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# INTERNATIONAL CENTRE FOR APPLIED SCIENCES

(Manipal University)

## IV SEMESTER B.S. DEGREE EXAMINATION –MAY 2016

### SUBJECT: POWER PLANT ENGINEERING (ME 246)

**(BRANCH: MECH/ IP)**

**25TH MAY, 2016**

**Time: 3 Hours** **Max. Marks: 100**

- ✓ **Answer ANY FIVE full Questions.**
- ✓ **Any mission data may be suitably assumed.**

**1A.** List out the factors taken into account while selecting a site for setting up of a power plant.

**1B.** Define the following:

(a) Demand Factor
(b) Load Factor
(c) Diversity Factor
(d) Plant capacity factor

**1C.** The peak load on a power plant is 60 MW. The loads having maximum demands of 30 MW, 20 MW, 10 MW and 14 MW are connected to the power plant. The capacity of the power plant is 80 MW and the annual load factor is 0.5. Estimate (a) the average load on the power plant, (b) the energy supplied per year, (c) the demand factor, and (d) the diversity factor. (8+4+8=20)

**2A.** What are the functions of a surge tank? Describe with neat sketches the behavior of a surge tank.

**2B.** Enumerate the advantages and disadvantages of Hydel power plants.

**2C.** What is a pumped storage plant? List out the advantages and limitations of this power plant. (8+6+6=20}

**3A.** With the help of a neat sketch explain the working of sprinkler stoker. Enumerate its merits and demerits.

**3B.** List out the advantages and disadvantages of pulverized coal.

**3C.** With a neat sketch explain the working of gravity and cyclonic separator.

(8+4+8=20)

**4A.** With a neat sketch explain the working of La Mont Boiler.

**4 B.** With the help of a diagram explain the working of storage type air preheater.

**4C.** Sketch and explain Pneumatic ash handling system. Enumerate its merits and demerits. (6+6+8=20)

**5A.** List out the advantages and disadvantages of Forced draught and Induced draught cooling towers

**5B.** Sketch and explain working of economizer and air preheater of the steam power plant.

**5C.** Write a short note on cooling ponds and cooling towers.

(6+6+8=20)

**6A.** List out the advantages and disadvantages of Diesel engine plants.

**6B.** Sketch and explain the working of pump injection system used to inject fuel in diesel plants.

**6C.** List our the advantages and disadvantages of gas power plants.

(6+8+6=20)

**7A.** Explain methods to improve thermal efficiency of gas power plants.

**7B.** List the advantages and disadvantages of a nuclear power plant.

**7C.** With a neat sketch explain the working of a Sodium Graphite Reactor.

(8+6+6=20)

**8A.** Sketch and explain the working of a Boiling Water Reactor.

**8B.** Write a short notes on the following:

(a) Pondage

(b) Pulverised Coal

(c) Nuclear Fission

(d) Siphon Spillway

(8+12=20)