PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - APR 2023

Semester : Semester VI -2020
Course Code : EEE3003
Course Name : Sem VI - EEE3003 - Switchgear and Protection
Program : EEE

Date : 17-APR-2023
Time : 2PM - 3:30PM
Max Marks : 60
Weightage : 30%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS   (5 X 2 = 10M)

1. Which among these are the main characteristics of a fuse element?
    a) Low melting point   (CO1) [Knowledge]
    b) High conductivity
    c) Least deterioration due to oxidation
    d) All of the above

2. For a high speed circuit breaker what will the total clearing time?
    a) Few minutes.   (CO1) [Knowledge]
    b) Few seconds.
    c) 1 to 2 cycles.
    d) 5 to 20 cycles.

3. What is / are the main disadvantage / s of using oil as the quenching medium in the circuit breakers?
    a) Need periodical replacement.   (CO2) [Knowledge]
    b) Risk of formation of explosive mixture with air.
    c) Possibility of causing fire hazards.
    d) All of the above.

4. What is the cut off current in the fuse?
    a) Maximum value actually reached.   (CO2) [Knowledge]
    b) Rms value actually reached.
    c) Average value actually reached.
    d) None of the above

5. What is the advantage of HRC fuses over Rewirable fuses?

  a) High-speed operation   (CO1) [Knowledge]

  b) High rupturing capacity

  c) No ageing effect.

  d) All of the above.

PART B

ANSWER ALL THE QUESTIONS   (2 X 15 = 30M)

6. Mr. Rakesh wants to install MCB and fuse to protect his home from short circuit faults and overload. Kindly suggest any two places in his home where MCB would be more reliable than a fuse. Also, differentiate between MCB and fuse by drawing a suitable circuit diagram.

                                                                        (CO1) [Comprehension]

7. The operation of oil circuit breaker may cause fire hazard and it requires lots of mainntenance. According to you, which circuit breaker would be safe and extinguish the arc in minimum no. of cycles? Explain the operation of circuit breaker with proper circuit diagram.

                                                                        (CO2) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION   (1 X 20 = 20M)

8. A 3 Phase 50 Hz alternator has rated voltage 20.8 kV connected to circuit breaker, inductive reactance 10 ohm/phase, C= 6 microFarad. Find
a) Peak Restriking Voltage
b) Maximum RRRV
c) Frequency of Oscillations
d)Time for maximum rate of rise of restriking voltage.

                                                                        (CO2) [Application]