

FACULTY OF ENGINEERING**B.E. 4/4 (EEE/Inst.) II-Semester (Main) Examination, April / May 2013****Subject : Neural Networks
(Elective-III)****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions of Part - A and answer any five questions from Part-B.****PART – A (25 Marks)**

1. Compare various neural Network architecture. (3)
2. What is error correction learning and competitive learning? (3)
3. How knowledge is represented in Neural Network? (3)
4. What are the node properties ? (2)
5. Does perception requires supervised learning ? Justify the answer. (2)
6. What is linear separability? (2)
7. What is meant by continuous Hopfield Net? (2)
8. What are the applications of ANN? (3)
9. What is AXON? (2)
10. How Neural Networks are functionally classified? (3)

PART – B (50 Marks)

11. Describe the different models of Neural Networks with diagrams. (10)
- 12.(a) What is an activation function ? List few activation functions. (5)
(b) What is Hybrid Intelligence? How it is used in Neural Network design? (5)
13. Explain the learning of NNW and output calculation with example. (10)
14. Explain Back propagation algorithm. Discuss the factors that influence the back propagation algorithm. (10)
- 15.(a) Differentiate supervised and unsupervised learning. (3)
(b) How information processing is done in human brain? (7)
16. Use a BAM to store three pairs of vectors as follows. (10)
Original vector
 $A_1=[1, -1,1]$ $B_1=[-1, 1, 1, -1]$
 $A_2=[-1, 1,1]$ $B_2=[1, -1, 1, 1]$
 $A_3=[1, 1,1]$ $B_3=[-1, 1, 1, -1]$
 (i) Specify the networks structure.
 (ii) Examine whether the BAM can Accurately retrieve the associated vector given each of the original vector.
17. (a) Explain Kohonen algorithm. (5)
(b) Explain Boltzman's machine algorithm. (5)

FACULTY OF ENGINEERING**B.E. 4/4 (EEE) II-Semester (Main) Examination, April / May 2013****Subject : Image Processing
(Elective-III)****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions of Part - A and answer any five questions from Part-B.****PART – A (25 Marks)**

1. Name few applications of digital image processing. (3)
2. Explain the terms :
(i) Radiance (ii) Luminance (iii) Brightness (2)
3. Write any five properties of 2D-DFT. (3)
4. Write a short notes on BUTTER worth high pass filters. (2)
5. Briefly explain edge detection. (3)
6. Discuss briefly region splitting and merging. (2)
7. Describe the image fidelity criteria for image compression. (3)
8. What is the need of "image compression in image processing"? (2)
9. Explain image degradation model with a block diagram. (3)
10. Discuss any three types of noise. (2)

PART – B (5x10=50 Marks)

- 11.(a) Explain the fundamental steps in digital image processing. (6)
(b) Illustrate the "Representation of the Digital image" in image processing. (4)
- 12.(a) Discuss about different spatial domain filtering techniques. (5)
(b) Draw the block diagram for filtering in frequency domain? Explain in brief. (5)
- 13.(a) Write the properties of 1D-DFT and 2D-DFT. (6)
(b) Explain the image sharpening using frequency domain filters. (4)
- 14.(a) Explain about histogram equalization with example. (5)
(b) Explain line and Edge detection algorithms. (5)
15. Explain global thresholding. Write Otsu's algorithm. (10)
16. Explain Huffman coding with an example. (10)
17. Write short notes on the following:
(a) Explain about Rayleigh noise and Earlang (gamma) noise (4)
(b) Distinguish lossy and lossless compression. (3)
(c) Aliasing (3)

FACULTY OF ENGINEERING

B.E. 4/4 (EEE) II-Semester (Main) Examination, April / May 2013

**Subject : Electronic Instrumentation Systems
(Elective-III)**

Time : 3 Hours

Max. Marks: 75

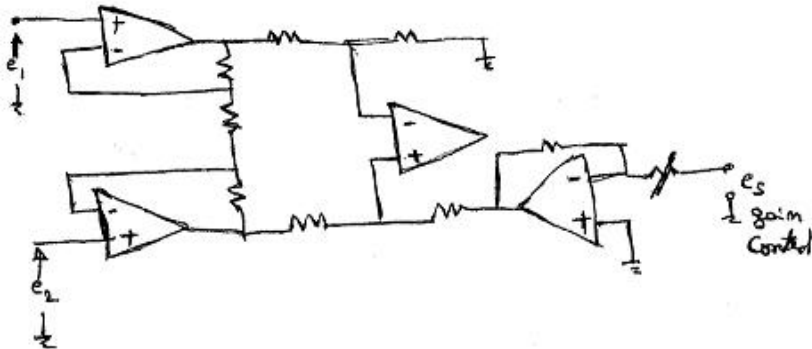
Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. List the specification of microprocessor compatible ADC. (3)
2. Differentiate active and passive transducers. (3)
3. List the advantages of successive approximation register ADC. (3)
4. Discuss different methods of Resistance to voltage conversion. (3)
5. Write a short note on were meter. (3)
6. List the applications of successive type of log IF amplifiers. (2)
7. What is meant by synthesized signal generation? (2)
8. Define RMS value. (2)
9. List the applications of digital storage oscilloscope. (2)
10. List the applications of Isolation amplifiers. (2)

PART – B (50 Marks)

11. An instrumentation on amplifier having a gain settable in the range of 10 to 100 is desired for a certain system. Show how this can be realized using the circuit shown in figure and a linear 10 turn potentiometer of value 100 k ohms.



- 12.(a) Derive an expression for output voltage of a 4 bit R-2R network DAC.
(b) An 8 bit ACT produces a full scale output with a 2V input signal. Determine the output word given the following inputs.
(i) 100 mV (ii) 10 μ V (iii) 0V (iv) 1.259V
- 13.(a) With a neat sketch explain the operation of a Op-Amp based current to voltage convertor.
(b) Explain different techniques that can be used for measuring low frequencies.
- 14.(a) What is meant by fundamental suppression in harmonic analysis?
(b) With a neat sketch explain the operation of were analyzer.
15. Explain in detail the procedure of testing an Audio amplifier using a computer.
16. With a neat block diagram, explain the operation of magnetic recorder.
17. Write short notes on the following:
 - (a) Vertical Amplifier
 - (b) Relay switch attenuation
 - (c) Spectrum Analysis

FACULTY OF ENGINEERING
B.E. 4/4 (EEE/Inst.) II-Semester (Main) Examination, April / May 2013

Subject : Reliability Engineering
(Elective-III)

Time : 3 Hours

Max. Marks: 75

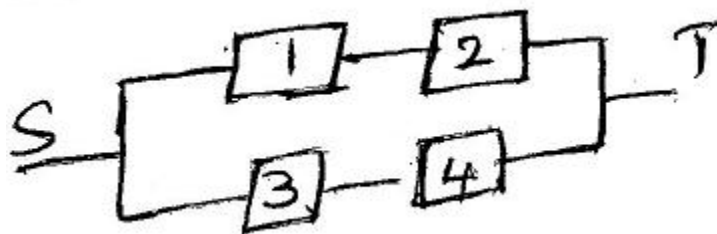
Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. Explain the properties of Probability distribution function. (3)
2. Define the variance of Random variable. (2)
3. What is Reliability function? (2)
4. What are the causes of failure? (3)
5. What is mean by Redundancy? (2)
6. A system is designed with overall reliability of 0.999. Using components having individual reliability of 0.7. What is the minimum number of components that must be connected in parallel? (3)
7. What is over-haul and what is replacement? (3)
8. Explain what is preventive maintenance. (2)
9. What is capacity outage probability Table? (2)
10. Write short notes on frequency of failures. (3)

PART – B (50 Marks)

- 11.(a) What is Poisson distribution? Write down the conditions to satisfy Poisson process. (4)
- (b) The probability that a particular type of thyristor will survive a given high voltage test is 0.75. If the test is carried out on 15 thyristors, find the probability that (2+2+2)
 - (i) Exactly 10 will survive
 - (ii) Atleast five will not survive and
 - (iii) Atleast 12 will survive
- 12.(a) Explain the Bath Tub curve in detail. (5)
- (b) A component with an MTTF of 100 Hours is known to have exponential distribution. Calculate the reliability of the component for a mission time of 10 hours. (5)
- 13.(a) Derive the expression for reliability of the given example by using cut set method. (5)



- (b) A system consists of 4 components in parallel system requires that atleast 3 out of 4 must function (5)
 - (i) What is the system reliability if each component has a reliability of 0.9 and
 - (ii) What is the system reliability if 5 components are there to perform the same function? (5)

..2..

- 14.(a) Explain the following terms : (5)
- (i) Mean Time Between failure (MTBF)
 - (ii) Maintainability
 - (iii) State transition matrix
- (b) Explain detail an optimum maintenance policy. (5)
15. Find the cumulative probability and uncumulative frequency of 3 unit generating system having capacities of 2 units of 25 MW each and one unit of 50 MW with each having failure rate of 0.01 failures / day and repair rare of 0.49 repairs / day. (10)
16. Explain in detail the following :
- (a) Exponential distribution (3)
 - (b) Mean time to failure (MTTF) (3)
 - (c) Failure rate and failure density (4)
17. Explain in detail following:
- (a) Normal distribution (3)
 - (b) Significance of Tie set method with evaluation of reliability (3)
 - (c) Distinguish between the terms Reliability and Availability (4)

FACULTY OF ENGINEERING

B.E. 4/4 (EEE) II-Semester (Main) Examination, April / May 2013

**Subject : Power System Reliability
(Elective-III)**

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. Write any three properties of Binomial distribution. (3)
2. Define variance of a Random variable. (2)
3. Write down the types of failures. (2)
4. What is Reliability Logic diagram? (3)
5. What is Stochastic Transitional probability matrix? (3)
6. What is the principle of limiting state probability evaluation? (2)
7. What is cumulative probability? (2)
8. What is Sequential Addition method ? Discuss. (3)
9. What are the Transient failures? (2)
10. Write short notes on weather effects. (3)

PART – B (50 Marks)

- 11.(a) Write short notes on Poisson distribution. (4)
- (b) Consider the case in which the probability of success in a single trial is $1/4$ and four trials are to be made. Evaluate the individual and cumulative probabilities of success and draw the two respective probability functions. (6)
- 12.(a) Derive the expression for MTTF when the components are connected in series in terms of failure rates. (4)
- (b) Consider a system comprising of 4 identical units with having the failure rate of 0.1 F/yr. Evaluate the probability of the system surviving 5 years, of atleast 2 units operate successfully. (6)
- 13.(a) Evaluate the limiting state probabilities associated with the following figure (1). (5)

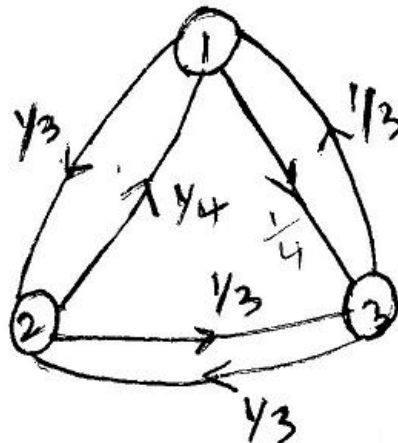


Fig. 1

- (b) For the given figure (2) if state 2' is an absorbing state, evaluate the expected member of intervals the system can reside in other state. (5)

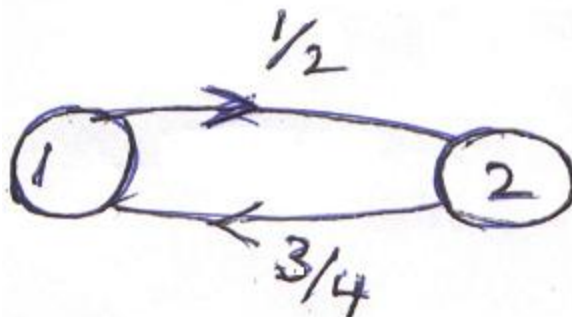


Fig. 2

..2..

14. Find the cumulative probability and cumulative frequency of 3 unit generating system having capacities of 2 units of 25 MW each and one of 50 MW with each having failure rate of 0.01 f/day and repair rate of 0.49 r/day. (10)
- 15.(a) Discuss various performance indices that are used for reliability analysis. (5)
(b) Explain in detail about scheduled maintenance. (5)
- 16.(a) Explain in detail Bath Tub curve. (5)
(b) A generating station has 5 units each of 20 MW capacity. The probability of failure of any unit is 0.06. What is the probability of the station not been able to generate 70 MW? (5)
- 17.(a) Write short notes on 2-level daily load representation. (5)
(b) Evaluate the limiting state probability of one component repairable system with STPM approach.

FACULTY OF ENGINEERING**B.E. 4/4 (EEE/Inst.) II-Semester (Main) Examination, April / May 2013****Subject : Soft Computing
(Elective-III)****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions of Part - A and answer any five questions from Part-B.****PART – A (25 Marks)**

1. Define Neural Network. (2)
2. Explain Supervised Learning. (3)
3. Explain Delta rule for single output unit. (3)
4. What is meant by defuzzification? (2)
5. Explain hybrid Genetic Algorithm. (3)
6. Write the two excluded middle laws for fuzzy sets. (2)
7. What is ART Neural Networks? (2)
8. Write Back propagation Network Learning rules. (2)
9. Define fuzzy equivalence relation. (3)
10. Give any 3 applications of genetic algorithm. (3)

PART – B (50 Marks)

- 11.(a) How Neural Networks are classified according to Network architecture. (5)
(b) Explain about Hebbian learning. (5)
- 12.(a) Explain Back propagation Network. (5)
(b) Explain perception Learning rule. (5)
13. Describe the architecture of the following networks (10)
(a) Hop field Network and (b) BAM Network
14. Explain defuzzification methods in detail. (10)
- 15.(a) Give the differences between Traditional Algorithm and Genetic Algorithm. (3)
(b) Explain the working of genetic programming. (7)
- 16.(a) Explain Mc Culloch - Pitts Neuron model. (5)
(b) Explain Adaline. (5)
17. Write short notes on the following: (5+5)
(a) Kohonen self organizing Network
(b) Adaptive Resonance Theory

FACULTY OF ENGINEERING**B.E. 4/4 (EEE) II-Semester (Main) Examination, April / May 2013****Subject : Technical Writing and Presentation Skills
(Elective-III)****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions of Part - A and answer any five questions from Part-B.****PART – A (25 Marks)**

1. Rewrite these sentences correctly. (2x2=4)
 - (a) Neither of the boys were absent yesterday.
 - (b) Mr. Rao has been living in Pune from 1996.
2. Punctuate the following sentences. (2x3=6)
 - (a) The saint said honesty is the best policy.
 - (b) She bought a phone a lap top and a scanner today.
3. Use the following idioms in sentences of your own. (3x2=6)
 - (a) see eye to eye
 - (b) straight from the horse's mouth
 - (c) thick skinned
4. Expand the following abbreviations. (4x1=4)
 - (a) viz. (b) vol. (c) N.B. (d) e.g.
5. Rearrange the jumbled sentences to make a good paragraph. (5x1=5)
 - (a) It contains more than 99.8% of the total mass of the Solar System.
 - (b) The outer layers of the Sun exhibit differential rotation.
 - (c) The Sun is, at present, about 70% hydrogen and 28% helium.
 - (d) This differential rotation extends considerably down into the interior of the Sun.
 - (e) The Sun is by far the largest object in the solar system.

PART – B (5x10=50 Marks)

6.(a) Discuss the various elements of a technical report.

OR

(b) Presentation skills are vital for technical professionals today. Justify.

7.(a) How should power point presentation slides be prepared?

OR

(b) Write short notes on the following:

- (i) headings and subheadings (ii) figures and tables

8.(a) Write a job application letter along with a resume for the post of a software engineer.

OR

(b) Write a letter to the Manager, Syndicate Bank in your locality requesting him to send you the necessary information related to car loans.

9.(a) What role does Nonverbal communication play in our lives?

OR

(b) Write a report on the Fresher's day celebrations in your college.

10.(a) Mention the salient principles we should follow in technical writing.

OR

(b) Effective communication skills are compulsory for engineering students today. Justify.

FACULTY OF ENGINEERING**B.E. 4/4 (EEE/Inst./M/P) II-Semester (Main) Examination, April / May 2013****Subject : Internet Programming
(Elective-III)****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions of Part - A and answer any five questions from Part-B.****PART – A (25 Marks)**

1. Write HTML tags to manage Hyper link with tips with a suitable script. (3)
2. How internet explorer is different from other browsers with respect to Active X controls? Explain. (3)
3. Compare Java with C++ with respect to programming problems. (3)
4. How function overriding is managed in Java? (3)
5. How virtual functions of C++ are defined or managed in Java? (3)
6. What is the job of a package in Java? How to define it? (2)
7. What is the Job of a Run time Environment of Java? (2)
8. What is DNS? (2)
9. What is work flow software? (2)
10. What is the Job of JDBC? (2)

PART – B (50 Marks)

11. Using suitable Database, ODBC and JDBC explain how a password is verified in webpage. (10)
12. Write Java Applet to compute Root of a Quadratic equation. Show HTML script also. (10)
13. How to represent a matrix in Java code? Write a procedure to compute transpose of a matrix? (10)
14. How Exception is handled in Java? Explain with a code segment. (10)
15. What are AWT controls? How to use them? Explain. (10)
16. How to build a chat server? Explain implementation issues. (10)
17. Write short notes on the following: (10)
 - (a) News servers
 - (b) FTP servers
