Reg. No. : | | | | | | | | | | |

Question Paper Code: 47302

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Seventh Semester

Electrical and Electronics Engineering

14UEE702 – POWER SYSTEM OPERATION AND CONTROL

(Regulation 2014)

Duration: 1.15 hrs Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. The area under the daily load curve gives

(a) The number of units generated in a day (b) Average load of the day

(c) The load factor of the day (d) The number of units generated in the year

2. The load factor for domestic loads may be taken as

(a) about 85% (b) 50-60% (c) 25-50% (d) 20-15%

3. In an ALFC loop, the frequency deviation can be reduced using _____controller.

(a) Differential (b) Integral (c) Proportional (d) All of these Plan

4. The time constant of power system when compared to a speed governor is

(a) Less (b) More (c) Same (d) None of these

5. The different types of tap changing transformers are _____

(a) Off-load (b) On load (c) Both (a) and (b) (d) Either (a) or (b)

6. Which is treated as the heart of an excitation system?

(a) Main exciter (b) Pilot exciter (c) Rotor field exciter (d) AVR

7. The optimum allocation of the generator at each generating station at various station load levels is called _____.

(a) State estimation (b) Unit commitment (c) Economic dispatch (d) None of these

8. When load on a thermal unit is increased, then fuel input

(a) Increases (b) Does not change (c) Decreases (d) None of these

9. A State estimation scheme is_____

(a) Lagrangian function method (b) Negative gradient method
(c) Lyapunov method (d) Weighted least square method

10. The system is in secure condition, even the occurrence of all possible outages, the system remain secure then the operating mode of power system is

(a) Alert mode (b) normal mode (c) 16-bit (d) contingency mode

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Why is the load on a power station variable? What are the effects of variable load on the operation of the power station? (8)

12. Derive the transfer function model of load frequency control of a Double area power system with necessary equations. (8)

13. Draw the circuit diagram of a typical excitation system of an alternator and derive the transfer function model for the same. (8)

14. The fuel costs of two units are given by:

$F_1 = 1.8 + 20\ P_{G1} + 0.12\ P_{G1}^2$ Rs/hr., $F_2 = 1.9 + 30\ P_{G2} + 0.12\ P_{G2}^2$ Rs/hr. P_{G1} and P_{G2} are in MW. Compute optimum scheduling neglecting losses for a demand of 200 MW. (8)

15. With a neat diagram, explain the various components involved in computer control of power systems using SCADA. (8)