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C09–EE–403

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BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2013

DEEE—FOURTH SEMESTER EXAMINATION

POWER SYSTEMS—I

Time : 3 hours] [*Total Marks* : 80

PART—A

Instructions : (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. State the merits of non-conventional energy sources.

2. State the advantage of pulverization of coal in thermal power station.

3. Classify the hydroelectric power station on the basis of load.

4. State the function of control rods in nuclear power stations.

5. State the factors which come under fixed charges while considering the tariff.

6. What is meant by integrated power station?

7. State the use of isolator and air brake switch.

8. List the requirements of the relay.

9. State the various schemes of protection systems used in alternators.

10. State the various schemes of protection systems used in transformers.

PART—B

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

11. Explain the function of each block of thermal power plant with line diagram.

12. *(a)* State the factors to be considered while selecting site for hydroelectric power station. 5

(b) A hydroelectric operates under an effective head of 50 metres and a discharge of 94 m^3/sec. Determine the power developed. 5

13. Explain the working of nuclear power plant with a neat diagram.

14. A generating station has a maximum demand of 100 MW. The following data referred to the power station :

(a) Interest and depreciation = Rs 10%

(b) Capital cost = Rs 150 10^6

(c) Annual cost of fuel oil Rs = 6 10^6

(d) Taxes, wages and salaries = Rs 5 10^6

(e) Annual load factor = Rs 60%

Calculate *(i)* fixed cost, *(ii)* running cost, *(iii)* energy generated per annum and *(iv)* cost per unit generated.

15. Explain the different types of reactors schemes with neat sketches.

16. Explain the construction and working principle of differential relay.

17. Explain the scheme of protection against excessive heating in stator of alternator.

18. *(a)* Compare between the nuclear power plant and hydroelectric power plant in various aspects. 5

(b) A 15 MW power station generates 50 10^6 units of energy per annum. Determine its load factor. If the load factor is improved to 60%, calculate the energy generated by the power station. 5

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