

1742**Code : 15EE53T**Register
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V Semester Diploma Examination, Nov./Dec. 2017**SWITCH GEAR & PROTECTION****Time : 3 Hours]****[Max. Marks : 100**

- Note :** (i) Answer any **six** questions from Part-A. (Each question carries **5** marks)
(ii) Answer any **seven** questions from Part-B. (Each question carries **10** marks)

PART – A

1. List any five harmful effects of Short circuit current. **5**
2. Explain the construction and working principle of Surge absorber. **5**
3. List the desirable characteristics of fuse element. **5**
4. Explain the working of trip mechanism of circuit Breaker with a neat sketch. **5**
5. List any five qualities of Protective relaying. **5**
6. Explain with a neat sketch the operation of voltage balanced differential relay. **5**
7. Explain the faults in alternator. **5**
8. Explain the basic concept of distance protection. **5**
9. List types of tests conducted on circuit breaker & explain any one in brief. **5**

PART – B

10. A 3 phase transmission line operating at 10 kV and having a resistance of 1Ω and reactance of 4Ω is connected to the generating station Bus bars through 5 MVA step up transformer having a reactance of 5%. The bus bars are supplied by a 10 MVA alternator having 10% reactance.
Calculate the short circuit KVA fed to the symmetrical fault between phases if it occurs at the load end of transmission line. **10**

11. Define the following terms : 10
- (a) Fusing Current
 - (b) Fusing factor
 - (c) Recovery voltage
 - (d) Transient Recovery voltage
 - (e) RRRV
12. Explain : 5
- (a) Arc formation in circuit breakers. 5
 - (b) Methods of arc extension in circuit breakers. 5
13. Explain with neat sketch the operation of puffer type circuit breaker. 10
14. (a) Define primary & back up protection in protective relays. 5
- (b) Explain earth fault protection of transformer. 5
15. Explain the construction & working of definite distance impedance relay. 10
16. Explain the construction & working of static over current relay. 10
17. Explain with a neat sketch the differential protection of alternators. 10
18. Explain with a neat sketch the operation of differential protection of Bus Bar. 10
19. Explain solid, resistance & reactance earthing of substation. 10