



8th Semester End Term Examination: 2021-22.

Subject : Neural Network System

Roll No:

Course : B.TECH [EEEE]

Full Marks : 70

Time : 3 Hours.

Instructions to the Candidates:

- Read the question paper very carefully.
- Start writing from 2nd page onwards; Don't Write On The 1st Page Backside.
- Question Paper is divided into Three Parts -A, B & C.
- Part-A is containing 12 multiple choice questions.
- Part- B containing SIX questions out of which FOUR questions are to be answered.
- Part C containing FOUR questions out of which TWO questions are to be answered.
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PART - A

Multiple Choice Questions

[12x1=12]

1. Why do we need biological neural networks?
 - a. To solve tasks like machine vision & natural language processing
 - b. To apply heuristic search methods to find solutions of problem
 - c. To make smart human interactive & user friendly system
 - d. All of the mentioned
2. What are the general tasks that are performed with back-propagation algorithm?
 - a. Pattern mapping
 - b. Prediction
 - c. Function approximation
 - d. All of the mentioned
3. What is unsupervised learning?
 - a. features of group explicitly stated
 - b. number of groups may be known
 - c. neither feature & nor number of groups is known
 - d. none of the mentioned
4. Which of the following is true for neural networks?
 - (i) The training time depends on the size of the network.
 - (ii) Neural networks can be simulated on a conventional computer.
 - (iii) Artificial neurons are identical in operation to biological ones.

6. All of the mentioned
 - a. (i) and (ii) are true
 - b. (ii) is true
 - c. None of the mentioned
 - d. None of the mentioned
7. What is true regarding back-propagation rule?
 - a. It is also called generalized delta rule
 - b. Error in output is propagated backwards only to determine weight updates
 - c. There is no feedback of signal at any stage
 - d. All of the mentioned
8. What is true regarding back-propagation rule?
 - a. It is a feedback neural network
 - b. actual output is determined by computing the outputs of units for each hidden layer
 - c. Hidden layers output is not all important, they are only meant for supporting input and output layers
 - d. None of the mentioned
9. What's the main point of difference between human & machine intelligence?
 - a. Human perceive everything as a pattern while machine perceive it merely as data
 - b. Human have emotions
 - c. Human have more iq & intellect
 - d. Human have sense organs
10. What is perceptron?
 - a. A single layer feed-forward neural network with pre-processing
 - b. An auto-associative neural network
 - c. A double layer auto-associative neural network
 - d. A neural network that contains feedback
11. What is the objective of back propagation algorithm?
 - a. To develop learning algorithm for multilayer feed forward neural network
 - b. To develop learning algorithm for single layer feed forward neural network
 - c. To develop learning algorithm for multilayer feed forward neural network, so that network can be trained
 - d. To capture the mapping implicitly
 - e. None of the mentioned
12. What is supervised learning?
 - a. Weight adjustment based on deviation of desired output from actual output
 - b. Weight adjustment based on desired output only
 - c. Weight adjustment based on actual output only
 - d. None of the mentioned
13. The back propagation law is also known as generalized delta rule, is it true?
 - a. yes
 - b. no

12. What are general limitations of back propagation rule?
 - a. local minima problem
 - b. scaling
 - c. slow convergenc
 - d. all of the mentioned

PART - B

Answer any FOUR out of SIX

[4x7=28]

1. Explain the model of a neuron with proper diagram.
2. What is linear Separability? Explain feed forward network.
3. Explain Bi-directional Associative memory.
4. How a Boltzman machine work? Mention two applications.
5. Explain MC-Culloch Pitts neuron in Artificial Neural Network.
6. Explain Supervised, Unsupervised and Reinforcement learning.

PART-C

Answer any TWO out of FOUR

[2x15=30]

1. Define an activation function. Describe the various activation functions used. Explain perceptron.
2. Explain how back propagation network is trained.
3. Explain Hebbian-Learning rule in details. Explain two Supervised Learning Techniques Regression and classification.
4. Write Short note on the following
 - a. Single Layer and Multi Layer Perceptron
 - b. Self Organizing Maps
 - c. Associative memory network



8th Semester End Term Examination: 2021-22.

Subject : VLSI System Design

Roll No:

Course : B.TECH [EEE]

Full Marks : 70

Time : 3 Hours.

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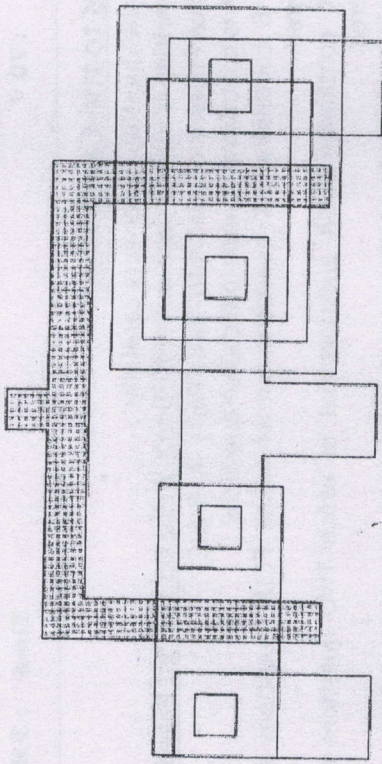
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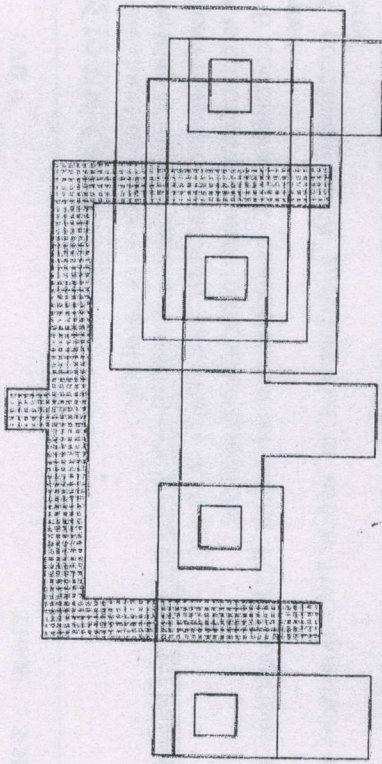
PART - A

Multiple Choice Questions

[12x1=12]

1. VLSI technology uses _____ to form integrated circuit.
a) transistor b) switches c) diodes d) buffers
b) n substrate
d) none of the mentioned
2. P-well is created on _____
a) p substrate b) n substrate
c) p & n substrate d) none of the mentioned
3. The scaling factor of gate area in constant voltage model is:
a) $1/\alpha^2$ b) $1/\beta^2$ c) 1 d) All of the mentioned
4. CMOS inverter has _____ regions of operation.
a) three b) four c) two d) five
5. The scaling factor for the supply voltage VDD is:
a) 1 b) 0 c) $1/\alpha$ d) $1/\beta$
6. n-well is created on _____
a) p substrate b) n substrate
c) p & n substrate d) none of the mentioned

- Stick diagrams are those which convey layer information through?
 - thickness
 - color
 - shapes
 - layers
- Silicon oxide is patterned on a substrate using _____.
 - Physical lithography
 - Photolithography
 - Chemical lithography
 - Mechanical lithography
- Which process is involved in growing the shaded region?
 



- _____ architecture is used to design VLSI.
 - system on a device
 - system on a chip
 - single open circuit
 - system on a circuit
- Which is the high level representation of VLSI design?
 - problem statement
 - HDL program
 - logic design
 - functional design

- Which type of MOSFET exhibit no current at zero gate voltage?
 - Depletion MOSFET
 - Enhancement MOSFET
 - Both a and b
 - None of the above

PART - B

Answer any FOUR out of SIX

[4x7=28]

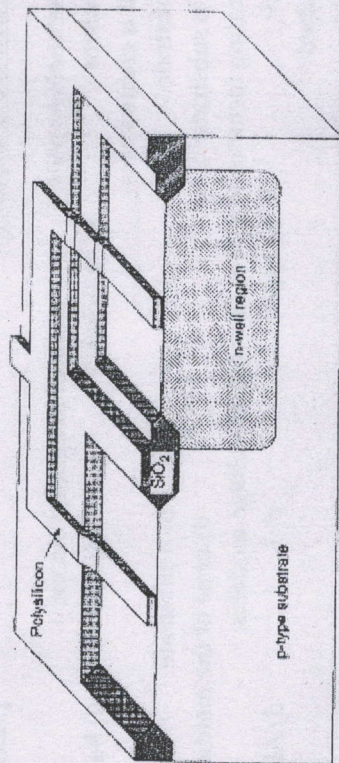
- What is scaling of a MOS? Discuss the parameters used for scaling.
- Why surface inversion is an essential condition for MOS operation?
- Explain the condition of channel shortening in a MOSFET.
- Discuss in detail the concept of floor planning and its various constraint.
- Draw and explain the layout for CMOS 2-input NAND gate.
- Explain any two of the following:
 - Pseudo NMOS
 - Domino CMOS Logic
 - Dynamic CMOS Logic

PART-C

Answer any TWO out of FOUR

[2x15=30]

- Describe in details the steps involved in the fabrication of CMOS.
- Design a resistive load inverter and discuss the VTC curve for the same.
- Derive an expression for drain current in n-channel MOSFET for saturation mode operation.
- Draw the circuit diagram; stick diagram and layout for CMOS inverter.



- Chemical vapor deposition (CVD)
- Sputtering and patterned by etching
- Chemical vapor deposition (CVD) and patterned by HF acid etching
- Chemical vapor deposition (CVD) and patterned by dry (plasma) etching

16/5/22



ARKAJAIN
University
Jharkhand

8th Semester End Term Examination: 2021-22.

Subject

: Power System Operation and Control Roll No:

Course

: B.TECH [EEE]

Full Marks

: 70

Time : 3 Hours.

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PART - A

Multiple Choice Questions

[12x1=12]

1. If the load on an isolated generator is increased without increasing the power input to the prime mover:
 - a) The generator will slow down.
 - b) The generator voltage will increase.
 - c) The generator will speed up.
 - d) The generator field
2. Area of frequency response characteristic ' β' ' is:
 - a) $1/R$.
 - b) $B + 1/R$.
 - c) B.
 - d) $B - 1/R$.
3. Power factor can be improved by installing such a device in parallel with load, which takes:
 - a) Lagging reactive power.
 - b) Apparent power.
 - c) Leading reactive power.
 - d) None of these.
4. Unit of R is.....
 - a) Hz/MV Ar.
 - b) Hz/MW.
 - c) Hz/MVA.
 - d) Hz-s.
5. In a two-area case, ACE is:
 - a) Change in frequency.
 - b) Linear combination of both (a) and (b)
 - c) Change in tie-line power.
 - d) None of these.

PART - B

Answer any FOUR out of SIX

[4x7=28]

1. What is meant by AFRC? Explain the load frequency control of single area system for controlled case.
2. What are various operating states of the system?
3. What are the various methods of voltage control in transmission system? Distinguish between on load and off-load tap changing Transformer.
4. Describe EMS & function of EMS.
5. Draw & explain the heat rate curve, fuel cost curve & incremental fuel cost curve. Also write power loss formula & Penalty factor. Develop the state variable model of a single area system and state the advantages of the model

PART-C

Answer any TWO out of FOUR

[2x15=30]

1. What is meant by control area? Two interconnected Area-1 and Area-2 have the capacity of 2,000 MW and 500 MW, respectively. The incremental regulation and damping torque coefficient for each area on its own base are 0.2p.u. and 0.8p.u. Respectively. Find the steady-state change in system frequency from a nominal frequency of 50 Hz and the change in steady-state tie-line power following a 75 MW change in the load of Area-1
2. Explain a typical turbine speed governing system and derive its transfer function.
3. What is load curve, give some difference between load curve & load duration curve. The daily demands of three consumers are given below:

Time	Consumer 1	Consumer 2	Consumer 3
12 midnight to 8 AM	100 W	200 W	300 W
8 AM to 2 PM	700 W	400 W	200 W
2 PM to 4 PM	300 W	1200 W	1500 W
4 PM to 10 PM	800 W	500 W	400 W
10 PM to Midnight	500 W	400 W	100 W

Plot the load curve & find the followings

- a. Maximum demand of individual consumer
 - b. Diversity Factor
 - c. Load factor of individual consumer
 - d. Load factor of the station
4. What is static VAR compensator? Mention the different types of SVC. Where it is used? State the merits of static VAR compensator over the other methods of voltage control.

6. The load curve describe
 - a) Generation with respect to load
 - b) Variation of load with respect to time
 - c) Generation with respect to time
 - d) None of above
7. The penalty factor
 - a) Is always less than 1.
 - b) May be more or less than 1.
 - c) Is always more than 1
 - d) Is equal to 1 or less than
8. A static VAR compensator is a
 - a) Voltage controlled shunt compensation device
 - b) Current controlled shunt compensation device
 - c) Voltage controlled series compensation device
 - d) Current controlled series compensation device
9. In fly ball speed governor, The increase in speed results in
 - a) Fly ball move outwards
 - b) Fly ball move inwards
 - c) Fly ball remain in same position
 - d) None of above
10. Match the following
 1. Master Station
 2. Data Acquisition
 3. Turbine-Governor
 4. Bad Measurement
 - a) 1-4,2-3,3-2,4-1
 - b) 1-3,2-4,3-2,4-1
 - c) 1-4,2-1,3-2,4-3
 - d) 1-4,2-3,3-1,4-2
11. The basic function of LFC is
 - a) To maintain frequency for variations in real-power demand.
 - b) To maintain voltage for variations in reactive power demand
 - c) To maintain both voltage and frequency for variations in real-power demand.
 - d) To maintain both voltage and frequency for variations in reactive-power demand
12. Hydraulic amplifier consists of
 - a) Pilot valve
 - b) Main piston
 - c) Both a and b
 - d) Steam valve



ARKAJAIN
University
Jharkhand

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Subject : Industrial Drives & control **Roll No:**

Course : B.Tech EEE

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PART - A

Multiple Choice Questions

[12x1=12]

1. Duty Cycle is ratio of
 - a. Ton/Toff b. Ton/T c. Toff/T d. Toff/Ton
2. What is an electric drive?
 - a. A machine that converts electrical energy into kinetic energy
 - b. A machine that converts mechanical energy into electrical energy
 - c. A machine that converts electrical energy into mechanical energy
 - d. A machine that converts kinetic energy into electrical energy.
3. In multiquadrant operation of drives, forward motoring is possible in
 - a. Quadrant I b. Quadrant II c. Quadrant III d. Quadrant IV
4. Chopper circuit converts
 - a. Fixed DC voltage to variable DC voltage
 - b. Fixed AC frequency to variable AC Frequency
 - c. Fixed AC voltage to fixed DC voltage
 - d. None of these

5. Which of these is not a part of Electrical Drives.

- a. Power Modulator
- b. Electric Motor
- c. Source
- d. Wires

6. _____ is a constant speed motor.

- a. Synchronous Motor
- b. Universal motor
- c. Induction motor
- d. DC series motor

7. Which of these is not a starter for three phase induction motor?

- a. Auto transformer starter
- b. Direct On line starter
- c. Star Delta starter
- d. 3-point starter

8. In Squirrel cage induction motor which of the following method for starting cannot be used?

- a. Resistance in rotor circuit
- b. Autotransformer starting
- c. Resistance in stator circuit
- d. Star Delta starting

9. _____ Motor has relatively wider range of speed control.

- a. Synchronous motor
- b. Squirrel cage induction motor
- c. Slip ring induction motor
- d. DC shunt motor

10. _____ has least range of speed control.

- a. Slip ring induction motor
- b. DC shunt motor
- c. Synchronous motor
- d. Schrage motor

11. A slip ring rotor induction motor is preferred over squirrel cage induction motor, when major consideration is

- a. Slow speed operation
- b. Low winding losses
- c. High starting torque
- d. All of the above

12. Which of the following happens when star delta starter is used for starting three phase induction motor?

- a. Starting voltage is reduced
- b. Both (a) & (b)
- c. Starting current is reduced
- d. None of the above

PART B

ANSWER ANY FOUR OUT OF SIX

(4x7=28)

1. Mention the various converters required for motor drive with suitable circuit diagrams.
2. Explain two quadrant & four quadrant operation of a DC drive with suitable diagram.
3. Explain Steady State condition performance of Chopper with suitable derivation & diagram.
4. Explain the Plugging braking mechanism & Regenerative braking mechanism.
5. Write a note on Rotor Resistance Control of a slip-ring Induction motor. Also explain the conventional method & Static rotor resistance control method.
6. What are the effects on change of rotor resistance on torque-speed curve of three phase Induction motor?

PART C

ANSWER ANY TWO OUT OF FOUR:

(2x15=30)

1. Write a detailed note on Electrical Drives with its advantages. And also explain the essential parts of an electrical drive.
2. Discuss the Slip Power Recovery of three-phase slip ring Induction motor. Also briefly explain two such schemes i.e. Static Scherbius Drive & Static Kramer Drive.
3. Elaborate the working of Voltage Source Inverter (VSI) Induction Motor Drives. Also mention the drawbacks suffered by an induction motor drive fed from Stepped wave inverter.
4. Explain the closed loop speed control & current limit closed loop control of drives using suitable block diagrams.