° lead
3. ✔ 90° lag
4. ✘ 180°

Question Number : 70 Question Type : MCQ

Correct : 2 Wrong : 0

The transformers are rated in kVA and not in kW because

Options :

1. ✘ Copper losses depend on voltage only
2. ✘ Iron losses depend on current only
3. ✘ Both losses are independent on frequency
4. ✔ Total losses are independent of power factor

Question Number : 71 Question Type : MCQ

Correct : 2 Wrong : 0

The Maximum efficiency of a transformer occurs at

Options :

1. ✔ Can be designed to occur at desired load
2. ✘ Maximum rated load
3. ✘ Half the rated load
4. ✘ No load

Question Number : 72 Question Type : MCQ

Correct : 2 Wrong : 0

An auto transformer has a turn ratio of 0.8. It supplies a load of 10kW. The power transferred inductively from the primary to secondary will be

Options :

1. ✘ 10kW
2. ✘ 8kW
3. ✔ 2kW
4. ✘ 1kW

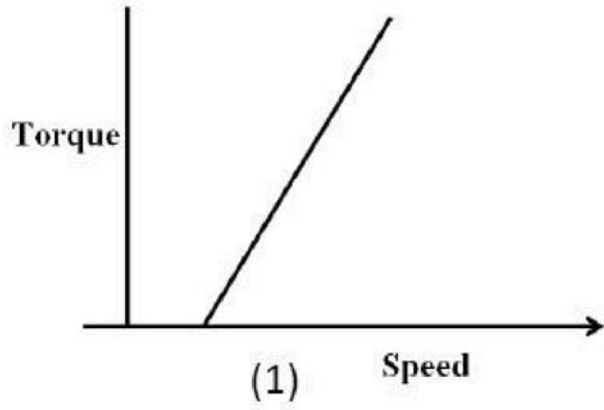
Question Number : 73 Question Type : MCQ

Correct : 2 Wrong : 0

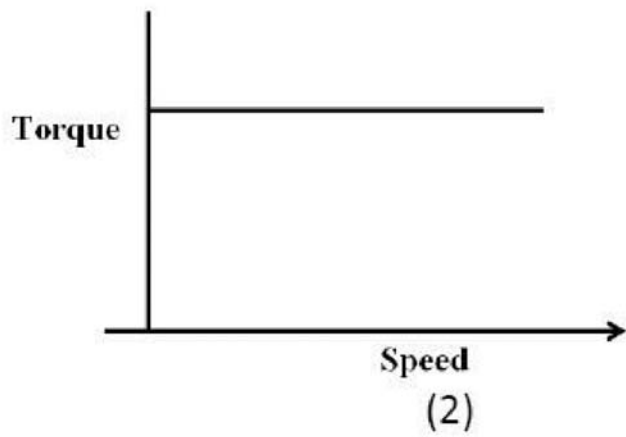
Which one of the following curves represents the torque speed curve of a synchronous motor ?

Options :

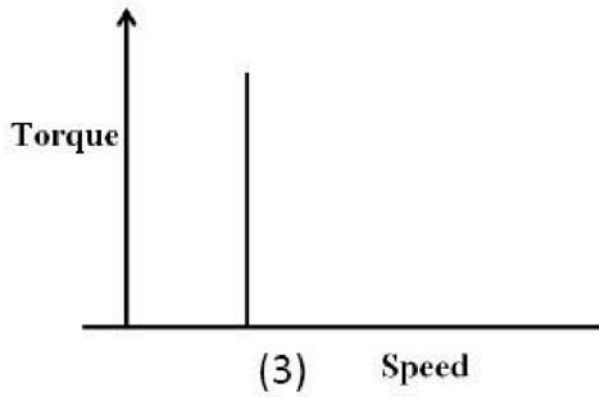
1. ✘



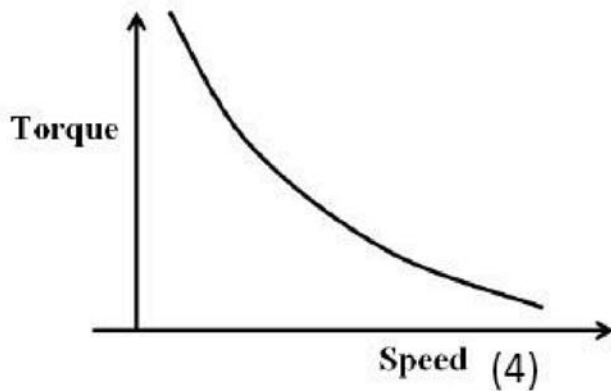
2. ✘



3. ✔



4. ✘



Question Number : 74 Question Type : MCQ

Correct : 2 Wrong : 0

Two single phase transformers operating in parallel share the load depending on their

Options :

1. ✘ Efficiency
2. ✔ Rating
3. ✘ Leakage reactance
4. ✘ Per unit impedance

Question Number : 75 Question Type : MCQ

Correct : 2 Wrong : 0

For parallel connection of 3 phase transformers, which one of the following is NOT essential ?

Options :

1. ✔ Same KVA rating
2. ✘ Same frequency
3. ✘ Same voltage rating
4. ✘ Same ratio of transformation

Question Number : 76 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following methods of determination of voltage regulation of an alternator is based on the separation of armature leakage reactance drop and armature reaction effects ?

Options :

1. ✘ Direct loading method
2. ✘ Ampere turn method
3. ✘ Synchronous impedance method

4. ✓ Zero power factor method

Question Number : 77 Question Type : MCQ

Correct : 2 Wrong : 0

Stepper motors have the advantage of having

Options :

1. ✗ Wide range of speed
2. ✗ Absence of field control
3. ✓ Compatibility with digital system
4. ✗ Large ratings

Question Number : 78 Question Type : MCQ

Correct : 2 Wrong : 0

A 2 phase servo motor uses

Options :

1. ✓ Drag cup rotor
2. ✗ Solid cylinder rotor
3. ✗ Squirrel cage rotor
4. ✗ Slip ring rotor with low rotor resistance

Question Number : 79 Question Type : MCQ

Correct : 2 Wrong : 0

In motor drives, the which type of braking combination is known as composite braking ?

Options :

1. ✗ Dynamic braking and mechanical braking
2. ✗ Regenerative braking and plugging
3. ✓ Regenerative braking and dynamic braking
4. ✗ Plugging and dynamic braking

Question Number : 80 Question Type : MCQ

Correct : 2 Wrong : 0

Under which condition the steady state ability of a Drive is obtained ?

Options :

1. ✗ Motor torque is more than the load torque
2. ✓ Motor torque is equal to the load torque
3. ✗ Motor torque is less than the load torque

4. ✘ Supply frequency is unchanged

Question Number : 81 Question Type : MCQ

Correct : 2 Wrong : 0

In case of an electric traction drive, the area under the speed time curve indicates the

Options :

1. ✘ Power consumed
2. ✘ Torque developed
3. ✔ Distance travelled
4. ✘ Time taken

Question Number : 82 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following is used to obtain variable dc from a fixed voltage dc ?

Options :

1. ✘ Regulators
2. ✘ Converters
3. ✘ Inverters
4. ✔ Choppers

Question Number : 83 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following is a disadvantage of the Armature voltage speed control of a d.c. motor ?

Options :

1. ✘ Low efficiency
2. ✘ Bad transient response
3. ✘ Poor speed regulation
4. ✔ Speed control only below rated speed

Question Number : 84 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following connection of 3 phase transformer is recommended at the substation end of a transmission line where the voltage is to be stepped down ?

Options :

1. ✘ Delta/ delta
2. ✘ Delta/ star

3. ✓ Star/ delta

4. ✗ Star / star

Question Number : 85 Question Type : MCQ

Correct : 2 Wrong : 0

In load flow studies of a power system, a voltage control bus is specified by

Options :

1. ✗ Real power and reactive power

2. ✓ Real power and voltage magnitude

3. ✗ Voltage and voltage phase angle

4. ✗ Reactive power and voltage

Question Number : 86 Question Type : MCQ

Correct : 2 Wrong : 0

The impedance per phase of a 3 phase transmission line on a base of 100 MVA, 100 KV is 2 pu.

The value of this impedance on a base of 400 MVA and 400 KV would be

Options :

1. ✗ 1.5 pu

2. ✗ 1 pu

3. ✓ 0.5 pu

4. ✗ 0.25 pu

Question Number : 87 Question Type : MCQ

Correct : 2 Wrong : 0

Which type of simultaneous equations are required to be solved in Load flow studies ?

Options :

1. ✗ Linear algebraic equations

2. ✓ Nonlinear algebraic equations

3. ✗ Linear differential equations

4. ✗ Nonlinear quadratic equations

Question Number : 88 Question Type : MCQ

Correct : 2 Wrong : 0

The diagonal elements of a nodal admittance matrix are strengthened by adding

Options :

1. ✓ Shunt inductances

2. ✘ Shunt capacitances
3. ✘ Loads
4. ✘ Generators

Question Number : 89 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following matrices reveals the topology of a power system network ?

Options :

1. ✘ Bus impedance matrix
2. ✘ Primitive impedance matrix
3. ✔ Bus incidence matrix
4. ✘ Primitive admittance matrix

Question Number : 90 Question Type : MCQ

Correct : 2 Wrong : 0

If all the sequence voltage at the fault point in a power system are equal, then the fault is a

Options :

1. ✘ Three phase fault
2. ✘ Line to ground fault
3. ✔ Double line to ground fault
4. ✘ Line to line fault

Question Number : 91 Question Type : MCQ

Correct : 2 Wrong : 0

The bus admittance matrix of a power system is given as

| | | | |
|---|--|---|---|
| | 1 | 2 | 3 |
| 1 | $\begin{pmatrix} -j50 & +j10 & +j5 \\ +j10 & -j30 & +j10 \\ +j5 & +j10 & -j25 \end{pmatrix}$ | | |
| 2 | | | |
| 3 | | | |

The impedance of line between bus 2 and 3 will be equal to

Options :

1. ✓ + j 0.1
2. ✗ -j 0.1
3. ✗ + j 0.2
4. ✗ -j 0.2

Question Number : 92 Question Type : MCQ

Correct : 2 Wrong : 0

For which of the protective equipment, the current rating is NOT required ?

Options :

1. ✗ Circuit breakers
2. ✓ Isolators
3. ✗ Relays
4. ✗ Load break switch

Question Number : 93 Question Type : MCQ

Correct : 2 Wrong : 0

In a circuit breaker, the Rate of Rise of Restriking voltage depends upon the

Options :

1. ✗ Capacity of the circuit breaker
2. ✗ Inductance of the system only
3. ✗ Capacitance of the system only
4. ✓ Inductance and capacitance of the system

Question Number : 94 Question Type : MCQ

Correct : 2 Wrong : 0

A digital relay protection system, as compared to other systems

Options :

1. ✗ is more costly
2. ✗ Has lesser flexibility in operation
3. ✗ Difficult to connect with other systems
4. ✓ Provides better transient stability of power system

Question Number : 95 Question Type : MCQ

Correct : 2 Wrong : 0

In a thermal power station, heat from flue gases is recovered in

Options :

1. ✘ Condenser
2. ✔ Economizer
3. ✘ Turbine
4. ✘ Super heater

Question Number : 96 Question Type : MCQ
Correct : 2 Wrong : 0

In a Nuclear reactor, the chain reaction is controlled by introducing

Options :

1. ✘ Iron rods
2. ✘ Graphite rods
3. ✘ Brass rods
4. ✔ Cadmium rods

Question Number : 97 Question Type : MCQ
Correct : 2 Wrong : 0

Which one of the following is termed as Gross head of a Hydroelectric system ?

Options :

1. ✘ Depth of turbine below ground level
2. ✘ Height of water level in the dam
3. ✔ Difference of water level between storage level and tail race
4. ✘ Height of water level in the river where tail race is provided

Question Number : 98 Question Type : MCQ
Correct : 2 Wrong : 0

In a transmission line, the corona losses increase with

Options :

1. ✔ Increase in supply frequency and reduction in conductor size
2. ✘ Increase in supply frequency and increase in conductor size
3. ✘ Decrease in supply frequency and increase in conductor size
4. ✘ Decrease in supply frequency and reduction in conductor size

Question Number : 99 Question Type : MCQ
Correct : 2 Wrong : 0

Which one of the statement about Interconnectors in a Transmission system is True ?

Options :

1. ✘ They connect two generating stations in series
2. ✔ They connect two generating stations in parallel
3. ✘ They have to be inductive only
4. ✘

They allow flow of power from Generator of high rating to low rating in one direction only.

Question Number : 100 Question Type : MCQ

Correct : 2 Wrong : 0

Which one of the following statements is True about a HVDC system ?

Options :

1. ✘ It has charging current but no skin effect
2. ✘ It has skin effect but no charging current
3. ✔ It has neither charging current nor skin effect
4. ✘ It has both charging current and skin effect