Module 6 : Main Switch Board

Name:	Date:

Part A: Multiple choice question (MCQ)

1) The length of MSB is more than 3m, what is the side minimum clearance?

(a) 50 mm
(b) 100 mm
(c) 600 mm
(d) 1000 mm

2) What is the thickness of rubber mat according to BS 5912 to be provided in the main switch board?

(a) 5 mm
(b) 10 mm
(c) 50 mm
(d) 80 mm

3) This signage is need to be put up inside a main switch board room. This referring to.

(a) PPE sign
(b) CPR sign
(c) Caution sign
(d) Road sign

4) Electrical switch room have an indicator lamp near the entrance door, what does RED color lamp lit up means?

(a) CO2 gas need replacement
(b) CO2 gas is faulty
(c) CO2 gas is normal operation
(d) CO2 gas is discharging

5) What is the standard acceptable approved load percentage?

(a) 85%
(b) 100%
(c) 125%
(d) 250%

6) The followings are the type of overcurrent relay, except.

(a) instantaneous type OCR
(b) define time OCR
(c) miniature circuit breaker
(d) directional OCR

7) Air circuit breaker uses what method to extinguish the fire during contact.

(a) CO2 gas
(b) air blast
(c) vacuum
(d) induction

8) What is the ideal setting for earth fault relay?

(a) 10%
(b) 14%
(c) 50%
(d) 100%

9) What is the function of current transformer?

(a) to step up power factor
(b) to step down power factor
(c) to step up voltage
(d) to step down current

10) What is the maximum secondary current (Is) generated from a current transformer?

(a) 5 ampere
(b) 15 ampere
(c) 25 ampere
(d) 50 ampere

11) The following component can be found inside the main switch board, except.

(a) mold case circuit breaker
(b) 20A MCB
(c) earth fault relay
(d) current transformer

12) What is the purpose of heater inside main switch board?

(a) to increase current
(b) to regulate voltage
(c) to heat up and remove moisture
(d) improve power factor

13) What is the acceptable earth resistance for main switch board?

(a) 100 Ω
(b) <1 Ω
(c) >15 Ω
(d) >1M Ω

14) Earth fault relay sensitivity setting is at 10%, the secondary current (Is) shall be?

(a) 100 ampere
(b) 1200 ampere
(c) 50 ampere
(d) 0.5 ampere

15) Volt meter in main switch board is connected _____.

(a) to busbar
(b) to power transformer
(c) to capacitor bank
(d) to overcurrent relay

16) A current transformer rated 1200/5A, what does 5A representing?

(a) primary current
(b) secondary current
(c) incoming voltage
(d) incoming current

17) What is the cable size for CT metering?

(a) 1.0 mm^2
(b) 1.5 mm^2
(c) 2.5 mm^2
(d) 10.0 mm^2

18) What is the phase indicator lamp is use for?

(a) to indicate supply is present
(b) to indicate power factor is good
(c) to indicate fire alarm is normal
(d) to indicate earth fault happen

19) What is the acceptable value of earth resistance for main switch board?

(a) 1 ohm
(b) < 15 ohm
(c) < 1 ohm
(d) < 100 ohm

20) When do we using the coupler switch in main switch board?

(a) when generator activation
(b) main switch board is trip
(c) power factor is too high
(d) either one of incomer is down, transfer supply from other incomer.

Part B: Subjective Question

1) a) List down four (4) component can be found inside a main switch board.

i) ……..……..

ii) ……..

iii) ……..

iv) ……..

b) List down four (4) main switch board room requirement.

i) ……..……..

ii) ……..

iii) ……..

iv) ……..

2)

a) A main switch board installed with a current transformer rated 1000/5A, after reading from ammeter, the current measured 637 ampere. Calculate the secondary current from the CT.

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b) Given a CT rated 400/5A where the maximum current is for overload setting is 400 ampere (100%) and approved load is set at 375 ampere. Calculate the approved load percentage?

……..……

……..……

3)

Write down the function of the listed component below.

a) earth fault relay ……..……

b) heater unit ……

c) capacitor bank ……..……

4) Draw the complete main switch board single line diagram by referring to the technical information provided below. (8 marks)

Main supply : 415 volts, 50 Hertz,
Air Circuit Breaker : 500A BC:100 kA MCCB TP-N
Current Transformer: 500/5A, 10P10, BURDEN: 15VA
Metering CT: 500/5A, CLASS1,BURDEN:15VA
EFR 10% setting Type: Instantaneous
OCR 500A setting Type: Instantaneous

Outgoing :

- 120A / BC:75 kA MCCB TP-N
- 200A / BC:75 kA MCCB TP-N
- 400A / BC:100 kA MCCB TP-N
- 300A / BC:75 kA MCCB TP-N
- Capacitor bank 10kVAR x 4 nos and PFR controller

Answer scheme

Part A : MCQ

1) **C**	6) **C**	11) **B**	16) **B**
2) **A**	7) **B**	12) **C**	17) **B**
3) **B**	8) **A**	13) **B**	18) **A**
4) **D**	9) **D**	14) **D**	19) **C**
5) **C**	10) **A**	15) **A**	20) **D**