

**UNIVERSITY OF PETROLEUM  
AND ENERGY STUDIES**



**End Semester Examination – April, 2017**

**Program/course: B.Tech-Power System Engineering**

**Semester-VIII**

**Subject: Load Dispatch and Electricity Regulation**

**Max. Marks : 100**

**Code : PSEG-462**

**Duration : 3 Hrs**

**No. of page/s: 03 pages**

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- All questions are compulsory.
- Assume any data if not available.

**Section – A**

**(5x 4 = 20 marks)**

**Attempt all questions.**

1. What are the functions of NLDC, RLDC, SLDC and STU ?
2. Explain present energy storage system projects in India
3. Analyze co-generation and tri-generation technologies with diagrams.
4. Determine the thermal efficiency of a steam power plant and its coal bill per annum using the following data. Maximum demand = 24000 kW, Load factor = 40%, Boiler efficiency = 90%, Turbine efficiency = 92%, Coal consumption = 0.87 kg/Unit, Price of coal = Rs. 280 per tonne.
5. Evaluate the Various Schemes Of BEE under the Energy Conservation Act 2001.

**Section B**

**(5X8=40 Marks)**

**Attempt questions 6, 7, 8, 9 compulsory and any one of Question 10 or 11.**

6. (a) A single – phase, ac, electric motor has a full load efficiency of 65%. If this 3 H.P motor operates from a 230 volt supply drawing a current of 20.8 A. What is the operating power factor ?
- b) One Electricity consumer has a motor rating = 9.3 KW of full load efficiency =87%. Energy manager proposed a motor rating = 9.3 KW of full load efficiency =90% to him. The Electricity use

hours are 7200 hours per year. The cost of electricity @ 3.5 per KWh and investment cost is Rs. 25000.00. Calculate the payback period.

7. Describe operating codes, scheduling and dispatch codes in I.E.G.C (Indian Electricity Grid Code).
8. What is power system network organization? Explain them with diagrams in ref to SCADA/DMS applications.
9. Analyze ABT (availability based tariff), UI (unscheduled interchange) charges, Economic and benefits of UI. Explain the merit order operation of power plants with diagram in detail.
10. Evaluate all 9 Nos Electricity regulations and policy with objective, impacts and evolution of Indian power sector.

**OR**

11. Analyze post reforms phase (after 1991) of Indian power industry.

**Section – C**

**(2x 20 = 40 marks)**

**Attempt question 12 And Any One From 13 & 14**

12. A new factory having a maximum demand of 700 kW and a load factor of 25% is comparing two power supply agencies. Find which one is economical ?

**(a)** Public supply tariff is Rs. 40 per kW of maximum demand plus 2 paise per kWh.

Capital cost = Rs. 70,000

Interest and depreciation = 10%

**(b)** Private oil engine generating station.

Capital Cost = Rs. 250,000

Fuel consumption = 0.3 kg per kWh

Cost of fuel = Rs. 70 per tonne

Wages = 0.4 paise per kWh

Maintenance cost = 0.3 paise per kWh

Interest and depreciation = 15%.

**(20 marks)**

13. (a) Analyze all new technologies of energy storage systems in transmission networks

(10

marks)

(b) Any undertaking consumes  $6 \times 10^6$  kWh per year and its maximum demand is 2000 kW. It is offered two tariffs.

(a) Rs. 80 per kW of maximum demand plus 3 paise per kWh.

(b) A flat rate of 6 paise per kWh.

Calculate the annual cost of energy.

(10 marks)

**OR**

14. (a) Evaluate power system stability classification with diagrams, explain various parameters in detail effecting power system stability (10 marks)

(b) Describe in details the Salient features of Electricity act 2003 with its amendment. Elaborate on the Light of the Act, Wheeling Charges, Open Access, Customer Service, AT &C Losses , Cross Subsidy and Subsidy (10 marks)

The END

