7E7041

Roll No. _____ [Total No. of Pages : 3

7E7041

B.Tech. VII Semester (Main) Examination, Dec. - 2015

Electrical & Electronics Engg.

7EX1A Power System Planning

EE, EX

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.)*

Unit - I

1. a) Explain the power system planning. Explain the strategic planning, long term planning and short term planning. ?Explain the electricity forecasting and its types also. **(8)**

   b) Mention and explain factors affecting the load of utility in forecasting modeling. With the help of neat diagram, explain least cost utility planning. **(8)**

OR

1. a) List the challenges faced by power system planning engineers. Explain the power system planning process. Enumerate the cyclical components of planning. **(3)**

   b) Discuss different stages of preparation of Detailed project report (DPR) for planning power projects. With the help of a neat diagram, explain least cost utility planning. Explain different time frames of load forecasting. **(8)**

Unit - II

2. a) What are the basic process of cogeneration what are its benefits and explain the strategies for transmission system expansion in India. **(8)**

b) Enumerate elaborately on the desirable generation options for next 25 years for India as per CEA and World bank. Write descriptive notes on

i) Boiler renovation and

ii) Power policy and trading. **(8)**

OR

2. a) Write a descriptive note on selection of voltage levels in India for the transmission and distribution. Explain concept of rational tariffs. **(8)**

b) Explain power pooling and trading in India and its role in power system planning. Explain the components of rural electrification planning. **(8)**

Unit - III

3. a) Enumerate different trades and issues that planners and operators have to cope with during reliability planning. Explain the various methods of load management. **(8)**

b) Describe the two methods of reliability assessment. Write a descriptive note on CEA's reliability planning criterion. **(8)**

OR

3. a) Explain system adequacy and security of power system reliability. Explain reliability evaluation and calculations. Explain basic methods to evaluate generation reliability. **(8)**

b) What do you mean by state estimation. Explain with the help of block diagram the function of state estimation and also explain the function of power system simulator. **(8)**

Unit - IV

4. a) What is insulation coordination and explain the principle of insulation coordination. **(8)**

b) Explain the green house effect and its technological impact. Define wheeling in power system and list the typical objectives of wheeling. **(8)**

OR

4. What the sources of generation and absorption of reactive power in transmission and distribution lines. **(16)**

Unit - V

5. a) Explain main steps in Optimal power system planning and WASP programme for generation system expansion planning. **(8)**

   b) Explain seven modular programmes of WASP package with block diagram representation. **(8)**

OR

5. a) Explain formulation of least cost optimization problem incorporating the capital with block diagrams. **(8)**

   b) Explain minimum assured reliability constraints by using optimization techniques of solution by programming. **(8)**

7E7042

Roll No. _____ [Total No. of Pages : 4

7E7042

B.Tech. VII Semester (Main/Back) Examination, Dec. - 2015

Electrical & Electronics Engg.

7EX2A Power System Analysis

EE, EX

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.*

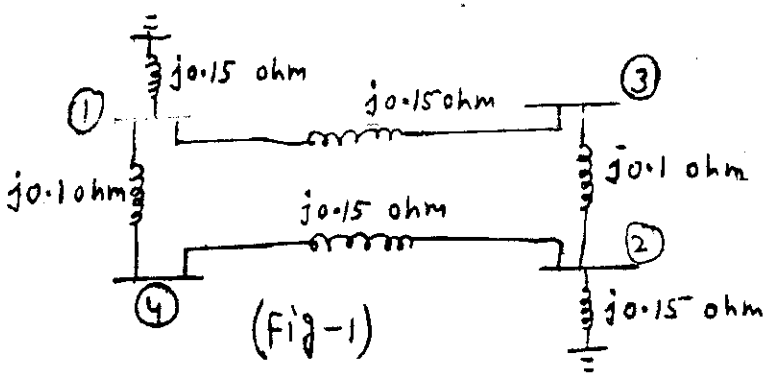
Unit - I

1. a) Show that in three-phase system how the per-unit values remain same, whether Calculated using per-phase basis or three-phase base quantities. **(6)**

   b) Show how the various elements (generator, motor, transformer, line, loads etc.) of any power system network are represented on impedance / reactance diagram on single-phase basis, for use under balanced conditions. **(10)**

OR

1. a) Constitute the bus admittance matrix for the following network **(Fig - 1)(12)**



(Fig-1)

   b) How the modifications in the existing Y -bus can be effected, explain. **(4)**

Unit - II

2. a) Derive the mathematical equation for short circuit on a transmission line, stating the used assumptions in doing so, and also draw the waveform of short circuit current. **(10)**

b) Bus impedance matrix (Z_{bus}) for network of fig - 2 is shown below:

$$Z_{bus} = \begin{bmatrix} \frac{2}{3} & \frac{1}{3} & 0 \\ \frac{1}{3} & \frac{2}{3} & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

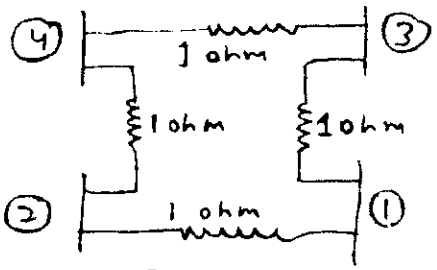


Fig - (2)

Obtain the modified Z-bus for above given Z_{bus} when one ohm element is connected between bus (1) and bus (3). **(6)**

OR

2. a) Describe the method of computing short circuit current through Thevenin theorem for short circuit of a loaded synchronous machine. **(8)**

b) Describe the algorithm for short circuit study for short circuit calculations for a given n-bus system (fig - 3) operating at steady load when r^{th} bus is faulted through a fault impedance Z^f. **(8)**

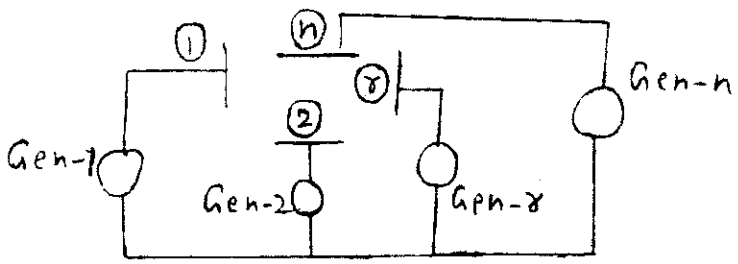


Fig - (3)

Unit - III

3. a) Describe how the positive and negative voltages & currents undergo a phase shift in passing through a deta-star transformer. **(8)**

b) Show that a fully transposed transmission line has equal positive and negative sequence impedances and zero sequence impedance is much larger than positive (or negative) sequence impedance. **(8)**

OR

3. a) Show that the symmetrical component transformation is power invariant. **(4)**

b) **A 30 MVA, 11kV** generator has $Z_1 = Z_2 = j0.2$ **pu.** $Z_0 = j0.05$ pu. A line to ground fault occurs on the generator terminals. Find the fault current and line to line voltages during fault conditions. Assume that the generator neutral is solidly grounded and that the generator is operating at no load and at rated voltage at the occurrence of fault. **(12)**

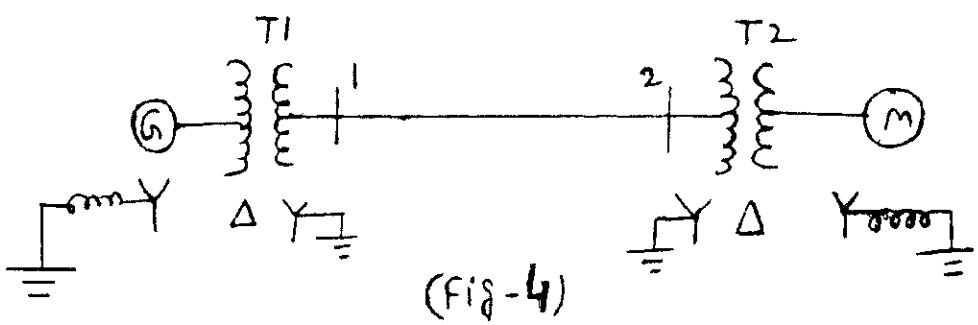
Unit - IV

4. a) Starting from basic conditions for a line to line fault with fault impedance Z^f, obtain fault current expression and show how the connection of sequence networks can be represented for line to line fault. **(8)**

b) **A 50 MVA, 11 kV,** 3-phase alternator was subjected to different types of faults. The fault currents were: 3-phase fault 1870 Amp, line to line fault 2590 Amp, single line to ground fault 4130 Amp. The alternator neutral is solidly grounded. Find the per unit values of three - sequence reactances of the alternator. **(8)**

OR

4. A single line-to-ground fault (on phase-a) occurs on the bus 1 of system of fig.4.



(Fig-4)

Rating of generator and motor both is 1200 kVA, 600 volt with $X_1 = X_2 = 10\%$, $X_0 = 5\%$. Each three- phase transformer is rated 1200 kVA, 600 volt/3300 volt (Δ-Y) with leakage reactance of 5%. The reactances of the transmission line are $X_1 = X_2 = 20\%$ and $X_0 = 40\%$ on a base of 1200 kVA, 3300 volt. The reactances of the neutral grounding reactors are 5% on the kVA and voltage base of machine.

Find

a) Current in the fault

b) Short circuit current on the transmission line in all the three phases. **(16)**

Unit - V

5. a) Describe the procedure by flow chart for Gauss-Seidal method for load flow when system has PQ and PV buses both. **(12)**

   b) Describe how the non-linear static load flow equations for an n-bus system are formed. **(4)**

OR

5. a) Describe the constitution of Jacobian matrix for one slack bus, one PQ bus and one PV bus system (ie a three-bus system), describing the mathematical expression for each element of Jacobian matrix of Newton-Raphson load flow method involving real and reactive power and phase-angle and voltage of related buses as applicable. **(12)**

   b) Present the comparison of Gauss-Seidal, Newton Raphson and Fast Decoupled load flow studies describing their suitability, advantages, disadvantages and applications etc. **(4)**

7E 7043

Roll No. _____ [Total No. of Pages : 4

7E 7043

B.Tech. VII Semester (Main/Back) Examination, Dec. - 2015

Electrical & Electronics Engineering

7EX3A Artificial Intelligence Techniques

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.)*

Unit - I

1. a) Define the terms-natural intelligence and artificial intelligence. How do you differentiate between the two? **(6)**

   b) Define and differentiate between weak and strong AI. **(5)**

   c) Write down the foundation of AI **(5)**

OR

1. a) Explain in short the working of DENDRAL and MYCIN **(8)**

   b) Explain the structure of the brain and its organization. **(8)**

Unit - II

2. a) Three missionaries and three cannibals are on one side of a river, along with a boat that can hold one or two people (one for rowing). Find a way to get everyone to the other side, without ever leaving a group of missionaries in oneplace outnumbered by the cannibals in that place (the cannibals eat the missionaries then).

   i) Formulate the problem precisely, making only those distinctions necessary to ensure a valid solution. Draw a diagram of the complete state space. **(6)**

   ii) Implement and solve the problem optimally using an appropriate search algorithm. Is it a good idea to check for repeated states? **(6)**

iii) Why do you think people have a hard time solving this puzzle, given that the state space is so simple? **(4)**

OR

2. a) Write four properties a good system should possess for the knowledge representation in a particular domain. **(5)**

b) What is the difference between knowledge representation and knowledge acquisition? **(5)**

c) Differentiate between simple hill climbing and steepest ascent hill climbing algorithms. **(6)**

Unit - III

3. a) Explain why a single-layer perceptron cannot solve the XOR problem. Use an X_1 vs. X_2 plot to show that a straight line cannot separate the XNOR states. List the several aspects to keep in mind when selecting an appropriate neural network structure. **(10)**

b) Explain with the help of a suitable example how Perceptron can be trained using the delta rule. **(6)**

OR

3. a) Derive the weight update equation for discrete Perceptron and write its summary algorithm. **(8)**

b) Explain with suitable examples, why neural networks can handle massive amount of input/output data more efficiently than conventional computers. **(8)**

Unit - IV

4. a) What are different types of learning schemes used in training of artificial neural networks? Explain each of them clearly. **(10)**

b) Explain the following terms with respect to Neural networks :

i) Stability

ii) Plasticity

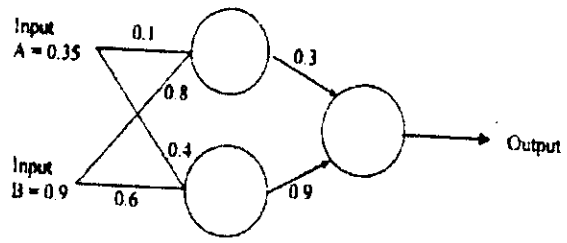
iii) Learning

iv) Architecture **(6)**

OR

4. a) Explain the limitations of backpropagation learning. Also explain the scope to overcome these limitations. **(8)**

b) Consider the simple network below : **(8)**



Assume that the neurons have a sigmoid activation function and

i) Perform a forward pass on the network.

ii) Perform a reverse pass(training)once(target = 0.5).

iii) Perform a further forward pass and comment on the result.

Unit - V

5. a) Show that when two fuzzy vectors are identical, that is **a=b**, the inner product $\mathbf{a.b^T}$ reaches a maximum while the outer product $a \oplus b^T$ reaches a minimum. **(10)**

a) Consider the problem of finding the shortest route through several cities, such that each city is visited only once and in the end return to the starting city(the travelling salesman problem).Suppose that in order to solve this problem we use a genetic algorithm, in which genes represent links between pairs of cities. For example, a link between london and paris is represented by a single gene 'LP'. Let also assume that the direction in which we travel is not important, so that LP=PL.

i) How many genes will be used in a chromosome of each individual if the number of cities is 10? **(2)**

ii) How many genes will be in the alphabet of the algorithm? **(4)**

OR

5. a) Using your own intuition, develop fuzzy membership functions on the real line for the fuzzy number "approximately 2 to approximately 8", Using the following function shapes :

i) Symmetric triangles

ii) Trapezoids

iii) Gaussian functions **(8)**

o) A budget airline company operates 3 plains and employs 5 cabin crews. Only one crew can operate on any plain on a single day, and each crew cannot work for more than two days in a row. The company uses all planes everyday. A genetic algorithm is used to work out the best combination of crews on any particular day.

i) Suggest what chromosome could represent an individual in this algorithm? **(1)**

ii) Suggest what could be the alphabet of this algorithm? What is its size? **(1)**

iii) Suggest a fitness function for this problem. **(2)**

iv) How many solutions are in this problem? Is it necessary to use Genetic algorithms for solving it? What if the company operated more plains and employed more crews? **(4)**

7E7044

Time :

Instruct

Atte
car
An
qua

1. a)

b)

1. a)

b)

2. a)

b)

374

7E7044

Roll No. _____ [Total No. of Pages : 3

7E7044

B.Tech. VII Semester (Main) Examination Dec. - 2015

Electrical & Electronics Engg.

7EX4A Non conventional Energy Sources

Common with EE

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.)*

Unit - I

1. a) On the basis of environment and economic aspects, justify the potential and use of non- conventional energy sources in power generation in Indian context. **(8)**

   b) Explain the environmental impact of Tidal power plant. **(8)**

OR

1. a) Briefly explain the different constraints in the use of renewable energy sources. **(8)**

   b) What are the reasons of tide and how it can be used for power production? Draw the layout of a tidal power plant and name its various components. **(8)**

Unit - II

2. a) How solar radiation on tilted surface can be calculated? Discuss mathematical used for the same. **(8)**

   b) Describe with neat sketch the working of solar water heating system. **(8)**

OR

2. a) Explain the following terms related to solar radiation geometry. Declination, Hour angle. Altitude angle, Zenith angle, Surface azimuth angle, Solar azimuth angle, slope, Incident angle, Day length and local apparent time. **(1×10=10)**

b) What are the principle of solar photovoltaic power generation? What are the main elements of PV system? **(6)**

Unit - III

3. a) Describe with neat sketch working of a preheat hybrid geothermal power plant. What are its merit and demerits? **(8)**

b) What is maximum efficiency of conversion of wind machine? Discuss its principle of conversion. **(8)**

OR

3. a) Explain the advantages and disadvantages of geothermal energy over other energy sources. **(8)**

b) Explain the factors on which the wind current depends. How wind blows in coastal areas? How the wind power is calculated? **(8)**

Unit - IV

4. a) Briefly explain the different methods of plasma confinement. **(8)**

b) What are the different requirements for nuclear fission and nuclear fusion? **(8)**

OR

4. a) Describe with neat sketch the working of laser fusion reactor. **(6)**

b) Explain the following term in detail. Magnetic heating pellet fusion reactor, plasma heating fusion hybrid and beam fusion. **(2×5=10)**

Unit - V

5. a) Explain the process of ethanol production from Cassava. What are the uses of ethanol in power sector? **(8)**

b) How biogas can be produced. Discuss its application and mechanism involved for generation. **(8)**

OR

5. a) What do you mean by pyrolysis? Discuss working of one of the most efficient pyrolysis unit. **(8)**

   b) What are the different factors considered for selection of biogas plant site? **(8)**

397

7E 7045

Roll No. _____ [Total No. of Pages : 3

7E 7045

B.Tech. VII Semester(Main/Back) Examination, Dec. - 2015

Electrical & Electronics Engineering

7EX5A Power System Engineering

EE,EX

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).*

Unit - I

1. a) Draw input output, heat rate and incremental rate curves of thermal generating units. **(8)**

   b) The fuel costs of two thermal units are given by $C_1 = C_1(P_{G1}) = 1.0 + 25P_{G1} + 0.2P_{G1}^2$ Rs/hr and $C_2 = C_2(P_{G2}) = 1.5 + 35P_{G2} + 0.2P_{G2}^2$ Rs/hr. If the total demand on the generators is 200MW, find the economic load scheduling of the two units. **(8)**

OR

1. a) Determine the incremental transmission loss formula for a system having three generators. **(8)**

   b) Write all the constraints considered in solving the unit commitment problem. **(8)**

Unit - II

2. a) A 50 Hz, 100 MVA, 4-pole, synchronous generator has an inertia constant of 3.5s and is supplying 0.16 pu power on a system base of 500 MVA. The input to the generator is increased to 0.18 pu. Determine:

i) The kinetic energy stored in the moving parts of the generator, and

ii) The acceleration of the generator. If the acceleration continues for 7.5 cycles, Calculate

iii) The change in rotor angle, and

iv) The speed in rpm at the end of the acceleration. **(8)**

b) Find out equation of synchronizing power coefficient. How it affects the stability? **(8)**

OR

2. a) Derive the equation of motion of the rotor of a synchronous generator by the laws of rotation. **(8)**

b) Write power angle equations and draw power angle curves for steady state and transient conditions. Give steady state stability limits. **(8)**

Unit - III

3. a) What are the assumptions commonly made in stability studies? **(7)**

b) Determine the stability limit for step change in mechanical power input to the machine, using equal area criterion. **(9)**

OR

3. a) Write possible techniques available for improvement of transient stability. **(8)**

b) Find out the equation of critical fault clearing time, for a system having sudden decrease in power output due to three phase fault on generator bus, if generator is feeding power to the infinite bus through a line. **(8)**

Unit - IV

4. a) What is the effect of varying excitation of a synchronous generator over its stiffness? Explain by curves. **(8)**

b) Write advantages and problems of inter-connected power system. **(8)**

OR

4. a) Draw the block diagram and explain the brushless excitation system. **(8)**

   b) What is the need of reserve capacity of power stations? Explain spinning and maintenance reserves. **(8)**

Unit - V

5. a) Describe one scheme of series compensation of transmission lines. What are the problems of series compensation. **(8)**

   b) Describe voltage stability analysis using P - V curves. **(8)**

OR

5. a) What are the requirements of phase angle control? Explain working of phase shifting transformer. **(8)**

   b) Explain power system security analysis. **(8)**

Ro

7E7047

Time : 3 H

Instruction

Attempt
carry e
Any da
quantit

a) De
ma

b) A 3
dia
has

c) Ex
for

a) Der
effe

b) The
slot

2mr

The

7E7047

Roll No. _____ [Total No. of Pages : 5

7E7047

B.Tech. VII Semester (Main/Back) Examination, Dec. - 2015

Electrical & Electronics Engg.

7EX6.2A Computer Aided Design of Electrical Machines

Common with EE

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.*

Unit - I

a) Define specific magnetic loading and specific electric loading of an electrical machine and explain them.

b) A 350 KW, 500 volt, 450 rpm, 6-pole, dc generator is built with an armature diameter of 0.87 meter and core length of 0.32 meter. The lap wound armature has 660 conductor. Calculate specific magnetic and specific electric loading.

c) Explain what is meant by real and apparent flux density. Derive an expression for the relation between these two. **(3+6+7)**

OR

a) Derive an equation for output of 3-phase ac rotating machines and explain the effect of output coefficient on design of machines.

b) The stator of a machine has a smooth surface but its rotor has open type of slots with slot width W_s = tooth width = 12 mm, and the length of airgap lg = 2mm. Find the effective length of airgap if carter's coefficient $= \frac{1}{1+5lg/w_s}$. There are no radial ducts.

c) Show that the output of an electrical machine is reduced by about 22%. If the copper winding of machine is replaced by aluminium winding. **(6+6+4)**

Unit - II

2. a) i) What are the different methods of heat dissipation?

ii) Derive the equation for temperature rise at any time for an electrical machine when it is running. **(2+6)**

b) An induction motor works at full load for 20 minutes and at no load for 15 minutes. The heating time constant is 2 hours and the cooling time constant is 3 hours. If the final steady temperature rise on continuous full load is 50^0C, find the mean temperature rise when the machine operates indefinitely on its load cycle. Given that: copper losses at full load = 500 W and iron losses = 300 W. **(8)**

OR

2. a) Define the following related to electrical machines.

i) Continuous rating

ii) Short time rating.

iii) Intermittent rating.

b) Derive the equation for mean temperature rise of an electrical machine, whe it is operating intermittently.

c) A 500 KVA transformer has a total losses of 7.5 KW at full load. The rate o heat dissipation from tank walls is 300 W/^{0}C rise and the heat energy require to rise its temperature by 1^0C is 0.45 Kwh. Calculate

i) Final steady temperature rise and thermal time constant of transformer

ii) Half hour rating of the transformer to give the same temperature rise, copper loss at full load is twice the iron loss. **3+5+(4+**

Unit - III

3. a) Derive an equation for output of a 3-phase transformer by first principles.

b) Explain why power transformers are designed to have maximum efficiency or near full load, while distribution transformers are designed to have maximu efficiency at about half of full load.

c) Estimate the main dimensions of Core for a 50 Hz, 3-phase, 200 KVA, 6600/ 500 volts, star / delta core type transformer. Use following data core limb section to be 4-stepped.

Window space factor = 0.27.

Ratio of height of window to width of window =2

Current density = 2.8 Amp / mm^2

max. flux density = 1.25 web / $meter^2$

Voltage per turn = 8.5 **(5+3+8)**

OR

3. a) Derive an equation for voltage per turn in terms of phase output of a transformer.

b) What are different types of windings used in power transformer.

Explain with neat sketches the following types of windings.

i) Cross-over windings

ii) DISC winding

iii) Helical windings.

c) A 200 KVA, 6600/440 volts, 3-phase, delta - star connected 50 Hz, core type transformer has the following particulars:

Max. flux density = 1.3 web/m^2

Current density = 2.5 Amp/mm^2

Window space factor = 0.3

Over all height = Overall width

Window area = 1.25 times core area.

Determine the overall dimensions of core. **(4+4+8)**

Unit - IV

4. a) Explain why a stationary armature and revolving field type of construction is most convenient for a synchronous generator.

b) Give reasons why a turbo-alternator has smaller diameter and larger length whereas a water wheel generator has larger diameter and smaller length.

c) Explain the terms critical speed and run - away speed with reference to synchronous machines.

d) Design the suitable values of diameter and length of a 75 MVA, 11KV, 50 Hz, 3000 rpm, 3-phase, star-connected alternator. Also find the values of flux, and number of turns per phase. Given that.

Average gap density = 0.6 web/m^2.

Specific electric loading = 50000 ampere - cond/m

Peripheral speed = 180 m/sec.

Winding factor = 0.95. **(3+3+3+7)**

OR

4. a) Explain the term 'Short Circuit Ratio (SCR) related to synchronous machines. Show that SCR is inversely proportional to the synchronous reactance of machine.

b) Discuss the five factors which influence the selection of specific magnetic and specific electric loading, in design of synchronous machines.

c) A 1250 KVA, 3-phase, 50Hz, 3300 volt, 300 rpm synchronous generator has the following data.

Specific magnetic loading = 0.58 web/m^2

Specific electric loading = 33000 Ac/m

Peripheral speed = 30 m/sec.

Winding factor = 0.955.

Find the main dimensions, turns per phase and current per phase for the machine. **(6+3+7)**

Unit - V

5. a) Explain the following for an Induction motor

i) Why is power factor poor when the machine is designed with a high specific magnetic loading?

ii) Why is the over load capacity low when the machine is designed with high specific electric loading?

b) What do you mean by the phenomenon of cogging and crawling in an Induction motor. What steps are considered at the design stage to avoid these phenomenon?

c) A 15 HP, 400 volt, 1430 rpm, 3-phase induction motor with an efficiency of 80% and Pf of 81% has inner diameter of stator 30 cm, and Length 12 cm.

Estimate the diameter and length for a 50 HP, 406 volt, 4-pole, 50Hz induction motor to be designed for 84% efficiency and 85% P.F, assuming same specific loadings as the previous motor. **(4+4+8)**

OR

5. a) i) Derive the output equation of 3-phase induction motor.

ii) What are the different criteria of design of 3-phase induction motor. Briefly explain.

b) Determine the main dimensions, turns per phase of a 250 h.p, 3-phase, 50Hz, 400V, 1410 rpm, slip ring induction motor. Assume: Average flux density in air gap = 0.5 web/m^2, specific elect. loading = 30000 Ac/m, efficiency = 0.9, power factor = 0.9, winding factor = 0.955, ratio of core length to pole pitch = 1.2. The machine is delta connected. **(4+4=8)**

7E 4171

Roll No. _____ [Total No. of Pages : 3]

7E 4171

B.Tech. VII Semester (Back) Examination, Nov./Dec. - 2015

Electrical Engineering

7EE1(O) DataBase Management System

Common With EX

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.*

Unit - I

1. a) Explain the role of Key's in DBMS with the help of example **(8)**

   b) What are the Benefits of ER Modeling and explain with the help of an example how ER modeling is done. **(8)**

OR

1. a) Explain Composite Attribute also mention the differences between Composite and multivalued attributes **(10)**

   b) Explain Relational data model in detail **(6)**

Unit - II

2. a) Define Normalization with its requirement in DBMS **(6)**

   b) With the help of appropriate example.Explain all the forms of Normalization in detail **(10)**

OR

2. a) What are the differences between physical and logical databases? Explain with the help of example. **(8)**

b) Explain Natural join operator and select operator with relation to relational Algebra with the help of example. **(8)**

Unit - III

3. a) What is the difference between SQL and Embedded SQL **(6)**

b) Consider the following structure

Column Name	Data Type	Size
S.No.	Varchar 2	5
Name	Varchar 2	24
Address	Varchar 2	28
Pin code	Number	6
Balance	Number	20,2

Perform the following operations for the above structure.

i) Create a Client master table for the structure

ii) Display all entries in the table

iii) Insert an entry in the table. Show with an example

iv) Delete the client whose balance is less then 1000

v) Rename the table **(10)**

OR

3. Write short notes on.

a) Stored Procedures

b) Triggers

c) Database security

d) JDBC **(4×4)**

Unit - IV

4. Explain hash functions with its types in detail? What are the problems arises in hash file organization and what are the solutions? Explain **(16)**

OR

4. a) Explain the differences between sequential, indexed and random files. **(10)**

   b) Explain Inverted and multilist structures in detail. **(6)**

Unit - V

5. a) Explain the ACID properties in detail. **(6)**

   b) Give reasons why concurrency occurs also give the solution to solve the concurrency problem. **(10)**

OR

5. a) Explain log based Recovery system in detail. **(6)**
   b) What are the advantages and disadvantages of strict two phase Locking **(6)**
   c) Define Serializablity with its types **(4)**

7E4174

Roll No. _____ [Total No. of Pages 3]

7E4174

B.Tech. VII Semester (Back) Examination Dec.- 2015

Electrical Engineering.

7EE4 (O) Utilization of Electrical Power

EX

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.)*

Unit - I

1. a) Give classification of various dielectric heating method along with their working principle? **(8)**

   b) Explain high frequency eddy current heating with suitable diagram? **(8)**

OR

1. a) Briefly describe the principle of induction heating at high frequency and highlight few applications of eddy current heating **(8)**

   b) Explain electric welding , classified it and explain arc welding? (8)

Unit - II

2. a) It is desired to illuminate a drawing hall with an average illumination of about 250 lux. Area of hall is 30 m x 20 m . Lamps are to be fitted at 5m height .Find out the no. and size of incandescent lamps required for an efficiency of12 lumens / watt utilization factor = 0.4 and maintenance factor is 0.85. **(8)**

   b) Explain illuminations , define its law and also explain luminous efficiency? **(8)**

OR

2. a) A building measuring 30m×20m is to be flood it on the front side with brightness of 25 lumen / Sqmtr coefficient of reflection is 0.25 . Lamps of 500 w having lumens output of 8000 each are used assumed beam factor = 0.6 , waste light factor 1.2 and maintenance factor 0.75 determine no. of lamps required . **(8)**

b) With help of neat sketch diagram explain construction and working of sodium vapour lamp. **(8)**

Unit - III

3. a) Explain principles and applications of electrolysis provide a suitable diagram if needed? **(8)**

b) Describe the phenomina of electrode position also provide factor which on which quantity of electrode position depends? **(8)**

OR

3. a) Explain electro extraction and electroplating , also describe its performance method? **(8)**

b) Explain the following terms in detail **(8)**

i) Electro polishing

ii) Electrocleaning.

Unit - IV

4. a) Explain the suitability of DC series motor for its application in electric locomotive for traction duty? **(8)**

b) Explain supply for electric traction system: comparison and application of different system. **(8)**

OR

4. a) Explain Ac system of electric traction with help of suitable comparision and neat diagram . **(8)**

b) Write short note on :

i) Conductor rail

ii) Pantograph. **(8)**

Unit - V

5. a) The peripheral speed of a railway traction motor cannot be allowed to exceed 45 m/s. If gear ratio is 16/64, motor armature diameter 40 cm and wheel diameter 84cm cal limiting value of train speed . **(8)**

   b) Explain various method of electric braking for traction motors. **(8)**

OR

5. a) Suburban electric train has max . Speed of 70 km/hr. Schedule speed including a stop of 20 sec is 40 km/hr. If acceleration is 2 km/h/s. Find the value of retar dation when average distance between stop is 4 km. **(8)**

   b) Describe the mechanics of train movement also explain Co-efficient of adhesion? **(8)**