

परीक्षेचे नांव : सहायक प्राध्यापक, विद्युत अभियांत्रिकी, अस्वायत्त शासकीय अभियांत्रिकी महाविद्यालय,
महाराष्ट्र अभियांत्रिकी महाविद्यालयीन शिक्षक सेवा, गट -अ, चाळणी परीक्षा-2014

परीक्षेचा दिनांक : 27 जुलै, 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 चाळणी परीक्षेच्या प्रश्नपत्रिकेची उत्तरतालिका उमेदवारांच्या माहितीसाठी संकेतस्थळावर प्रसिध्द करण्यात आली होती. त्यासंदर्भात विहित दिनांकापर्यन्त (दिनांक ८ ऑगस्ट, २०१४) एकही अभिवेदन प्राप्त न झाल्याने दिनांक १ ऑगस्ट, २०१४ रोजी प्रसिध्द करण्यात आलेल्या उत्तरतालिकेतील उत्तरे अंतिम समजण्यात येतील. यानंतर आलेली निवेदने विचारात घेतली जाणार नाहीत व त्याबाबत कोणताही पत्रव्यवहार केला जाणार नाही, याची कृपया नोंद घ्यावी.

उत्तरतालिका - KEY

MPSC

MPSC 27th July 2014 Shift 1

Notations :

1. Options shown in green color and with ✓ icon are correct.
2. 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
Group Minimum Duration :	60
Revisit allowed for view? :	No
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 :

1. ✗ Coal
2. ✗ Biogas
3. ✗ Natural gas
4. ✓ Electricity

Question Number : 2 Question Type : MCQ

Correct : 2 Wrong : 0

Inexhaustible energy sources are known as

Options :

1. ✗ Commercial energy sources
2. ✗ 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

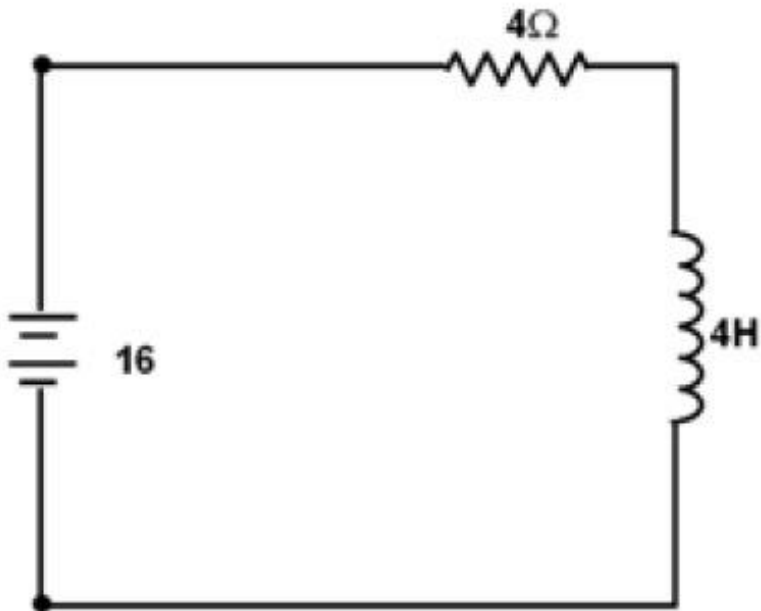
3. ✗ Cement

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



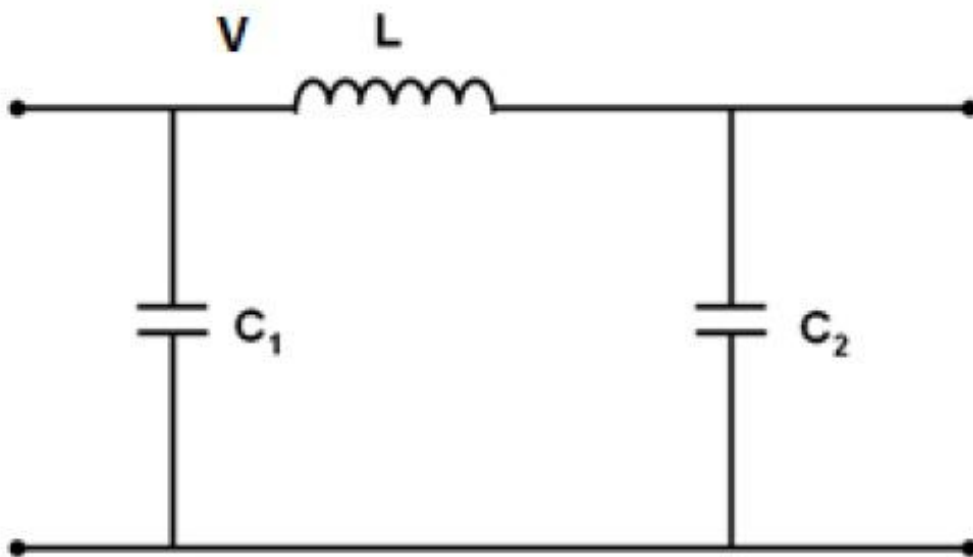
Options :

- 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

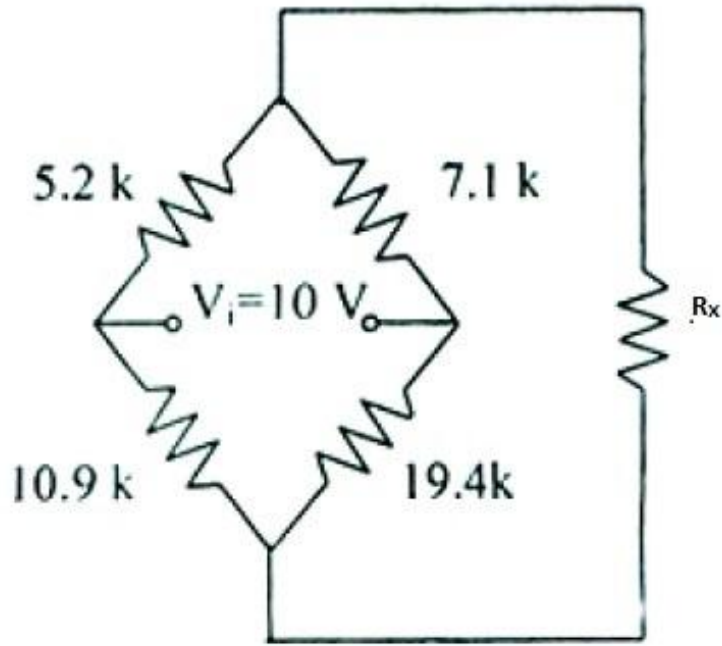
According to Thevenin's theorem, a given network can be represented by a

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



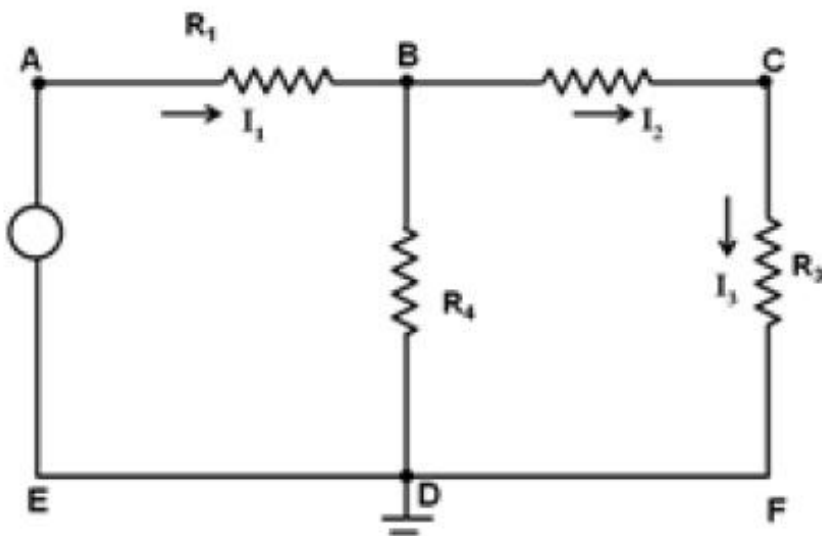
Options :

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. ✗ $200/10 \tan \pi/4$

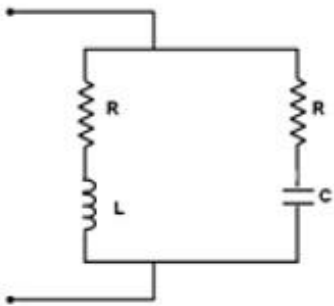
3. ✗ $200/10 \cos \pi/4$

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. ✓ $R = \sqrt{L/c}$

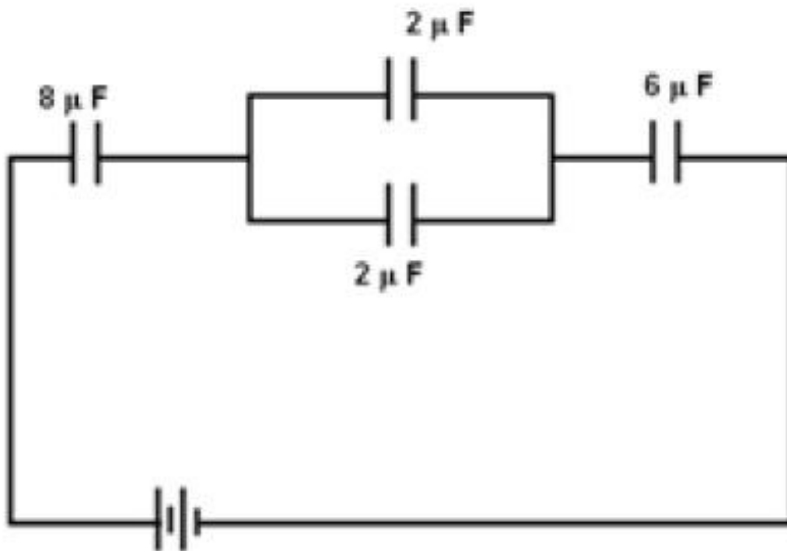
3. ✗ $R = L/c$

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

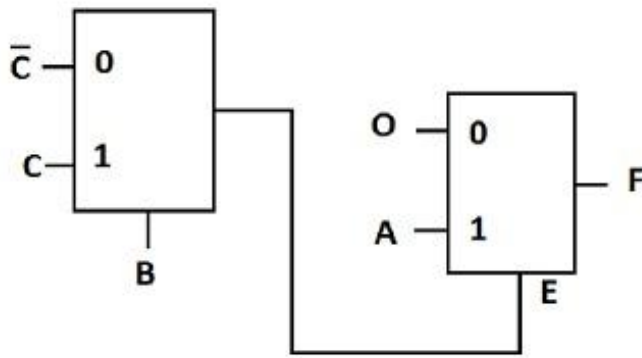
3. ✗ Trigger current

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. ✘ $\bar{A}BC + A\bar{B}\bar{C}$
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's 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

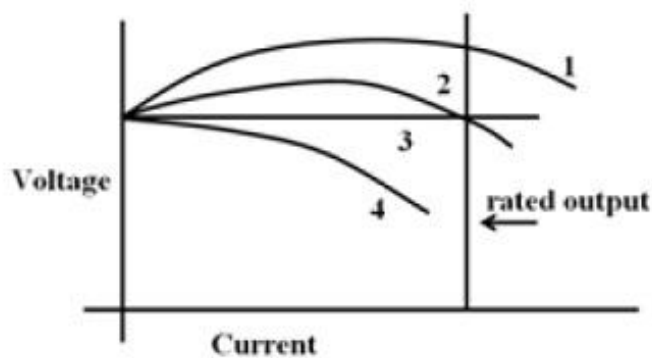
Options :

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

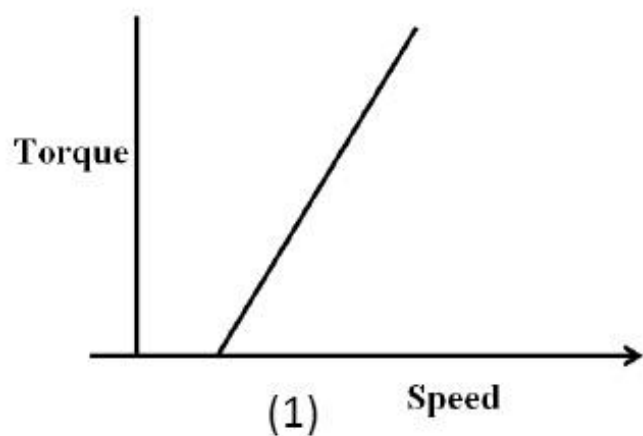
Question Number : 73 Question Type : MCQ

Correct : 2 Wrong : 0

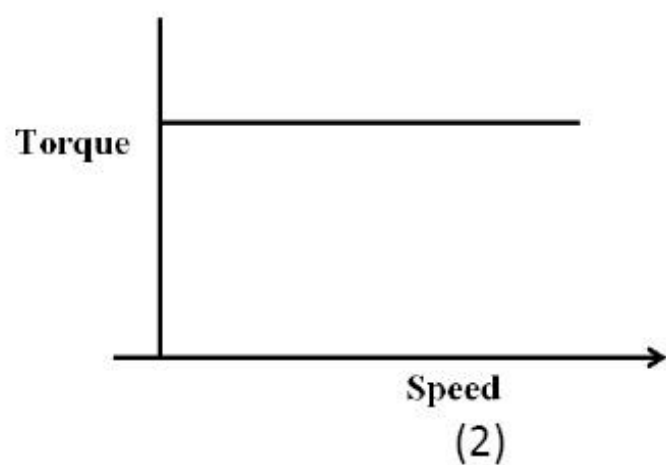
Which one of the following curves represents the torque speed curve of a synchronous motor ?

Options :

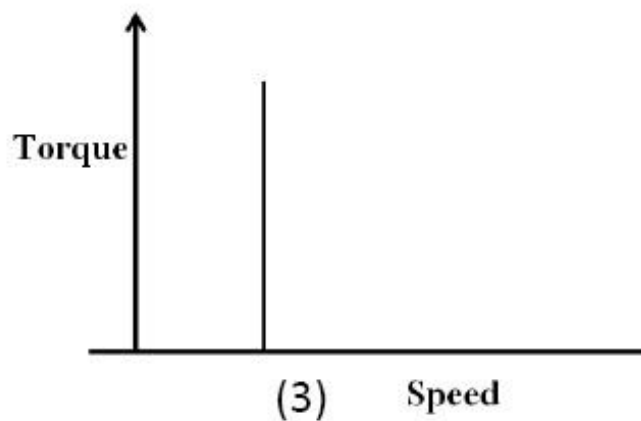
1. ✘



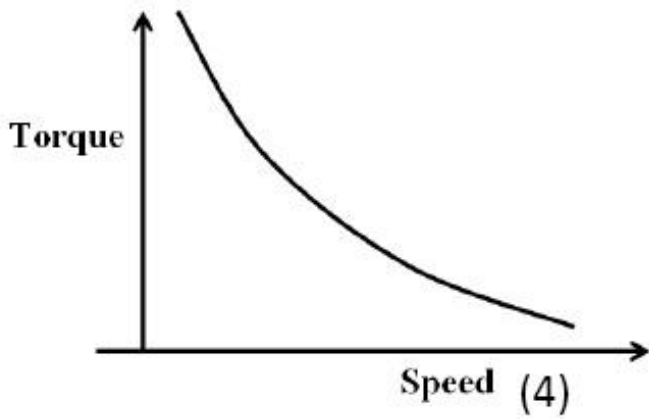
2. ✘



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	$-j50$	$+j10$	$+j5$
2	$+j10$	$-j30$	$+j10$
3	$+j5$	$+j10$	$-j25$

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