8E4109

Roll No. _____ Total No of Pages: 3

8E4109

B. Tech. VIII Sem. (Main/Back) Exam., April, 2015

Electrical Engineering

8EE1 EHV AC/DC Transmission

Common for 8EE1 & 8EX1

Time: 3 Hours **Maximum Marks: 80**

Min. Passing Marks: 24

Instructions to Candidates:

*Attempt any **five questions,** selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. NIL 2. NIL

UNIT – I

Q.1 (a) Describe the relative merits of AC & DC modes of transmission. What is the need of EHV transmission? [8]

(b) Describe the problems posed in Extra High Voltage (EHV) AC transmission. [8]

OR

Q.1 (a) Explain the properties of the bundled conductors. How electrostatic field of EHV lines effects human, animals and plants. [8]

(b) Define & Explain: [8]

(i) Geometric mean radios of bundle.

(ii) Corona effects.

UNIT – II

Q.2 (a) Obtain the mathematical model of the speed governing system and turbine. [8]

(b) Define the concept of load sharing between parallel operating generators. [8]

OR

Q.2 (a) Describe the Automatic generation control along with the block diagram. [8]

(b) Explain Flat Frequency, Flat Tie Line and Tie Line load bias control methods of Load Frequency control. [8]

UNIT – III

Q.3 (a) Explain the various conventional methods of voltage control along with advantages & disadvantages. [8]

(b) Explain voltage collapse problem in brief. [8]

OR

Q.3 (a) Describe thyristorised static VAR compensators- TCR, FC-TCR and TSC-TCR in detail. [8]

(b) Why thyristorised static VAR compensators are better to control Transient stability, Dynamic stability & Power Oscillations developed in power system? [8]

UNIT – IV

Q.4 (a) How FACTS controllers are useful to control interrelated parameters of transmission line. [8]

(b) Describe the various types of FACTS controllers. [8]

OR

Q.4 Describe in brief- [16]

(a) STATCOM

(b) TCSC

(c) UPFC.

UNIT – V

Q.5 (a) Discuss the advantages & disadvantages of HVDC transmission. [8]

(b) Draw a simple scheme of HVDC converter station and describe briefly main components of the converter station. [8]

OR

Q.5 (a) Describe types of HVDC links with the help of diagrams. Discuss the applications of each of these links. [8]

(b) Explain & draw the basic converters control characteristics for negative current margin. [8]

22

8E4110

Roll No. _____ Total No of Pages: 2

8E4110

B. Tech. VIII Sem. (Main/Back) Exam., April, 2015
Electrical Engineering
8EE2 Electric Drives and Their Control
Common for 8EE2, 8EX2

Time: 3 Hours **Maximum Marks: 80**

Min. Passing Marks: 24

Instructions to Candidates:

*Attempt any **five questions,** selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2.NIL

UNIT – I

Q.1 (a) Discuss loop configurations of drives. [6]

(b) Explain speed torque conventions & multi quadrant operation. [10]

OR

Q.1 What do you mean by steady state stability. Derive equivalent values of drive parameters. [16]

UNIT – II

Q.2 (a) Define the term "starting". Differentiate between regenerative braking, dynamic braking & plugging. [10]

(b) What are speed torque curves? [6]

OR

Q.2 (a) Explain the construction & working of controlled DC drives. [8]

(b) What are power limitation occur in armature voltage? [8]

UNIT – III

Q.3 Explain the techniques of various frequency control from voltage source. [16]

OR

Q.3 Discuss the operation & significance of voltage source inverter (VSI) control. [16]

UNIT – IV

Q.4 Explain the following terms- [8×2=16]

(a) Cycloconverter control

(b) CSI control

OR

Q.4 Differentiate Stator Scherbius drive and static Kramer drive. Give the applications of these drives. [16]

UNIT – V

Q.5 Explain (with suitable diagrams) the dynamic & regenerative braking of synchronous motor with VSI. [16]

OR

Q.5 Write short note on **any two** of the following: [8×2=16]

(a) VSI fed self controlled synchronous motor drive.

(b) Current source inverter.

(c) Speed torque characteristics for regenerative braking.

8E4111

Roll No. _____ Total No of Pages: 3

8E4111

B. Tech. VIII Sem. (Main/Back) Exam., April, 2015
Electrical Engineering
8EE3 Switchgear & Protection
Common for 8EE3 & 8EX3

Time: 3 Hours **Maximum Marks: 80**

Min. Passing Marks: 24

Instructions to Candidates:

*Attempt any **five questions,** selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2.NIL

UNIT – I

Q.1 (a) What is a static relay and what is the basis for its development? In what way has it been successful in replacing the conventional electromagnetic relays? [8]

(b) In what respect are static comparators more convenient than electromagnetic comparators? How are the composite signals derived in a system to be fed to the comparator? [8]

OR

Q.1 (a) How are the logic gates applied in protective relaying? Explain dearly the relay logic with the help of logic gates. [8]

(d) Differentiate the characteristics of different static over – current relay by suitable graphs and their block diagrams. [8]

UNIT – II

Q.2 (a) How can different distance relay characteristics be achieved with the help of amplitude as well as phase comparators? [8]

(b) Describe the circuitry of static differential protection of generator. [8]

OR

Q.2 (a) Describe the advantages of poly – phase relays. Discuss with the help of neat diagram the theory and principle of the operation of a poly – phase relay. [8]

(b) Discuss the directional reactance scheme for distance protection. [8]

UNIT – III

Q.3 (a) Explain the advantages of elliptical and quadrilateral characteristics for distance protection. How is a quadrilateral characteristics obtained with the help of static comparators? [8]

(b) How does the carrier help in overcoming the limitation of the three-stepped distance protection? [8]

OR

Q.3 (a) What are the various options for implementing the carrier communication channel? [8]

(b) Discuss the effect of power swings on the performance of distance protection. [8]

UNIT – IV

Q.4 (a) A three phase circuit breaker is rated at 1250A, 2000 MVA, 33kV, 4s. Find the rated symmetrical breaking current, making current and short time rating. [6]

(b) Develop expression for restriking voltage and RRRV for circuit breaker. [10]

OR

Q.4 Write technical notes on the following:-

(a) Energy balance theory [8]

(b) Current chopping phenomena. [8]

UNIT – V

Q.5 (a) Explain the construction of an SF_6 circuit breaker. How does it essentially differ from an air-blast circuit breaker? [8]

(b) Describe the hidden failures in power system. How digital relays can prevent/overcome it? [8]

OR

Q.5 (a) What are the practical limitations of breaking high voltage direct current circuits? Explain some of the means of overcoming these difficulties. [8]

(b) Briefly describe the block diagram of digital relay. [8]

8E4112

Roll No. _____ Total No of Pages: 3

8E4112

B. Tech. VIII Sem. (Main / Back) Exam., April, 2015
Electrical Engineering
8EE4.1 Non Conventional Energy Sources
Common in 8EX4.3

Time: 3 Hours **Maximum Marks: 80**

Min. Passing Marks: 24

Instructions to Candidates:

*Attempt any **five questions,** selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2.NIL

UNIT – I

Q.1 (a) Explain in brief the Conventional and Non-conventional sources of energy. [8]

(b) Write a short-note on energy-management system. [8]

OR

Q.1 What are the advantages and limitations of renewable energy sources? Write a note on "Energy crisis in India". [16]

UNIT – II

Q.2 (a) Explain the construction and operation of Solar Water Heating System. [8]

(b) Explain the construction and functions of main components of flat-plate solar collector. [8]

OR

Q.2 (a) Write the working principle and operation of solar-cells (photovoltaic – converter). [8]

(b) Explain in brief the different methods of measurement of solar radiations. [8]

UNIT – III

Q.3 (a) What are the main considerations in selecting a site for wind generators? [8]

(b) Explain the design and working of wind generators. [8]

OR

Q.3 (a) What is Geo-thermal energy? Explain the scheme of vapour dominated power-plant. [8]

(b) What are advantages and problems of Geo-thermal energy? [8]

UNIT – IV

Q.4 (a) What are the factors to be considered in selecting the site of a nuclear power station? [8]

(b) Explain with a neat sketch the working of a nuclear power station. [8]

OR

Q.4 (a) What is meant by nuclear fission and chain reaction? [8]

(b) Discuss the advantages and disadvantages of a nuclear plant as compared to other conventional power systems. [8]

UNIT – V

Q.5 (a) Explain the constructional detail and working of floating gas holder digester. [8]

(b) What are the advantages and limitations of Biological conversion of solar energy? [8]

OR

Q.5 What are the factors which affect the size of the biogas plant? Explain the construction and operation of Deen-bandhu Bio-gas plant. [16]

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