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ELECTRICAL AND ELECTRONICS ENGINEERING BRANCH
II SEMESTER
ME 9153 : POWER PLANT ENGINEERING
(REGULATIONS 2008)

Time : 3 Hours

Max. Marks : 100

Instructions : Follow standard practices of presentation.

Answer ALL Questions

PART-A (10 x 2 = 20 Marks)

1. Indicate the specialities of gas turbine power plant systems.
2. Indicate the object of pairing different types of plants in combined cycle power plant systems.
3. Indicate the features of pumped storage hydel power plants.
4. Give a couple of reasons for the present state of electrical energy crisis in Tamil Nadu as well as in the country as a whole.
5. Indicate the basic features of the type of **Nuclear fission reactor power plant** being commissioned at Kudankulam in Tamil Nadu.
6. Define the following terms :
 - i) Cross-subsidised electricity tariff.
 - ii) Cut-in wind speed of a wind turbine power plant.
7. How the current modes of thermal power generation impact the environment?
8. Indicate the salient features of SOFC power plant systems.
9. Indicate the major accidents encountered in the history of Nuclear Power Plant operation across the globe.
10. Can a Diesel Generator set be operated with a gaseous fuel like natural gas? If so, indicate a methodology.

PART-B (5 X 16 = 80 Marks)

- 11.(i) Give the schematic of an IGCC power plant and briefly indicate its features. (6)
- (ii) Discuss the working of a typical fluidised-bed boiler system with an illustration. (10)
- 12.(a) (i) How a hydel power plant could be specified? (6)
- (ii) Give the layout of a large hydel power plant and discuss its working. Indicate the demerits of such plants. (10)
- (OR)**
- (b) (i) Give a comparison of water turbines with steam turbines in power plant practice. (6)
- (ii) Discuss the features of Francis water turbine. (10)
- 13.(a) (i) Give a brief note on Nuclear Fission Reactor based power plant systems. (6)
- (ii) Discuss the constructional features of a PWR power plant with an illustration. (10)
- (OR)**
- (b) (i) How do PHWR power plants differ from PWR power plants? (6)
- (ii) Outline the road-map of Indian Nuclear Power Development for civilian use. (10)
- 14.(a) (i) Indicate the types of Diesel engine power plants in use and the merits of such plants. (6)
- (ii) Discuss the working of a typical gas turbine power plant with suitable illustration(s). (10)
- (OR)**
- (b) (i) Give a note on Gas turbine power plants vis-a-vis C.I. engine power plants. (6)
- (ii) Indicate the major pollutants from piston-engine power plants and method(s) of their control. (10)
- 15.(a) (i) Indicate the peculiarities of solar and wind power systems. (6)
- (ii) Indicate the operational features of an OTEC power plant with illustration(s). (10)
- (OR)**
- (b) (i) Indicate the role of fuel cells for electric utility applications. (6)
- (ii) Outline the features of a typical candidate fuel cell power plant with an illustration. (10)
