

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Electrical Engg.) (Sem.-6)
POWER SYSTEM-II (Switch gear & Protection)

Subject Code : BTEE-602

M.Code : 71148

Date of Examination : 05-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

1. Answer briefly :

- a) Draw the cut-off characteristics of a fuse and label the important parameters.
- b) What are the essential qualities of a protective relay?
- c) Define pick-up current.
- d) Why a circuit breaker is used instead of high capacity fuse in power supply system?
- e) Why distance protection is superior to other types of protection for an overhead line?
- f) What are the common types of faults in generators?
- g) How does circulating current protection system also provide the protection against inter-turn faults in power transformers?
- h) What are the internal causes of over voltages?
- i) What is meant by impulse ratio of any lightning arrester ?
- j) List out the equipment used in a substation.

SECTION-B

2. Classify the substations on the basis of operating voltage. Give the layout of outdoor substation and briefly describe the function of each component.
3. Describe the construction and working principle of air blast circuit breaker.
4. Discuss the protection scheme of an alternator against the unbalanced loading.
5. Enumerate the purpose of neutral grounding. Differentiate between neutral grounding and equipment grounding.
6. Explain the working principle of low voltage HRC fuse in brief. Also, state its advantages and disadvantages.

SECTION-C

7. Discuss the protection of a transformer with a differential protection scheme with the help of suitable diagram for a star-star and a star-delta transformer. What is the purpose of biased differential protection scheme for transformers?
8. Explain the operating principle of MHO relay and its characteristics on the R-X diagram. Also, list its advantages over other distance relays with application.
9.
 - a) How the system is graded with respect to time of operation of relays?
 - b) How earth fault protection is achieved in case of feeders? Explain with sketches.

NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC against the Student.