2015/09

N.B. : (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions out of **remaining** questions.
(3) Draw a **neat** diagram if **required**.
(4) Answer to question should be grouped and written **together**.

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1. (a) Define : (i) Demand factor (ii) Load factor (iii) Diversity factor (iv) Utilization factor (v) plant capacity factor. 5
(b) Explain in brief : (i) hydrologic cycle (ii) runoff (iii) Hydrograph. 5
(c) Explain : (i) Radioactive Decay (ii) Activity (iii) Half life (iv) Average (mean) life. Nuclear fission and fusion. 5
(d) Draw a neat layout of fuel handling equipment in steam powerplant and explain its operation in brief. 5

2. (a) Explain various types of tarrif in brief. 10
(b) Two part tariff rate is quoted as below — 10
Demand rate :
First 1 kw of maximum demand = Rs. 6/kw/month
Next 4 kw of maximum demand = Rs. 5/kw/month
Excess 5 kw of maximum demand = Rs. 4/kw/month.
Energy rates :
First 50 kwh = 7 paise/kwh
Next 50 kwh = 5 paise/kwh
Next 200 kwh = 4 paise/kwh
Next 400 kwh = 3 paise/kwh
Excess over 700 kwh = 2 paise/kwh.
Determine :
(i) monthly bill for a total consumption of 2000 kwh and a m.d. of 15 kw. Also find out the unit energy cost.
(ii) lowest possible bill for a month and a corresponding unit energy cost.

3. (a) Explain in brief classification of Hydro electric powerplant. 10
(b) Explain in brief Nuclear reactors. 10

4. (a) Explain (i) Fluidized bed combustion process (ii) Pulverised fuel firing. 10
(b) List advantages and disadvantages of Gas turbine power plant over Diesel power plant and Steam power plant. 10

5. (a) A power station has the installed capacity of 180 Mw Cal. cost of generation. Other data pertaining to power station are given below : 10
Capital Cost = Rs. 300×10^6
Rate of interest and depreciation = 18 percent
Annual cost of fuel oil, salaries and Taxation = Rs. 36×10^6
Load factor = 0·4
Also calculate the saving in cost/kwh if annual load factor is raised to 0·5, (Assume M.D. = Capacity of power plant).
(b) Explain ASh handling plant in steam power station. 10

6. (a) Explain the operation of Diesel power plant and also explain the essential component of Diesel power plant. 10
(b) Explain in brief factors affecting Economic of generation and Distribution of Electric power. 10

7. Write notes on any **two** :– 20
(a) Gas turbine power plant
(b) Solar power plant
(c) Green house effect
(d) Acid rain and acid snow.