BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY

QUESTION BANK Unit Test-II

Program: - Electrical Engineering | Program Code:- EE
Course Title: Emerging Trends in Electrical Engineering | Semester: - Sixth
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Unit - IV Intelligent Motor Control Centres (14 M) (CO-IV)

Which of these is not a basis of classification of Motor Control Centers?

a. Based on Voltage Supplied
b. Based on type of operation
c. Based on mechanical machine coupled to motor
d. Based on module division

What makes a MCC intelligent?

a. Deliver immediate access to detailed information that enhances asset management when you need it, where you need it .
b. Provide precise control and monitoring through intelligent devices
c. Easily integrate with new and legacy systems using any of the major industrial protocols
d. All of above

Which of these is not a benefit of intelligent MCC?

a. Reduced costs
b. Faster Project Timelines
c. Enhanced personnel safety
d. No or zero breakdowns

Which of these is not a component of intelligent MCC?

a. Advanced motor protection
b. VFDs and soft starters
c. Power meters
d. Single phase auto-reclosures

Which of these is not offered by Intelligent Motor Control Systems?

a. Control is achieved through a microprocessor-based system
b. Monitoring is achieved through a GPS-based system
c. Network technology is used to replace hardwiring
d. Some degree of enhanced diagnostic or protective functionality is included.

Which of these is not an advantage of smart MCC?

a. Reduced system installation and commissioning costs
b. Reduced maintenance cost
c. Reduced energy costs
d. Reduced system information

Motor control involves….
a) Starting the motor.
b) Stopping the motor.
c) Direction and speed controls of the motor.

d) All of the above.

Identify the component of the motor-starter.
a) Fuse.
b) Circuit breaker.
c) Over-load relay.
d) Main Switch.

Identify the component/s of the motor-supply circuit.
a) Circuit-breaker.
b) Fuse.
c) Power Contacts.
d) All of the above.

Fuse is used in the circuit to…
a) Protect the circuit components from short circuit faults
b) Limit the starting current.
c) Disconnect the circuit from supply mains in the event of any fault
d) All of the above

Contactor is ….
a) Manually operated switch
b) Protection device
c) Electromagnetic coil
d) Electromagnetically operated circuit breaker

Overload relay protects the motor from…
a) Over-voltage condition
b) Over-current condition
c) Excessive speeding
d) Undesirable oscillation

Fuse protects the motor from…
a) Under-voltage condition
b) Excessive speeding.
c) Short-circuit condition.
d) Undesirable oscillations.

NO contact means…
a) Number One contact
b) Neutral On contact
c) Normally On contact
d) Normally Open contact

NC contact means…
a) Neutral Cut contact
b) Normally Cut contact
c) Normally Closed contact
d) No Closed contact

Red push-button is generally used to…
a) Start the motor
b) Accelerate the motor
c) Decelerate the motor
d) Stop the motor

Green push-button is generally used to…
a) Start the motor
b) Accelerate the motor
c) Decelerate the motor
d) Stop the motor

Motor rotation of three-phase induction motor can be reversed by.
a) Interchanging R & Y phases
b) Interchanging Y & B phases
c) Interchanging B & R phases
d) Any one of the above

Motor Control Centre (MCC) is….
a) Compact assembly
b) Modular assembly
c) Integration of motor control & distribution components
d) All of the above

PLC stands for…
a) Phase Load Centre
b) Programmable Logic Controller
c) Phase Locked Contactor
d) Programmable Load Contactor

VFD stands for….
a) Very Fast Drive
b) Variable Fastest Drive
c) Variable Frequency Drive
d) Voltage Frequency Drive

On control panel, the operating state is shown by.
a) Push-buttons
b) Circuit-breaker
c) Indicator lamps
d) Overload-relay

A combination starter is a single enclosure comprising…
a) Motor starter
b) Fuse
c) Circuit breaker or disconnecting switch
d) All of the above

The push buttons are used for …
a) Stopping motors

b) Starting motors
c) Jogging or inching of motors
d) All of the above

A conventional MCC unit is ….
a) Purely Electrical unit
b) Purely magnetic unit
c) Electromagnetic unit
d) Electromechanical unit

Traditional MCC offers…
a) Well-coordinated control
b) Better protective functionality
c) Highly effective controls
d) None of the above

Intelligent MCC is smart MCC because.
a) It has multiple feeders
b) It has a common power busbar
c) It has multiple combination starters
d) It has communication capable motor management device

Difference between MCC and IMCC lies in….
a) Multiple feeders
b) Common power busbar
c) Intelligent relays
d) Circuit breaker

The heart of IMCC is…
a) Smart circuit breaker
b) Fast acting fuse
c) Smart motor management device
d) All of the above

IMCC offers…
a) Optimized use of control components
b) Increased control flexibility
c) Improved safety
d) All of the above

IMCC requires…
a) Effective communication networks with high bandwidths
b) Extensive process data
c) Components for Proper diagnostic features
d) All of the above

As compared to MCC, the IMCC offers…
a) Increased downtime
b) Inferior quality control
c) Proactive condition monitoring
d) Unpredicted maintenance

Protective functions offered by intelligent relay include.
a) Phase loss
b) Current imbalance
c) Overload
d) All of the above

A relay is said to be intelligent if it has the feature/s of
a) Built-in network communication
b) Programming facility to set the protective parameters
c) Diagnostics
d) All of the above

Identify the non-contact type sensor…
a) Photoelectric sensor
b) Inductive proximity sensor
c) Capacitive proximity sensor
d) All of the above

Limit switch is operated by…
a) Displacement limit
b) Current limit
c) Voltage limit
d) Speed limit

IMCC has dedicated software that…
a) Delivers known computing environment in MCC
b) Generates screens for effective control implementation and monitoring
c) Tests the entire system for accurate functions and communication
d) Does all of the above

The following is not a Basic Motor function:
a) Under voltage protection.
b) Single phasing protection.
c) Detecting motor bearing condition.
d) Voltage and current indicating meters

Conventional MCCs are preferred when:
a) The components therein do not become obsolete over 12 to 15 years of time.
b) Very huge amount of data/information needs to be communicated to the DCS.
c) The cost effectiveness of equivalent IMCC is very poor.
d) A very large number of additional functions need to be incorporated in the starter sections

Time delay fuses are recommended for applications wherein
a) The inrush current is more than 500%
b) The inrush current is very low of the order of 150%
c) The inrush currents are absent.

d) The normal rated currents are expected not to be exceeded.

Non-time delay fuses are recommended for applications wherein
a) The over currents are more than 500% for a very long time
b) The over currents are equal to 500% for a very long time
c) The over currents are slightly less than 500% for a very long time
d) The over currents are around 500% for a fraction of a second.

A combination starter contains
a) Starter with overload relay
b) Fuses
c) Switch for disconnection
d) All of the above

IMCCs are a better choice when,
a) conventional MCCs are very cheap
b) a significant number of changes are going to be needed to be made in the controls
c) conventional MCCs are very costly
d) no major significant changes are going to be needed to be made in the controls

Time delay fuses provide following protection to motors:
a) over voltage and short circuit protection
b) under voltage and short circuit protection
c) overcurrent and short circuit protection
d) under current and short circuit protection

Non-time delay fuses provide following protection to motors:
a) quick over voltage protection
b) quick short circuit protection
c) quick under voltage protection
d) quick lightening protection

Fuses are rated by
a) maximum continuous current they can handle
b) maximum continuous voltage they can work at
c) both a) and b)
d) none of the above.

The circuit breakers are rated such that their rated current (continuous)
a) exceeds the current rating of the fuses in the related circuit
b) exceeds the voltage rating of the fuses in the related circuit
c) does not exceed the cable conductor current rating used in the circit
d) does not exceed the cable conductor voltage used in the circuit

The power monitoring unit has circuitary that does not cover the following in MCC:
a) protection
b) operation
c) measurements

d) load characteristics

Network cabling does not
a) carry communication signal from intelligent relay
b) carry communication signal to PLC
c) carry communication signal to AC drives
d) carry communication signal to coupled mechanical load

In automated systems solenoid actuated valves form the interface between
a) pneumatic and electrical control
b) Magnetic and electrical controls
c) Electronic communication systems
d) Landline and mobile communication networks

The following is not a basic motor operation function:
a) Current indication
b) Energy condition monitoring
c) Overload protection
d) Single phasing protection

The following is not an enhanced motor operation function:
a) Energy condition monitoring
b) Motor bearing condition monitoring
c) Overload protection
d) Restarting after sudden voltage dips

Intelligent MCCs are a better choice when:
a) A huge amount of data is communicated to the DCS
b) Personnel working on the systems need expensive training.
c) Component obsolescence will not be faced for a long period
d) Standard starters are sufficient for the work to be done.

Unit - V Tariff and Smart Billing (14M) (CO-V)

PPA is the
a) MOU between two parties
b) Mode of behavior between two parties
c) Contract between two parties
d) Conditions for terminating the contract between two parties

Duration of PPA is generally
a) Upto Six Months
b) One Year
c) 1-2 Years
d) 5-20 Years

In PPA the party which generates the electrical power is
a) Seller
b) Buyer
c) Operator
d) Organizer

Cross-subsidies can be defined as
a) A mechanism of charging consumer at different tariffs.
b) A mechanism of identifying types of consumer.
c) A mechanism of penalizing consumer for electrical theft.
d) A mechanism of charging consumer at different tariffs

Flat-rate tariff , Volumetric tariff, multi-part tariffs are
a) Types of subsidies
b) Slabs of billing
c) Key factors for Tariff Design
d) Types of consumers

The only way to reduce Electricity Duty is
a) To reduce consumption per unit.
b) To reduce generation
c) To reduce the power factor
d) To reduce the maximum demand

FAC Charges is the amount
a) that utilities apply on bills based on kWh use of the consumer
b) that utilities apply on bills based on p.f. of the consumer.
c) that utilities apply on bills based on the MD of the consumer.
d) that utilities apply on bills based on varying price of fuel or Coal

Electricity rates charged to the consumer as agreed in
a) PPA
b) MOU
c) National Power Policy
d) None of the above

Wheeling charges in consumers electricity bill are for
a) the electricity transportation charges to be paid to the transmission company
b) the transportation charges towards use of four wheelers used for officers
c) the transportation charges to be paid to the Toll agencies
d) None of the above

Average billing rate consist of
a) Fixed and Energy charges
b) O & M charges
c) Labor charges
d) Transmission charges

Overall Average Cost of Supply (ACoS) not depends on

a) Fuel prices
b) Salary hikes
c) Capital inflow
d) Tariff

Unit of the Average billing rate is
a) kVAh
b) INR /kWh
c) kWh/INR
d) INR

Aggregate Revenue Requirement (ARR) is prepared by
a) DISCOM
b) State Government
c) Central Government
d) Central Electricity Authority

Which following parameter not use for determination of ARR
a) Interest on Loan
b) Depreciation
c) Income Tax
d) Profit

Availability Based Tariff (ABT)is introduced by
a) National Thermal Power Corporation
b) State Distribution Companies
c) Central Electricity Regulatory Commission (CERC)
d) Maharashtra Electricity Regulatory Commission (MERC)

Objective of Availability Based Tariff is
a) To maintain Grid frequency
b) Available energy as per consumer demand
c) Supply energy when it is available
d) Make Availability of energy at high cost

Which of following in not a function of ABT
a) Facilitating grid discipline;
b) Facilitating trading in capacity and energy; and
c) Facilitating merit order dispatch as and when made effective
d) Facilitating consumers to purchase energy

The energy rates in Time of Day (or TOD) tariff
a) Are fixed during day time
b) Are fixed during night time
c) Are not fixed during night time
d) Are not fixed during time of the day

Time of Day (TOD) tariff give incentive to consumer during
a) Off-peak times
b) Peak times
c) Off-peak and peak times

d) Complete day time

Basic purpose of ToD tariff is to
a) Shift the load from off-peak to peak hours
b) Shift the load from peak to off-peak hours
c) Keep tariff rate different for day
d) Attract consumers to consume more energy

In TOD tariff the non-peak hours are
a) 0600 hrs To 2200.
b) 0900 hrs To 1200 Hrs
c) 2200 hrs. To 0600
d) 1800 hrs To 2200 hrs

For LT and HT Consumers the non peak and peak hours are
a) Different
b) Same
c) Peak hours same but non peak hours different
d) Peak hours different but non peak hours same

Which statement is incorrect in relation to ToD
a) Reduction in cost of power purchase due to reduction in peak consumption
b) Advantage to Utility
c) Incentivizes to consumers is same for entire day
d) Additional revenue on account of TOD surcharge during peak hours

kVAh based tariff encourages consumer to
a) Maintain power factor near unity
b) Constant Maximum demand
c) Maintain constant Voltage
d) Maintain constant frequency

kVAh based tariff is applicable to consumers
a) All consumers
b) Consumer having load below 20kW
c) Consumer having load above 20kW
d) It is not depends on consumer load

In kVAh based tariff PF incentive to consumers
a) Are remove
b) Reduced to 50%
c) Not change
d) Are increase

Which statement is wrong in connection with kVAh based tariff
a) If PF level is less than 0.90 then penalty shall be given.
b) If PF level is greater than 0.95 PF incentives shall be given.
c) Both kVAh Lag and Lead consumption is consider for incentives
d) Both kVAh Lag and Lead consumption is not consider for incentives

Resultant reactive energy is not equal to zero in kVAh based tariff calculation
a) RkVAh Lag and Lead occurs at same time
b) RkVAh Lag and Lead cannot occur simultaneously
c) RkVAh Lag and Lead value have not same amplitude
d) Because of the error in PF calculation

Net metering means
a) the billing mechanism for solar & grid power combinedly
b) the mechanism for billing the internet users
c) the billing mechanism for solar & grid power separately.
d) the mechanism for billing the industrial consumer

Gross metering means
a) the billing mechanism for solar & grid power combinedly
b) the mechanism for billing the internet users
c) the billing mechanism for solar & grid power separately.
d) the mechanism for billing the industrial consumer

As per MERC rules the solar power generated by the consumer shall not exceed (2M)
a) 10% of the rated capacity of that distribution transformer
b) 15% of the rated capacity of that distribution transformer
c) 25% of the rated capacity of that distribution transformer
d) 50% of the rated capacity of that distribution transformer

What is the main disadvantage of two-part Tariff?

a. Consumer has to pay semi-fixed charges.
b. Consumer has to pay fix charges
c. Consumer has to pay running charges
d. None of the above

Maximum demand Tariff is applied to which kind of consumers?

a. Industrial Consumers
b. Residential consumers
c. Agriculture consumers
d. All of above

Flat rate Tariff is charged on what basis?

a. Connected Load
b. Units consumed
c. Maximum demand
d. Lowest demand

The Tariff in which power factor is taken as reference-

a. Sliding scale Tariff
b. KVA maximum demand Tariff
c. KW and KVAR Tariff
d. All of these

Which of these is not key element or component of an electric bill?

a. Energy Consumption
b. Load factor
c. Power factor
d. Plant Utilization factor

Which of these is not an advantage of Power Purchase Agreement?

a. Predictable cost of power
b. Net metering
c. Financing Solar PV
d. Reduced Tariff rates

Which of these does not indicate per unit rate of electricity?

a. Average Tariff Rate
b. Average Billing Rate
c. Through Rate
d. Fixed Rate

Availability Based Tariff is

a. Frequency based pricing mechanism
b. Voltage based pricing mechanism
c. Current based pricing mechanism
d. Power based pricing mechanism

Which tariff is also known as the average power factor tariff?

a. Sliding scale Tariff
b. KVA maximum demand Tariff
c. KVAR Tariff
d. KW Tariff

Which of the following is not an application of Intelligent Motor Control Centre?

a. HVAC Pumps
b. Mining
c. Ball Mills
d. Flour Mill

Modern electronic soft starters are used for motors to-

a. Achieve variable speed
b. Provide smooth start and stop
c. Improve the loading
d. None of the above

AMI means?

a. Automated Metering Instrument
b. Alternate Metering Instrument
c. Advanced Metering Infrastructure
d. Advanced Metering Instrument

What is net meter for Solar?

a. Its gross metring technique

b. Its an average metering technique
c. It’s a Solar incentive
d. None of the above