

# National Testing Agency

**Question Paper Name:** 5220 Real Time Power System Analysis and Smart Grid 30th June 2019 Shift 1  
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## Real Time Power System Analysis and Smart Grid

**Group Number :** 1  
**Group Id :** 489994175  
**Group Maximum Duration :** 0  
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**Group Marks:** 100

## Real Time Power System Analysis and Smart Grid

**Section Id :** 489994231  
**Section Number :** 1  
**Section type :** Online  
**Mandatory or Optional:** Mandatory  
**Number of Questions:** 100  
**Number of Questions to be attempted:** 100  
**Section Marks:** 100  
**Display Number Panel:** Yes  
**Group All Questions:** No

**Sub-Section Number:** 1  
**Sub-Section Id:** 489994248  
**Question Shuffling Allowed :** Yes

**Question Number : 1 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

In traditional power system, energy generally flows in

- A. One direction
- B. Bi-direction
- C. Does not flow
- D. None of the above

**Options :**

- 1. 1
- 2. 2
- 3. 3

4. 4

**Question Number : 2 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Equal area criterion gives the information regarding

- A. stability region
- B. absolute stability
- C. relative stability
- D. swing curves

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 3 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Steady state stability of a power system is improved by

- A. Single pole switching
- B. Decreasing generator inertia
- C. using double circuit line instead of single circuit line
- D. all of the above

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 4 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

What is the value of transient stability limit?

- A. Higher than steady state stability limit
- B. Lower than steady state stability limit.
- C. Depending upon the severity of load
- D. All of these

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 5 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

What is steady state stability limit?

- A. The maximum flow of power through a particular point in the power system without loss of stability when small disturbances occur.
- B. The maximum power flow possible through a particular component connected in the power system.
- C. The maximum flow of power through a particular point in the power system without loss of stability when sudden disturbances occur
- D. All of these

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 6 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is power system stability?

- A. The maximum power flow possible through a particular component connected in the power system.
- B. The ability of the power system to regain the state of operating equilibrium point when the system is subjected to any disturbances.
- C. It is a phenomenon in which a power system losses its operating equilibrium when subjected to large disturbances.
- D. All of these

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 7 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Advantages of gauss siedel method is/are

- A. calculation time for each iteration is less
- B. number of iterations are less
- C. applicable for large power system network
- D. all of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 8 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For load flow studies, the quantities specified at load bus are

- A. P and V
- B. P and Q
- C. V and  $\delta$
- D.  $\delta$  and Q

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 9 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following matrix is used for load flow studies?

- A. Y bus matrix
- B. Z bus matrix
- C. Unit Matrix
- D. Null Matrix

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 10 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In load flow studies PV bus is treated as PQ bus when

- A. phase angle become high
- B. voltage at the bus become high
- C. reactive power goes beyond limit
- D. any of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 11 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For accurate load flow calculations on large power systems, the best method is

- A. N-R method
- B. G-S method
- C. Decoupled method
- D. All of the above

Options :

- 1. 1
- 2. 2
- 3. 3

4. 4

Question Number : 12 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Critical Clearance time of a fault in the power system is related to

- A. Reactive power limit
- B. Short Circuit limit
- C. Steady state stability limit
- D. Transient stability limit

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 13 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the torque angle of the alternator increases indefinitely the system will show

- A. Steady state stability limit
- B. Transient state stability limit
- C. Instability
- D. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 14 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The steady state stability of the power system can be improved by:

- A. Increasing the number of parallel lines between the transmission points
- B. Connecting capacitors in series with the line
- C. Reducing the excitation of the machines
- D. Both a and b

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 15 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The use of high speed breakers can

- A. Increase the transient stability
- B. Decrease the transient stability
- C. Increase the steady state stability
- D. Decrease the steady state stability

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 16 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In Hardware in loop

- A. Both controller and plant are in simulation
- B. Plant is simulated and controller is real
- C. Controller is simulated and plant is real
- D. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 17 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Real-time Simulation

- A. Is required when real hardware is connected to the simulation
- B. ensures coherent time responses : determinism
- C. allows the simulation to lure the real hardware
- D. all of above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 18 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In real time simulation, which of the following solver is used:

- A. Variable step
- B. Fixed step
- C. Both a and b
- D. None of the above

Options :

- 1. 1
- 2. 2

3. 3

4. 4

**Question Number : 19 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

In real time simulation, host PC and target PC are connected through

- A. Ethernet
- B. Wi-fi
- C. Bluetooth
- D. None of the above

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 20 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

In RT lab, following block is used for communication between two subsystems:

- A. OpComm
- B. Opwrite
- C. Both a and b
- D. None of the above

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 21 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Syntax for Master subsystem in RTLab is

- A. SM
- B. CM
- C. ZM
- D. GM

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 22 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Syntax for Slave subsystem is

- A. SS
- B. CS
- C. ZS
- D. GS

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 23 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Syntax for Console subsystem is

- A. SC
- B. CC
- C. ZC
- D. GC

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 24 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Shunt Compensation is used to

- A. Improve voltage Profile
- B. Decrease Transmission line impedance
- C. Control phase angle
- D. None of these

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 25 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Series Compensation is used to

- A. Improve voltage Profile
- B. Decrease Transmission line impedance
- C. Control phase angle
- D. Both B and C

Options :

- 1. 1
- 2. 2
- 3. 3



4. 4

Question Number : 26 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When voltage generated by STATCOM ( $V_0$ ) exceeds system voltage ( $V_s$ ),

- A. Reactive power is generated by STATCOM
- B. Reactive power is absorbed by STATCOM
- C. Active power is generated by STATCOM
- D. Active power is absorbed by STATCOM

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 27 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When voltage generated by STATCOM ( $V_0$ ) is less than system voltage ( $V_s$ ),

- A. Reactive power is generated by STATCOM
- B. Reactive power is absorbed by STATCOM
- C. Active power is generated by STATCOM
- D. Active power is absorbed by STATCOM

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 28 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When voltage generated by STATCOM ( $V_0$ ) leads system voltage ( $V_s$ ),

- A. Reactive power is generated by STATCOM
- B. Reactive power is absorbed by STATCOM
- C. Active power is generated by STATCOM
- D. Active power is absorbed by STATCOM

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 29 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When voltage generated by STATCOM ( $V_0$ ) lags system voltage ( $V_s$ ),

- A. Reactive power is generated by STATCOM
- B. Reactive power is absorbed by STATCOM
- C. Active power is generated by STATCOM
- D. Active power is absorbed by STATCOM

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 30 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

TCSC is used to

- A. Reduce Transmission line impedance
- B. Increase Transmission line impedance
- C. Improve Voltage Profile of transmission line
- D. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 31 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

TCSC can control the line impedance through the introduction of a

- A. thyristor controlled capacitor in series with the transmission line
- B. thyristor controlled reactor in series with the transmission line
- C. thyristor controlled capacitor in parallel with the transmission line
- D. thyristor controlled reactor in parallel with the transmission line

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 32 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When the reactance of the fixed capacitor is less than that of the parallel connected variable reactor in TCSC,

- A. this combination provides a variable capacitive reactance.
- B. A resonance develops that result in infinite capacitive impedance,
- C. combination provides a variable inductive reactance
- D. None of the above

Options :

- 1. 1
- 2. 2

3. 3

4. 4

**Question Number : 33 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

When the reactance of the fixed capacitor is equal to that of the parallel connected variable reactor in TCSC,

- A. this combination provides a variable capacitive reactance.
- B. A resonance develops that result in infinite capacitive impedance,
- C. combination provides a variable inductive reactance
- D. None of the above

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 34 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

When the reactance of the fixed capacitor is greater than that of the parallel connected variable reactor in TCSC,

- A. his combination provides a variable capacitive reactance.
- B. A resonance develops that result in infinite capacitive impedance,
- C. combination provides a variable inductive reactance
- D. None of the above

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 35 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

UPFC is capable of regulating

- A. Regulating voltage of bus
- B. active power flow acting as a phase shifter
- C. active power flow acting as a variable series compensator
- D. All of the above

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 36 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

When phase angle of series injected voltage is in phase with nodal voltage

- A. UPFC regulates the terminal voltage of bus.
- B. UPFC regulates active power flow acting as a phase shifter.
- C. UPFC regulates active power flow acting as a variable series compensator.
- D. UPFC operates as a combination of the voltage regulator, phase shifter, and variable series compensator.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 37 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

UPFC is capable of

- A. Capable of controlling all power flow parameters ( $V$ ,  $\delta$ ,  $X$ ) either simultaneously or selectively
- B. Operated as SSSC, or STATCOM independently
- C. independently control real power without altering reactive power
- D. All of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 38 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Disadvantage(s) of UPFC is/are

- A. Cost per KVAR is very high
- B. Procurement, and installation of UPFC is an exclusive monopoly of the supplier
- C. Both A and B
- D. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 39 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

FDLF method is used for what studies?

- A. Multiple load flow studies
- B. Optimisation studies
- C. Small size systems
- D. Both (a) and (b)

Options :

- 1. 1

- 2. 2
- 3. 3
- 4. 4

**Question Number : 40 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Transient stability limit of a power system be improved by using

- A. Series inductor
- B. Shunt resistance
- C. Series Resistance
- D. Series Capacitor

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 41 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Transient stability limit is defined as

- A. The maximum power flow possible through a particular component connected in the power system.
- B. The maximum flow of power through a particular point in the power system without loss of stability when large and sudden disturbances occur.
- C. The maximum flow of power through a particular point in the power system without loss of stability when small disturbances occur.
- D. None of the above

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 42 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The main drawback in NR method is

- A. A large memory allocation is required to store the jacobian matrix
- B. The number of iterations is more
- C. Slow to converge
- D. All of these

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 43 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The main challenges in today's power system is

- A. Integration of Renewable Energy Sources into the Main Grid
- B. Conventional Energy sources are getting added
- C. decrease in global power demand
- D. All the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 44 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

India faced the biggest blackout in which year?

- A. 2012
- B. 2010
- C. 2009
- D. 2011

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 45 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Simulation is done to

- A. Reduce risk
- B. Reduce delay
- C. Reduce cost
- D. All of above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 46 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Both controller and plant are in simulation in

- A. Model in the loop
- B. Rapid Control Prototyping
- C. Hardware in loop
- D. None of the above

Options :

- 1. 1
- 2. 2

3. 3

4. 4

**Question Number : 47 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Controller is simulated and plant is real in

- A. Model in the loop
- B. Rapid Control Prototyping
- C. Hardware in loop
- D. None of the above

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 48 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

In Hardware in Loop,

- A. Both controller and plant are in simulation
- B. Plant is simulated and controller is real
- C. Controller is simulated and plant is real
- D. None of the above

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 49 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

PHIL simulation is the integrated simulation of a complete system with

- A. one part simulated numerically and the other part using real devices
- B. Both parts simulated numerically
- C. Both parts using real devices
- D. None of the above

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 50 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Voltage stability is defined as

- A. To maintain steady voltages at all the buses after the occurrence of fault.
- B. To maintain steady voltages at all the buses before the occurrence of fault.
- C. To maintain the system frequency after the severe disturbances
- D. All of these

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 51 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Duty cycle of a dc-dc boost converter under continuous conduction mode

- A.  $V_o/V_d = 1/(1-D)$
- B.  $V_o/V_d = D/(1-D)$
- C.  $V_o/V_d = D$
- D.  $V_d/V_o = D$

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 52 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The abc to dq transformation is performed to

- A. To decouple P & Q power and control them independently
- B. To couple P & Q
- C. To eliminate harmonics
- D. To eliminate voltage ripples

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 53 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0



The current distortion limit for bus voltage of 120V- 69kV at current (50 < 100) A is.

- A. <5%
- B. <8%
- C. <12%
- D. <15%

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 54 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A stepped sine wave obtained from the constant dc input source is odd symmetry  
ie.  $f(-t) = -f(t)$ .

- A.  $a_0$  and  $a_n$  are zero and the peak value of the output is resolved using  $b_n$  alone
- B.  $a_0$  is zero and the peak value of the output is resolved using  $a_n$  and  $b_n$
- C.  $a_n$  is zero and the peak value of the output is resolved using  $a_0$  and  $b_n$
- D.  $a_0$  and  $b_n$  are zero and the peak value of the output is resolved using  $a_n$  alone

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 55 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Depth of discharge (DoD), for the battery pack in a electric vehicle is given by

- A. 0% = empty; 100% = full
- B. 100% = empty; 0% = full
- C. 0% = empty; 80% = full
- D. 80% = empty; 0% = full

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 56 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A 1Ah battery with  $\frac{1}{2}C$  discharging can last for,

- A. 1 hour and discharge fully
- B.  $\frac{1}{2}$  hour and discharge fully
- C. 2 hour and discharge fully
- D.  $1\frac{1}{2}$  hour and discharge fully

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 57 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The daily energy consumption of the house hold is 3200Wh. Assume, 2% cable Loss, Inverter  $\eta=93\%$  . Determine the Inverter Input and output Energy.

- A. 3510.75 Wh, 3265 Wh
- B. 3440.86 Wh, 3511.08 Wh
- C. 3440.86 Wh, 3265 Wh
- D. 3510.75 Wh, 3511.08 Wh

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 58 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The daily energy consumption of the house hold is 3200Wh. Assume, 2% cable Loss, Inverter  $\eta=93\%$  , Battery Bank Depth of Discharge(DoD) is 50%, Days of Autonomy(DoA) is 2 days, Charge Controller  $\eta=97\%$ , market available battery 120 Ah, 12 V and battery bank efficiency as 70%. Determine the final capacity of battery with system voltage of 48V and the required number of battery strings.

- A. 299Ah, 2 strings
- B. 299Ah, 3 strings
- C. 460Ah, 2 strings
- D. 460Ah, 3 strings

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 59 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The daily energy consumption of the house hold is 3200Wh. Assume, 2% cable Loss, Inverter  $\eta=93\%$ , Battery Bank Depth of Discharge (DoD) is 50%, Days of Autonomy (DoA) is 2 days, Charge Controller  $\eta=97\%$ , market available battery 120 Ah, 12 V, battery bank efficiency as 70%, peak sun hours for a location as 5 h, Module Derate Factor is 34.75% and aging factor 90%. Determine the number of modules of 250W required.

- A. 19 modules
- B. 8 modules
- C. 22 modules
- D. 6 modules

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 60 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The daily energy consumption of the house hold is 3200Wh. Assume, 2% cable Loss, Inverter  $\eta=93\%$ , Battery Bank Depth of Discharge (DoD) is 50%, Days of Autonomy (DoA) is 2 days, Charge Controller  $\eta=97\%$ , market available battery 120 Ah, 12 V, battery bank efficiency as 70%, peak sun hours for a location as 5 h, Module Derate Factor is 34.75% and aging factor 90%. Determine the charge controller rating.

- A. 24V, 50A
- B. 48V, 25A
- C. 48V, 50A
- D. 24V, 25A

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 61 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In general, which stages of smart grid are easiest to hack?

- A. Generation
- B. Distribution & Control
- C. Consumption
- D. Transmission

Options :

- 1. 1

- 2. 2
- 3. 3
- 4. 4

**Question Number : 62 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which Technique use Pre defined classes to detect attack?

- A. Lightweight Message Authentication Method
- B. Generalized likelihood ratio Detector
- C. Supervised Learning Algorithms
- D. Chi-Square Test

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 63 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Geographic information system (GIS) is an actor under ----- as per NISTIR 7628 logical interface category

- A. Transmission
- B. Distribution
- C. Service provider
- D. Marketing

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 64 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The high-level security requirements that are applicable to the entire Smart Grid is described by

- A. IEC 27001
- B. NISTIR 7628
- C. ISO 31000
- D. NERC CIP-002

**Options :**

- 1. 1

2. 2
3. 3
4. 4

**Question Number : 65 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Denial of Service (DoS) attack classified under

- A. Component-wise
- B. Protocol-wise
- C. Network- Wise
- D. Topology-wise

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 66 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Components of Cyber Security Strategy are

- A. Identify, Protect, Analyse, Recover
- B. Identify, Analyse, Detect, Recover
- C. Prevention, Detection, Response, Recovery
- D. Prevention, Analyse, Detect, Recover

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 67 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Pick the incorrect attribute of Big Data?

- A. Velocity
- B. Volume
- C. Version
- D. Veracity

**Options :**

1. 1
2. 2
3. 3
4. 4

Question Number : 68 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What are the different modes of processing big data?

- A. Real-time processing
- B. Batch mode processing
- C. Real-time and Batch processing
- D. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 69 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If devices in the field goes down for intermittent period, what method is used to identify the reading?

- A. Reading is ignored
- B. Reading is estimated
- C. Previous reading is repeated
- D. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 70 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which model is used for Power System State Estimation (PSEE) in smart grid

- A. Non-linear estimation model
- B. Linear estimation model
- C. Hybrid model
- D. Linear estimation model with weight assignment

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 71 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What are the three components of Analytical Logical Model

- A. Component Model, Operational Model, Development Model
- B. Component Model, Operational Model, Synergy Model
- C. Synergy Model, Services stack Model, Component Model
- D. Component Model, Services stack Model, Development Model

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 72 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Pick the write explanation if Confusion Matrix of some classifier is as follows

[[14 0 0]

[1 17 0]

[0 0 22]]

- A. three classes, only one wrong classification
- B. three classes, 14 correct numbers classified as class-1
- C. Accuracy is about 98%
- D. All of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 73 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Point out the wrong statement:

- A. k-means clustering is a method of vector quantization
- B. k-means clustering aims to partition n observations into k clusters
- C. k-nearest neighbour is same as k-means
- D. None of the Mentioned

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 74 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How would you import a decision tree classifier in sklearn?

- A. from sklearn.decision\_tree import DecisionTreeClassifier
- B. from sklearn.ensemble import DecisionTreeClassifier
- C. from sklearn.tree import DecisionTreeClassifier
- D. None of these

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 75 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following methods do we use to best fit the data in Logistic Regression?

- A. Least Square Error
- B. Maximum Likelihood
- C. Jaccard distance
- D. Both A and B

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 76 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What would do if you want to train logistic regression on same data that will take less time as well as give the comparatively similar accuracy (may not be same)?

Suppose you are using a Logistic Regression model on a huge dataset. One of the problem you may face on such huge data is that Logistic regression will take very long time to train.

- A. Decrease the learning rate and decrease the number of iteration
- B. Decrease the learning rate and increase the number of iteration
- C. Increase the learning rate and increase the number of iteration
- D. Increase the learning rate and decrease the number of iteration

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 77 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0



Suppose we have a dataset which can be trained with 100% accuracy with help of a decision tree of depth 6. Now consider the points below and choose the option based on these points.

Note: All other hyper parameters are same and other factors are not affected.

1. Depth 4 will have high bias and low variance
2. Depth 4 will have low bias and low variance

- A. Only 1
- B. Only 2
- C. Both 1 and 2
- D. None of the above

Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 78 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Classification problems are distinguished from estimation problems in that

- A. classification problems require the output attribute to be numeric.
- B. classification problems require the output attribute to be categorical.
- C. classification problems do not allow an output attribute.
- D. classification problems are designed to predict future outcome.

Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 79 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which statement is true about the K-Means algorithm?

- A. All attribute values must be categorical.
- B. The output attribute must be categorical.
- C. Attribute values may be either categorical or numeric.
- D. All attributes must be numeric.

Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 80 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The correlation between the number of years an employee has worked for a company and the salary of the employee is 0.75. What can be said about employee salary and years worked?

- A. There is no relationship between salary and years worked.
- B. Individuals that have worked for the company the longest have higher salaries.
- C. Individuals that have worked for the company the longest have lower salaries.
- D. The majority of employees have been with the company a long time.
- E. The majority of employees have been with the company a short period of time.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4
- 5. 5

Question Number : 81 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Regression trees are often used to model \_\_\_\_\_ data.

- A. linear
- B. nonlinear
- C. categorical
- D. symmetrical

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 82 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Main Functions of AMI are

- A. Data Acquisition & storage
- B. Communication Network
- C. Data management
- D. All of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 83 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

AMI Objectives can be

- A. Remote meter reading for error free data
- B. Load profiling
- C. Partial load curtailment in place of load shedding
- D. All of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 84 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which security is Part of AMI architecture

- A. Data Security
- B. Network security
- C. IT security
- D. All of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 85 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which protocol is not belong to Home area network

- A. ZigBee
- B. Bluetooth
- C. Wi-Fi
- D. LoRaWAN

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 86 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which frequency spectrum used by NB -IoT technology

- A. 800-2700Mhz
- B. 2.4Ghz
- C. 125Khz
- D. 800-2700Khz

Options :

1. 1
2. 2
3. 3
4. 4

**Question Number : 87 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which Protocol defines in IEC IEC62056-46 for communication between Meter and Concentrator?

- A. MODBUS
- B. MQTT
- C. HTTPS
- D. DLMS/COSEM

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 88 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

MDMS functions are

- A. Validate the data
- B. Storing the data
- C. Synchronize data between DCU, AMR/AMI databases and master systems
- D. All of the above

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 89 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Transport layer security (TLS) uses cryptographies techniques

- A. asymmetric
- B. symmetric
- C. Both
- D. None of above

**Options :**

1. 1
2. 2
3. 3
4. 4

Question Number : 90 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which IoT protocol supports Distributed structure

- A. HTTP
- B. MQTT
- C. CoAP
- D. AMQP

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 91 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Near me Area Network (NAN) does not supports topology as

- A. Mesh
- B. Tree
- C. Point to Point
- D. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 92 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is a genesis block?

- A. The last block of the chain
- B. Set of instructions for smart contract
- C. The second transaction of the chain
- D. The first block of a Block chain

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 93 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the name of the technology underlying Bitcoin?

- A. Bitchain
- B. Blocklink
- C. Blockchain
- D. CoinLedger

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 94 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is an apt use case for Blockchain

- A. Holiday tracking
- B. Track your child
- C. Attendance management
- D. Logging energy utilization/production from non-conventional energy sources

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 95 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How is Blockchain immutable?

- A. Records can be deleted only by consent from partners
- B. Anyone can delete records
- C. No one can delete records
- D. All of these

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 96 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Blockchain is advantageous in eliminating which of the following problems

- A. Double Spend
- B. Authentication
- C. Isolation
- D. All of these

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 97 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is a node in Blockchain?

- A. A type of cryptocurrency
- B. An exchange
- C. A blockchain
- D. A computer on a blockchain network

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 98 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is SHA 256?

- A. Set of mining rules
- B. Executable program file
- C. First block of blockchain
- D. A secure hashing algorithm

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 99 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What characteristic makes blockchain tamper-proof?

- A. VPN
- B. Routers
- C. Immutability
- D. Servers

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 100 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the ledger type considered by users in Blockchain?

- A. Distributed Ledger
- B. Private ledger
- C. Decentralized Ledger
- D. No ledger is used

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4