

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular/Backlog), April-May 2018
B. Tech. in Electrical Engineering, Semester VI

Roll No.....

COURSE CODE: EE 622

Time: 3 hours

Max. Marks: 100

COURSE TITLE: RESTRUCTURED POWER SYSTEM

Instructions to students:

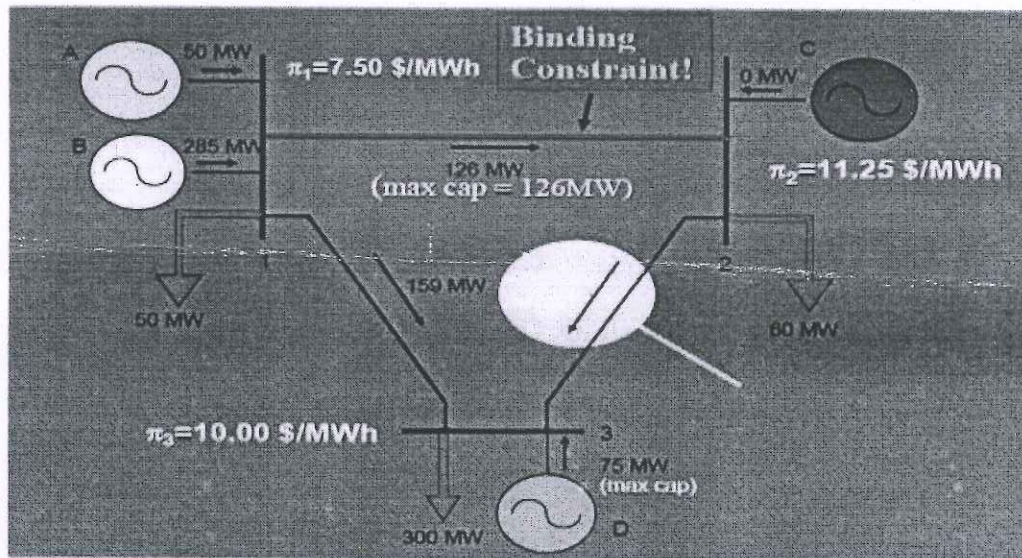
1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A Objective type multiple choice questions (10 questions @ 1 mark)

10

- i. Effects of laws of physics in presence of binding transmission and capacity constraints, determine the power flow in branch between node 2 and 3

(a) 50 MW (b) 66 MW (c) 60 MW (d) 100 MW



- ii. Available based Tariff (ABT) have purpose

- I. To deliver electric power reliably.
- II. To provide flexibility for changing system conditions.
- III. To give the indication about the additional amount of power transfer.
- IV. To allow trading of electric power among systems

(a) I, II only (b) III, IV only (c)) II, IV only (d) All

- iii. In the India, the most commonly used fuel for the generation of electric power is

(a) Natural gas (b) Nuclear energy (c) Coal (d) Oil

- iv. By definition, a VERTICALLY INTEGRATED UTILITY is a utility that.

(a) Owns generation plants, a transmission network, and a distribution network

for (retail) customer service

- (b) Is organized as a private corporation owned by shareholders
- (c) Owns many different generation plants across a wide geographical area
- (d) Owns its own sources of fuel for the generation of electric power
- v. What are not main pillar of market design?
 - (a) Rural electrification
 - (b) Scheduling
 - (c) Congestion Management
 - (d) Ancillary Services
- vi. Which market models have 'many' number of sellers?
 - (a) Single Buyer
 - (b) Wholesale Competition
 - (c) Retail Competition
 - (d) All
- vii. For a standard two bus lossless systems, the power flow is from bus 1 to bus 2 and Lagrange multiplier associated with the global load-generation balance equation λ is equal to 10. The Lagrange multiplier associated with inequality constraint of line flow limit is $\mu_{12}=0$. The LMP on bus 2 is
 - (a) 10
 - (b) 5
 - (c) 15
 - (d) None of the above
- viii. By definition, a WHOLESALE POWER MARKET is a market
 - (a) In which all buyer/seller transactions take the form of bilateral trades.
 - (b) In which buyers purchase electric energy from sellers and hold this energy in inventory for later resale.
 - (c) In which buyers purchase forward contracts for capacity energy reserves from a market operator
 - (d) In which buyers purchase electric power from sellers for resale to "downstream" retail customers.
- ix. Which market model is not based on contractual arrangements?
 - (a) Monopoly Model
 - (b) Single Buyer Model
 - (c) Wholesale Competition Model
 - (d) None
- x. A common characteristic of all ECONOMIC DISPATCH problems in power economics that assume loss-less line transmission is that
 - (a) The total amount of generated power is constrained to equal the total demand for power
 - (b) The objective is the maximization of net buyer and seller surplus.
 - (c) Cost functions are required to be quadratic.
 - (d) The only way to solve such problems is the Lagrangean method

Q.2 Short answer type questions (4 questions @ 2.5 marks)

10

- List out different types of electricity market model in restructured environment.
- List out the features for congestion management in restructured power system
- List out the impact of deregulation and restructuring of power system for consumer oriented services.
- Write difference between spinning reserve and cold reserve in thermal plant?

Q.3A Discuss in brief the understanding restructuring process of power system.

05

- Q.3B Explain role of load dispatch center in power system. Also state roles and responsibilities of Independent System Operators? 05
- Q.4A Compare distinguish features of electricity as a commodity with other common commodity. Also describe how principles of State the advantages of postage stamp method? 05
- Q.4B Explain in brief MW-Mile method transmission pricing method. Also explain function of different entities in deregulated power system. 05
- Q.5A Explain important points of electricity act - 2003. 05
- Q.5B Describe how to obtain ancillary service in restructured power system 05
- Q.6A Explain any five basic terminologies in followings 05
- Power transmission distribution factor(PTDF)
 - Total transfer capability(TTC)
 - Opportunity cost
 - System expansion cost
 - Physical transmission rights
- Q.6B Explain briefly to calculate nodal pricing using DC OPF and AC OPF method 05
- OR
- Q.6B How does deregulated power system differs from vertically integrated electric industry? Also state the advantages of contract path method of transmission pricing. 05
- Q.7A Discuss in brief an impact of distributed generation in restructured power system 05
- Q.7B What is the congestion in power system? Discuss in brief various methods for relaxing the congestion. 05
- OR
- Q.7B Discuss in brief the three models of electricity markets involving in the transmission planning? 05
- Q.8A Discuss in brief the recent research on any one product/ services to modernize/renovate Indian power sector. 10
- Q.9A
- Explain economic load dispatch problem. Formulate a multiobjective combined economic emission load dispatch problem. 10
 - State the electricity market players of deregulated power system. Explain the problems associated with transmission planning in bilateral contracts.
- Q.9B Discuss in brief the application aspects of the primary and secondary ancillary services adopted in India. 10
- OR
- Q.9B Write short notes on any two of the following policy support and initiatives 10
- R-APDRP
 - UJALA Scheme
 - Ujwal Discoms Assurance Yojana (UDAY)
 - Rent a roof policy