Maharashtra Public Service Commission

Question Paper Name :	ExecutiveEngineerElectricalGroupA 20th Mar 2023 Shift 1
Subject Name :	Executive Engineer Electrical Group A
Actual Answer Key :	Yes
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 1 Question Id : 630680189683 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Who among the following did NOT receive the Nobel Prize in Physics 2022?

Options :

1. Alain Aspect

2. John F Clauser

3. Anton Zeilinger

4. Carolyn R Bertozzi

Question Number : 2 Question Id : 630680189684 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

As of February 2023, who is the Managing Director of the International Monetary Fund?

Options :

1. Kristalina Georgieva

2. Christine Lagarde

3. Dominique Strauss-Kahn

4. Rodrigo de Rato

Question Number : 3 Question Id : 630680189685 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following countries topped the Global Peace Index 2022?

Options :

1. Denmark

2. New Zealand

3. Iceland

4. Ireland

Question Number : 4 Question Id : 630680189686 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following awards was received by SS Rajamouli for best song in the blockbuster Telugu film RRR?

Options :

1. Grammy Awards

2. ZD Awards

3. MTV Music Awards

4. Golden Globe Awards

Question Number : 5 Question Id : 630680189687 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following singers was conferred the Padma Bhushan in the year 2023?

Options :

1. Kaajee Singh

2. Tsering Namgyal

3. Zubin Mehta

4. Vani Jairam

Question Number : 6 Question Id : 630680189688 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Dilshad Hussain, who received the Padma Shri Award 2023 for the field of art, hails from which of the following states?

Options :

1. Uttar Pradesh

2. Maharashtra

3. Rajasthan

4. Karnataka

Question Number : 7 Question Id : 630680189689 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In which of the following years was the Geographical Indications of Goods (Registration and Protection) Act enacted by the Parliament of India?

Options :

1. 1999

2. 2000

3. 2001

4. 2002

Question Number : 8 Question Id : 630680189690 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

As per the report published by World Air Quality Report 2021, which of the following cities of India is listed with the most polluted air for the fourth consecutive year?

Options :

1. Kolkata

2. Delhi

3. Kanpur

4. Mumbai

Question Number : 9 Question Id : 630680189691 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

How much budget has been allocated to Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGA) in the Union Budget 2023?

Options :

1. ₹40,000 crore

2. ₹50,000 crore

3. ₹60,000 crore

4. ₹70,000 crore

Question Number : 10 Question Id : 630680189692 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In the budget 2023-24, the allocation of budget to the Ministry of Labour and Employment is approximately _____.

Options :

1. ₹16,221.73 crore

2. ₹14,221.73 crore

3. ₹13,221.73 crore

4. ₹10,221.73 crore

Question Number : 11 Question Id : 630680189693 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The Prohibition of Child Marriage (Amendment) Bill in which the minimum age of marriage of females was proposed to increase from 20 years to 21 years was introduced in which of the following years?

Options :

1. 2019

2. 2020

3. 2021

4. 2022

Question Number : 12 Question Id : 630680189694 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is NOT one of the Sustainable Development Goals (SDGs) adopted by the United Nation in 2015?

Options :

1. No Poverty

2. Zero Hunger

3. Good Health and Well-being

4. Quality of Life.

Question Number : 13 Question Id : 630680189695 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

As per UNICEF's 2021 report titled "The Climate Crisis Is a Child Rights Crisis: Introducing the Children's Climate
Risk Index" (CCRI), India ranked at which position out of 163 ranked countries?

Options :

1. 23rd

2. 24th

3. 25th

4. 26th

Question Number : 14 Question Id : 630680189696 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In the month of January 2022, who was appointed as the Chief Economic Advisor of the Government of India?

Options :

1. Sanjeev Sanyal

2. V Anantha Nageswaran

3. Kunjulekshmi Saradamoni

4. Gopal Krishna Sarangi

Question Number : 15 Question Id : 630680189697 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In the month of October 2022, the International Monetary Fund (IMF) cut India's economic growth estimate for FY23 to _____ from its July estimate of 7.4%.

Options :

1. 5.2%

2. 5.8%

3. 6.2%

4. 6.8%

Question Number : 16 Question Id : 630680189698 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In which of the following months did PM Narendra Modi roll out petrol blended with 20 per cent ethanol at select petrol pumps in 11 states and union territories as part of a programme to increase the use of biofuels to cut emissions?

Options :

1. November 2022

2. December 2022

3. January 2023

4. February 2023

Question Number : 17 Question Id : 630680189699 Is Question Mandatory : No Calculator :

Correct Marks : 2 Wrong Marks : 0.5

In which of the following months was the Unified Logistics Interface Platform (ULIP) launched by Prime Minister Shri Narendra Modi?

Options :

1. September 2022

2. October 2022

3. November 2022

4. December 2022

Question Number : 18 Question Id : 630680189700 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In which of the following cities is the first meeting of the G20 Digital Economy Working Group scheduled from 13–15 February 2023?

Options :

1. Bengaluru

2. Udaipur

3. Delhi

4. Lucknow

Question Number : 19 Question Id : 630680189701 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In the year 2022, how much budget was approved by the Cabinet Committee on Economic Affairs (CCEA) for the computerisation of Primary Agricultural Credit Societies (PACS)?

Options :

1. ₹1,516 crore

2. ₹2,516 crore

3. ₹3,516 crore

4. ₹4,516 crore

Question Number : 20 Question Id : 630680189702 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In the month of February 2023, how much stake did the Government of India take in Vodafone Idea (Vi)?

Options :

1. 26%

2. 30%

3. 33%

4. 36%

Is Section Default? :   null

Question Number : 21 Question Id : 630680189703 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Right to Information Act 2005, is an initiative of a department under which of the following ministries?

Options :

1. Ministry of Personnel, Public Grievances and Pensions

2. Ministry of Statistics and Programme Implementation

3. Ministry of Home Affairs

4. Ministry of Finance

Question Number : 22 Question Id : 630680189704 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In _____, in the Raj Narain vs the State of Uttar Pradesh case, the Supreme Court ruled that Right to Information will be treated as a Fundamental Right under Article 19.

Options :

1. 1972

2. 1976

3. 1979

4. 1981

Question Number : 23 Question Id : 630680189705 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which section of the Right to Information Act, 2005, provides a two-tier mechanism for appeal?

Options :

1. Section 15

2. Section 17

3. Section 23

4. Section 19

Question Number : 24 Question Id : 630680189706 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The RTI amendment Bill passed in _____ removes political parties from the ambit of the definition of public authorities, and hence from the purview of the RTI Act.

Options :

1. 2013

2. 2015

3. 2017

4. 2011

Question Number : 25 Question Id : 630680189707 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following information is exempted from Right to Information Act, 2005?

Options :

1. Salaries of MLAs

2. Intellectual property rights

3. Salary of the President

4. Attendance of Government employees

Is Section Default? :   null

Question Number : 26 Question Id : 630680189708 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is a primary source of energy?

Options :

1. Biofuels

2. Crude oil

3. Gasoline

4. Hydrogen

Question Number : 27 Question Id : 630680189709 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Total electricity produced from fossil fuels in India, as on 31 December 2022 is:

Options :

1. 46,850 megawatts

2. 1,67,750 megawatts

3. 1,74,530 megawatts

4. 2,35,809 megawatts

Question Number : 28 Question Id : 630680189710 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The percentage of electrical power consumed by industries in India in the financial year 2021 was:

Options :

1. 51%

2. 46%

3. 41%

4. 36%

Question Number : 29 Question Id : 630680189711 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following Acts provides for the establishment and incorporation of the Bureau of Energy Efficiency (BEE)?

Options :

1. Energy Conservation Act, 2001

2. Energy Conservation Act, 2002

3. Energy Conservation Act, 2010

4. Energy Conservation Act, 2011

Question Number : 30 Question Id : 630680189712 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which section of the Indian Electricity Act, 2003 deals with captive generation?

Options :

1. Section 5

2. Section 7

3. Section 9

4. Section 11

Question Number : 31 Question Id : 630680189713 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

**Correct Marks : 2 Wrong Marks : 0.5**

For machines of voltage exceeding 650 V but not exceeding 33 kV, a _____ type connector should be used and the trailing cable should be suitably anchored at the machine end.

Options :

1. bolted

2. riveted

3. soldered

4. welded

Question Number : 32 Question Id : 630680189714 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5
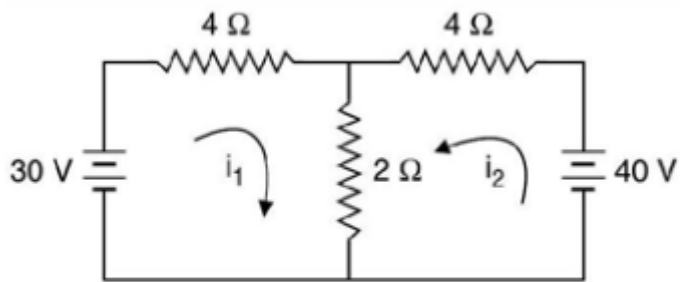
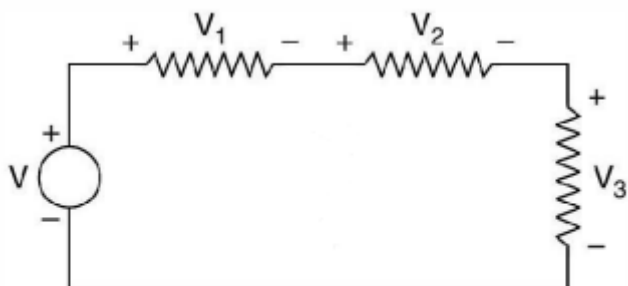Determine the current i_2 of the given network using loop analysis.

Options :

1. -3.125 A

2. 3.125 A

3. 5.625 A

4. -5.625 A

Question Number : 33 Question Id : 630680189715 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Find the value of V_3 in the given circuit.

Options :

1. $V_3 = V + V_1 + V_2$
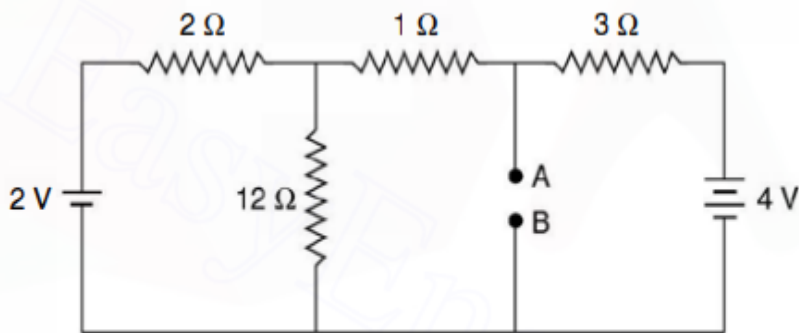
2. $V_3 = V - V_1 - V_2$

3. $V_3 = V_1 + V_2 - V$

4. $V_3 = V_1 - V_2 - V$

Question Number : 34 Question Id : 630680189716 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Calculate the Thevenin equivalent resistance between A and B in the given circuit.

Options :

1. $\dfrac{37}{24} \Omega$
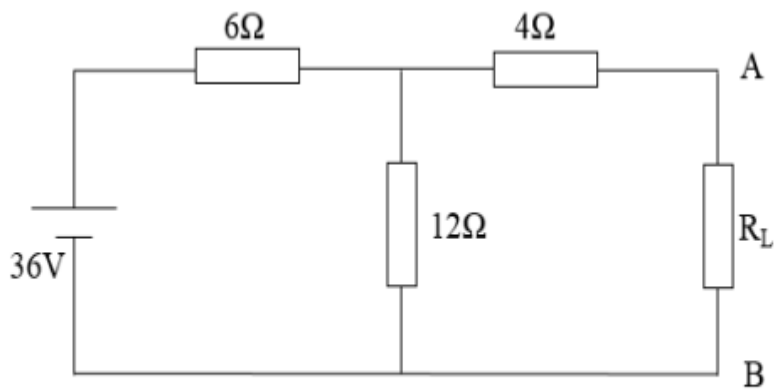
2. $\dfrac{43}{24} \Omega$

3. $\dfrac{51}{14} \Omega$

4. $\dfrac{57}{40} \Omega$

Question Number : 35 Question Id : 630680189717 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

6Ω   4Ω

                              A

36V   12Ω   R_L

                              B

Calculate the maximum power, that can be transferred from the source in the given circuit.

Options :

1. 9 watts

2. 12 watts

3. 18 watts

4. 24 watts

Question Number : 36 Question Id : 630680189718 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In an electrical network, if there are 3 nodes and 6 branches, then how many mesh equations can be formed?

Options :

1. 2

2. 3

3. 4

4. 5

Question Number : 37 Question Id : 630680189719 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

A series RL circuit having R = 2 Ω and L = 10 H is supplied with a DC voltage of 100 V. Find the value of the current in the circuit, 5 seconds after the application of the DC voltage.

Options :

1. 10 A

2. 23.5 A

3. 31.5 A

4. 42 A

Question Number : 38 Question Id : 630680189720 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In some specially designed transformers, the core may be of non-magnetic materials. Such transformers are known as:
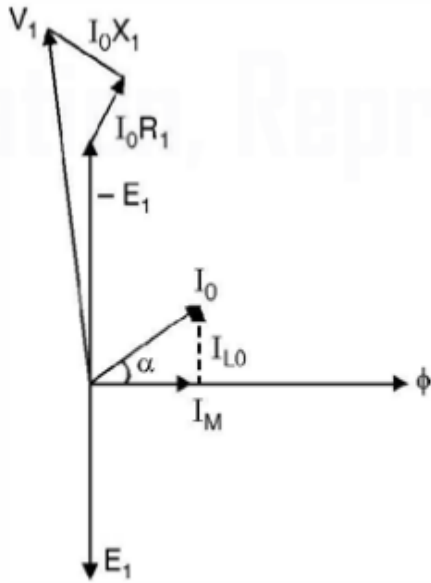
Options :

1. shell type transformers

2. core type transformers

3. biased cored transformers

4. air cored transformers

Question Number : 39 Question Id : 630680189721 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

'α' in the given phasor diagram of a transformer on no load condition is known as:

Options :

1. angle of hysteric advance

2. loss angle

3. recovery angle

4. angle of working component

Question Number : 40 Question Id : 630680189722 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Negative Marks Display Text : 0.5

Correct Marks : 2 Wrong Marks : 0.5

A single-phase transformer has 400 primary and 1000 secondary turns. The net cross sectional area of the core is $50 cm^2$. If the primary is connected to a 50 Hz supply at 444 V, determine the peak value of the flux density in the core.

Options :

1. $0.5 \ Wb/m^2$

2. 0.75 Wb/m^2

3. 0.83 Wb/m^2

4. 1 Wb/m^2

Question Number : 41 Question Id : 630680189723 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following parameters are calculated from the short circuit test of the transformers?

Options :

1. Exciting reactance and the resistance accounting to the core losses

2. Resistance and reactance of primary and secondary

3. Resistance and reactance of primary, exciting reactance and the resistance accounting to the core losses

4. Resistance and reactance of secondary, exciting reactance and the resistance accounting to the core losses

Question Number : 42 Question Id : 630680189724 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Determine the regulation of a transformer in which ohmic loss is 2% of the output and the reactance drop 10% of the voltage when power factor is 0.8 leading.

Options :

1. 7.6%

2. 4.4%

3. −4.4%

4. −7.6%

Question Number : 43 Question Id : 630680189725 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In a 25 kVA 2000/200 V transformer, the iron and copper losses are 425 and 800 W, respectively. Calculate the efficiency on unity power factor at half load.

Options :

1. 93.8%

2. 95.2%

3. 96.5%

4. 97.3%

Question Number : 44 Question Id : 630680189726 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following connections of a transformer is used to interlink three-phase and two-phase systems?

Options :

1. Δ-Δ connection

2. T-T connection

3. Y-Y connection

4. V-V connection

Question Number : 45 Question Id : 630680189727 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is true for the starting torque and starting current for a three-phase slip ring induction motor?

Options :

1. It has a low starting torque and low starting current.

2. It has a high starting torque and low starting current.

3. It has a low starting torque and high starting current.

4. It has a high starting torque and high starting current.

Question Number : 46 Question Id : 630680189728 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In a split-phase induction motor, the centrifugal switch disconnects the auxiliary winding from the main circuit when the motor attains a speed up to _____ of the synchronous speed.

Options :

1. 25% to 30 %

2. 40% to 45 %

3. 50% to 60 %

4. 75% to 80%

Question Number : 47 Question Id : 630680189729 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following technologies is NOT used in a geothermal power plant?

Options :

1. Dry stream

2. Wet stream

3. Flash stream

4. Binary cycle

Question Number : 48 Question Id : 630680189730 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following voltage levels is used for secondary power transmission?

Options :

1. 3.3 kV

2. 11 kV

3. 33 kV

4. 132 kV

Question Number : 49 Question Id : 630680189731 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The main criterion for the design of the distribution feeder is:

Options :

1. the material

2. the voltage drops

3. the insulation resistance

4. the distribution system

Question Number : 50 Question Id : 630680189732 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

A 132 kV transmission line has the weight of the conductor as 700 kg/km, length of span as 240 m, ultimate strength as 3200 kg and the safety factor is 2. Calculate the height above the ground at which the conductor should be supported. Ground clearance required is 10 metres.

Options :

1. 12.75 meter

2. 13.15 meter

3. 13.75 meter

4. 14.15 meter

Question Number : 51 Question Id : 630680189733 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Skin effect is negligible when the supply frequency is _____ and conductor diameter is _____.

Options :

1. more than 50 Hz; more than 1 cm

2. more than 50 Hz; less than 1 cm

3. less than 50 Hz; more than 1 cm

4. less than 50 Hz; less than 1 cm

Question Number : 52 Question Id : 630680189734 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Transmission efficiency in case of medium and long transmission line is measured as:

(Consider the parameters denoted with R for receiving end and S for sending end)

Options :

1. $\dfrac{V_R I_R \cos\theta_R}{V_S I_S \cos\theta_S + I_S^2 R}$

2. $\dfrac{V_R I_R \cos\theta_R}{V_R I_R \cos\theta_R + I_S^2 R}$

3. $\dfrac{V_S I_S \cos\theta_S}{V_R I_R \cos\theta_R + I_S^2 R}$

4. $\dfrac{V_R I_R \cos\theta_R}{V_R I_R \cos\theta_R + I_R^2 R}$

Question Number : 53 Question Id : 630680189735 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Characteristic impedance (Z_0), the impedance measured at the sending end of the transmission line, is defined as:

Options :

1. $Z_0 = \sqrt{\dfrac{series\ impedance}{shunt\ impedance}}$

2. $Z_0 = \sqrt{\dfrac{series\ admittance}{shunt\ admittance}}$

3. $Z_0 = \sqrt{\dfrac{series\ impedance}{shunt\ admittance}}$

4. $Z_0 = \sqrt{\dfrac{series\ admittance}{shunt\ impedance}}$

Question Number : 54 Question Id : 630680189736 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

State whether the following statements for load flow analysis are true or false.

Statement 1:

Load flow solves a set of simultaneous non-linear algebraic power equations for the two known variables ($|I|$ and $\angle\delta$) at each node in a system.

Statement 2:

The output of the load flow analysis is the voltage and phase angle, real and reactive power (both sides in each line), line losses and slack bus power.

Options :

1. Both the statements are true

2. Both the statements are false

3. Statement 1 is true and Statement 2 is false

4. Statement 2 is true and Statement 1 is false

Question Number : 55 Question Id : 630680189737 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following matrix is preferred for fault calculations (short circuit studies)?

Options :

1. Y_{bus}

2. Z_{bus}

3. Y_{Bus}

4. Z_{Bus}

Question Number : 56 Question Id : 630680189738 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The fuel costs of two units are given by $F_1 = 1.5 + 20\,P_{G1} + 0.1\,P_{G1}^2$ ₹/h and $F_2 = 1.9 + 30\,P_{G2} + 0.1\,P_{G2}^2$ ₹/h (where P_{G1} and P_{G2} are in MW).

Find the optimal schedule neglecting losses when the demand is 200 MW.

Options :

1. 45 ₹/MWh

2. 75 ₹/MWh

3. 95 ₹/MWh

4. 125 ₹/MWh

Question Number : 57 Question Id : 630680189739 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Prospective voltage of a circuit breaker is given as:

(L = inductance of the system, C = capacitance of the system and i = instantaneous value of arc current)

Options :

1. $V = i\sqrt{\dfrac{L}{C}}$

2. $V = iLC$

3. $V = \dfrac{i}{\sqrt{LC}}$

4. $V = \dfrac{i}{LC}$

Question Number : 58 Question Id : 630680189740 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

State whether the following statements for solid state relays (SSR) are true or false.

Statement 1:

Typically, 3 to 32 volts DC, can be used to control a large output voltage, or current such as 240 V, 10 amps.

Statement 2:

One of the main components of SSR is an opto-isolator, which contains one or more infra-red light-emitting diode, or LED light source, and a photo sensitive device within a single case.

Options :

1. Both the statements are true

2. Both the statements are false

3. Statement 1 is true and Statement 2 is false

4. Statement 2 is true and Statement 1 is false

Question Number : 59 Question Id : 630680189741 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Negative Marks Display Text : 0.5

Correct Marks : 2 Wrong Marks : 0.5

In a two wattmeter of power measurement, reading of both W_1 and W_2 is 2.5 kW. Calculate the power factor.

Options :

1. 0

2. < 0.5

3. > 0.5

4. 1

Question Number : 60 Question Id : 630680189742 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following involves the series or parallel connection of a tuned LC and high-pass filter circuit to form a low-impedance path for a specific harmonic frequency?

Options :

1. Active front end filter

2. Notch filter

3. Pulse converter

4. Tuned harmonic filter

Question Number : 61 Question Id : 630680189743 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following may cause voltage swell?

Options :

1. Faults in consumer's installation; connection of heavy loads and start-up of large motors

2. Insulation failure, lightning, and insulator flashover

3. Lightning, switching of lines or power factor correction capacitors, disconnection of heavy loads

4. Badly dimensioned power sources, badly regulated transformers (mainly during off-peak hours)

Question Number : 62 Question Id : 630680189744 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Potentiometer as a transducer converts:

Options :

1. pressure to voltage

2. temperature to voltage

3. temperature to resistance

4. displacement to resistance

Question Number : 63 Question Id : 630680189745 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

A moving coil instrument, whose resistance is 20 Ω, gives a full-scale deflection with a voltage of 50 mV. This instrument is to be used with a series multiplier to extend the range to 20 V. Find the value of the multiplier resistance.

Options :

1. 6.85 kΩ

2. 7.98 kΩ

3. 8.57 kΩ

4. 9.97 kΩ

Question Number : 64 Question Id : 630680189746 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

State whether the following statements for electrodynamometer wattmeter are true or false.

Statement 1:

The moving coils, wound with heavy wire, carry the current of the load.

Statement 2:

The fixed coil is mounted on a pivoted spindle and embraced by the two halves of moving coils.

Options :

1. Both the statements are true

2. Both the statements are false

3. Statement 1 is true and Statement 2 is false

4. Statement 2 is true and Statement 1 is false

Question Number : 65 Question Id : 630680189747 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The type of digital voltmeter that measures the true value of input voltage over a fixed measuring time is:

Options :

1. continuous balance type DVM

2. integrating type DVM

3. ramp type DVM

4. successive approximation type DVM

Question Number : 66 Question Id : 630680189748 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The transformation ratio of current transformers with inductive burden is:

Options :

1. lesser than the turns ratio

2. equal to the turns ratio

3. greater than the turns ratio

4. either lesser or greater than the turn ratio

Question Number : 67 Question Id : 630680189749 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Generally, an indoor substation is preferred for voltages up to:

Options :

1. 220 kV

2. 132 kV

3. 66 kV

4. 33 kV

Question Number : 68 Question Id : 630680189750 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is NOT true for outdoor substations?

Options :

1. Less quantity of building materials

2. Low initial cost

3. Maintenance cost is less

4. Time required for erection is less

Question Number : 69 Question Id : 630680189751 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Rigid bus bars are made up of _____ and are supported on _____.

Options :

1. aluminium tubes; strain insulators

2. ACSR conductors; post insulators

3. ACSR conductors; strain insulators

4. aluminium tubes; post insulators

Question Number : 70 Question Id : 630680189752 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is used to provide reactive power compensation during low loads?

Options :

1. Shunt reactor

2. Series reactor

3. Shunt capacitor

4. Series capacitor

Question Number : 71 Question Id : 630680189753 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following may generate Very Fast Transients Over Voltages (VFTOS)?

Options :

1. Aesthetic requirements

2. Field non-uniformities

3. Prolonged arcing

4. Switching operation

Question Number : 72 Question Id : 630680189754 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In sub-stations, it is often desired to disconnect a part of the system for general maintenance and repairs. This is accomplished by:

Options :

1. a busbar

2. a circuit breaker

3. an HRC fuse

4. an isolator

Question Number : 73 Question Id : 630680189755 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The cross section of the earth continuity conductor should not be either less than _____ or _____ of the installation conductor size.

Options :

1. 1.9 mm^2; one quarter

2. 1.9 mm^2; half

3. 2.9 mm^2; one quarter

4. 2.9 mm^2; half

Question Number : 74 Question Id : 630680189756 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

If a copper strip is used as earth wire, then its cross section should be:

Options :

1. not less than 15 mm × 1.6 mm

2. not less than 25 mm × 2.6 mm

3. not less than 25 mm × 1.6 mm

4. not less than 35 mm × 2.6 mm

Question Number : 75 Question Id : 630680189757 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which type of insulator consists of a number of porcelain discs connected in series by metal links in the form of a string?

Options :

1. Pin type insulator

2. Suspension type insulator

3. Strain insulator

4. Stray insulator

Question Number : 76 Question Id : 630680189758 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following lightning arresters is made up of an inorganic compound of ceramic material and such type of arrester is most commonly used for the protection against dangerous high voltages?

Options :

1. Auto valve lightning arrester

2. Expulsion type lightning arrester

3. Thyrite lightning arrester

4. Valve type lightning arrester

Question Number : 77 Question Id : 630680189759 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which relays are used on transmission lines to see that the line current does NOT exceed safe values?

Options :

1. Definite Time Lag Relay
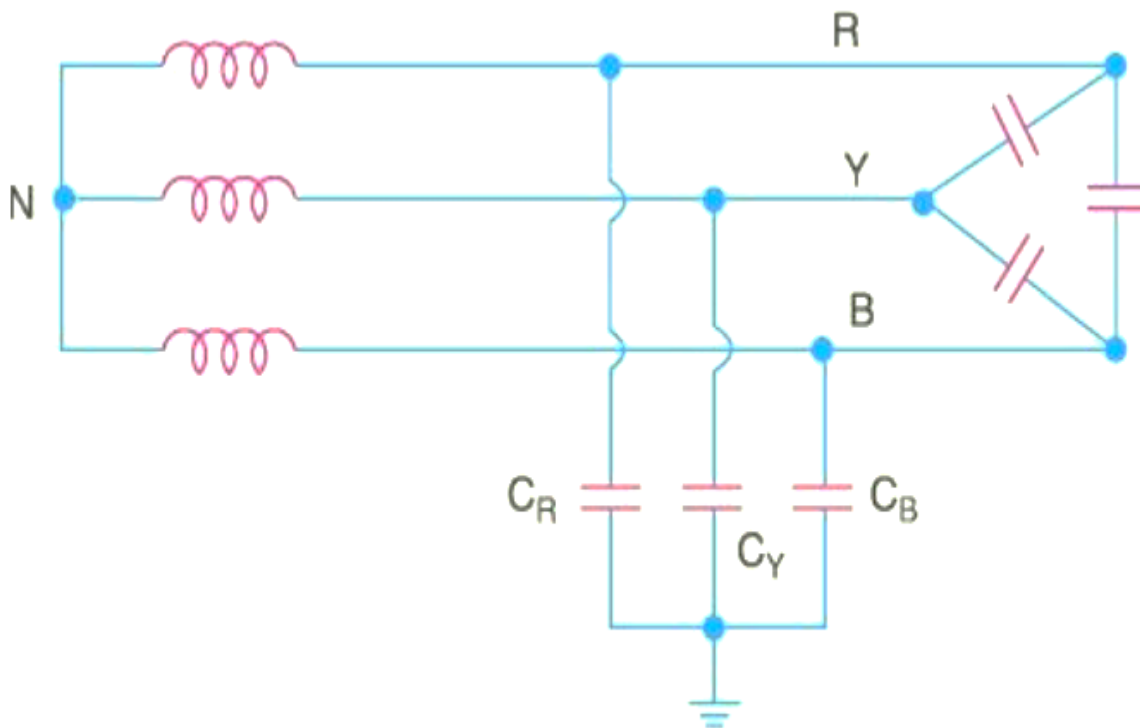
2. Inverse definite minimum time

3. Instantaneous relays

4. Static relays

Question Number : 78 Question Id : 630680189760 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The grounding system shown in the given circuit is:

Options :

1. neutral grounding system

2. reactance grounding system

3. solid grounding system

4. ungrounded neutral system

Question Number : 79 Question Id : 630680189761 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is NOT true for the air blast circuit breaker?

Options :

1. High speed of operation

2. High maintenance

3. Less fire hazards

4. Stability for frequent operation

Question Number : 80 Question Id : 630680189762 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following statements about the coefficient of performance (COP) of HVAC and refrigeration system are true?

Statement 1:

COP = electrical power intake/heat dissipation.

Statement 2:

When COP rises, cooling output rises in proportion.

Statement 3:

When COP is higher, the power consumption is higher and the running cost is higher.

Options :

1. Only Statement 1 and Statement 2 are true

2. Only Statement 1 and Statement 3 are true

3. Only Statement 2 and Statement 3 are true

4. All the statements are true

Question Number : 81 Question Id : 630680189763 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The process of adding water vapour to the air in the conditioned space for the purposes of raising or maintaining the moisture content of the air is known as:

Options :

1. cleaning

2. cooling

3. dehumidifying

4. humidifying

Question Number : 82 Question Id : 630680189764 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The vapour compression refrigeration system comprises of:

Options :

1. compressor, condenser, expansion valve, and heat pump

2. compressor, condenser, heat pump, and evaporator

3. compressor, heat pump, expansion valve, and evaporator

4. compressor, condenser, expansion valve, and evaporator

Question Number : 83 Question Id : 630680189765 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following heat pumps use the refrigeration cycle to manipulate the temperature of a fluid stream?

Options :

1. Air-to-air heat pumps

2. Air-to-water heat pumps

3. Geothermal heat pumps

4. Both air-to-air heat pumps and air-to-water heat pumps

Question Number : 84 Question Id : 630680189766 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Where is the high-pressure liquid condensate stored in the cold storage refrigeration system?

Options :

1. Condenser

2. Expansion valve

3. Evaporator

4. Receiver

Question Number : 85 Question Id : 630680189767 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Negative Marks Display Text : 0.5

Correct Marks : 2 Wrong Marks : 0.5

State whether the following statements for the ventilation mechanism in the HVAC system are true or false.

Statement 1:

It exchanges inside air with outside air to ensure a fresh supply.

Statement 2:

It plays a role in filtering the air or maintaining the proper level of humidity.

Options :

1. Both the statements are true

2. Statement 1 is true but Statement 2 is false

3. Statement 2 is true but Statement 1 is false

4. Both the statements are false

Question Number : 86 Question Id : 630680189768 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The ratio of the discharge pressure over the suction pressure for the blower is:

Options :

1. 1.11 to 1.2

2. 1.21 to 1.3

3. 1.31 to 1.39

4. 1.41 to 1.5

Question Number : 87 Question Id : 630680189769 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following types of fans has the maximum efficiency?

Options :

1. Propeller axial fan

2. Pressure blower centrifugal fan

3. Radial centrifugal fan

4. Vane axial fan

Question Number : 88 Question Id : 630680189770 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What will happen to the power requirement when the speed of the fan is increased by 10%?

Options :

1. Power requirement will increase by 17%

2. Power requirement will increase by 27%

3. Power requirement will increase by 30%

4. Power requirement will increase by 33%

Question Number : 89 Question Id : 630680189771 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The operating point of the will always be where:

Options :

1. the head flow curve and friction head meet

2. the head flow curve and system curve meet

3. the static head and friction head meet

4. the static head and system curve meet

Question Number : 90 Question Id : 630680189772 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The head of a pump is 100 m when the pump is rotated at 1750 rpm. What will be the head when the rpm is 3500?

Options :

1. 25 m

2. 50 m

3. 200 m

4. 400 m

Question Number : 91 Question Id : 630680189773 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Negative Marks Display Text : 0.5

Correct Marks : 2 Wrong Marks : 0.5

Consider a case where we need to pump 50 m³/hr of water at 36 m head. Calculate the motor power considering water density as 1000 kg/m³, g as 9.8 m/s², pump is operated at 70% efficiency and motor efficiency is 0.9.

Options :

1. 6.5 kW

2. 7.78 kW

3. 8.84 kW

4. 9.5 kW

Question Number : 92 Question Id : 630680189774 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What is the unit of installed load efficacy in a lighting system?

Options :

1. Watts per lumen (W/lm)

2. Lumens per circuit watt (lm/W)

3. Watts per square metre per 100 lux (W/m²/100 lux)

4. Lux per watt per square metre (lux/W/m²)

Question Number : 93 Question Id : 630680189775 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

If the lamp renders the colour of the chips identical to the reference light source, its colour rendering index is:

Options :

1. 1

2. 10

3. 100

4. 1000

Question Number : 94 Question Id : 630680189776 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The illuminance required for performance of visual tasks of low contrast or very small size over a prolonged period is:

Options :

1. 1000-1500-2000 lux

2. 2000-3000-5000 lux

3. 5000-7500-10000 lux

4. 10000-15000-20000 lux

Question Number : 95 Question Id : 630680189777 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

A hall of size 30 m by 50 m is to be illuminated with 40 lux. If the lamp efficiency is 100 lumens/watt, utilisation factor is 0.8 and candle power depreciation is 25%, the total wattage required is:

Options :

1. 6 kW

2. 4.5 kW

3. 3 kW

4. 1.5 kW

Question Number : 96 Question Id : 630680189778 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following lamps is more suitable for street lighting?

Options :

1. Halogen lamp

2. High pressure mercury lamp

3. High pressure sodium lamp

4. Metal halide lamp

Question Number : 97 Question Id : 630680189779 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

A charged cell was completely discharged in 12 hours, the discharge current being constant at 5 A. The average terminal voltage during discharge was 2 V. A charging current of 4 A, maintained constant for 18 hours, was required to restore the cell to its initial state of charge, the average terminal voltage being 2.2 V. Calculate the watt-hour efficiency.

Options :

1. 53%

2. 68%

3. 75%

4. 83%

Question Number : 98 Question Id : 630680189780 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Offline UPS are generally used with PCs or computers or other appliances where a small duration of _____ interruption in power supply can be tolerated.

Options :

1. 1 ms or less

2. 2 ms or less

3. 5 ms or less

4. 10 ms or less

Question Number : 99 Question Id : 630680189781 Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

One litre of fuel consumed by a diesel generator produces an average of:

Options :

1. 0.7 kg of CO_2

2. 1 kg of CO_2

3. 1.7 kg of CO_2

4. $2.7 \text{ kg of } CO_2$

Question Number : 100 Question Id : 630680189782 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is used to bypass the UPS inverter, only when a fault develops in the UPS inverter in case of an online UPS?

Options :

1. DIAC

2. TRIAC

3. GTO

4. SCR