A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 97304

B.E./B.Tech. DEGREE EXAMINATION, NOV 2023

Seventh Semester

Electrical and Electronics Engineering

19UEE704 – PROTECTION AND SWITCHGEAR

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Outline the function of a circuit breaker CO1-U

   (a) a Power factor correcting device (b) a device to neutralize the effect of transients

   (c) a waveform correcting device (d) a current interrupting device

2. Identify the protective device given below : CO1-U

   (a) Fuse (b) Relay (c) Circuit Breaker (d) all of the above

3. Which one is called non-operative region in R-X diagram? CO2- U

   (a) positive torque region (b) negative torque region

   (c) voltage wave (d)all of the above

4. The relay operating speed depends upon CO2-U

   (a)the spring tension (b)the rate of flux built up (c)armature core air gap (d)) all of the above

5. A Merz-price protection is suitable for CO3-U

   (a) transformers (b) alternators (c) feeders (d) transmission lines.

6. Current transformers are used _____ CO3-U

   (a) to provide to measure voltages (b) to measure high value of currents

   (c) to short-circuit the unwanted instruments (d) to measure low value of currents

7. In which comparator the output R is positive when P>Q CO4-U

   (a) Phase (b)Amplitude (c) Hybrid (d)None of the above

8. Another name of numerical relay is CO4-U

(a) Microprocessor based relay (b) Static relay

(c) over current (d) overvoltage

9. Which semiconductor device is not used in static relay? CO5-U

(a) Transistors (b)Diodes (c)Multiplexers (d) Filter

10. SF6 gas is CO5-U

(a) sulphur fluoride (b) sulphurdifluoride

(c) sulphurhexafluorine (d) sulphur hexafluoride.

PART – B (5 x 2= 10Marks)

11. Relate "Primary Protection" with "Back-up Protection". CO1-Ana

12. What is meant by Differential relay? CO2-U

13. Illustrate the importance of bus bar protection. CO3-U

14. Explain the role of Phase and amplitude comparators CO4-U

15. What is meant by Recovery Voltage? CO5 -U

PART – C (5 x 16= 80Marks)

16. (a) Why protection scheme is required in power system? Explain with suitable example CO1- U (16)

Or

(b) Explain the different qualities required for protective relaying CO1- U (16)

17. (a) Explain the construction, working & operating principle of Non – directional Induction type over current relay. CO2- U (16)

Or

(b) Explain the protective device, which operates during the occurrence of under frequency. CO2 -U (16)

18. (a) Describe the Merz-Price protective scheme for Transformer protection. CO3 -U (16)

Or

(b) With neat sketches, explain the different types of protective schemes for Transmission lines. CO3- U (16)

19. (a) Explain Numerical over current protection & differential protection of transformer. CO4- U (16)

Or

(b) With Block diagram, explain the operation of static over current relay. CO4- U (16)

20. (a) With neat sketches, explain the construction and working principle of about the air break and minimum oil circuit breaker. CO5 U (16)

Or

(b) Explain the construction and working of SF6 circuit breakers and write its advantages and disadvantages. CO5 U (16)

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