Code No.: **301A1**

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)
(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Maisammaguda, Dhulapally,(Post Via kompally), Secunderabad-500 100.

IV B.TECH II SEM REGULAR END EXAMINATIONS, MARCH - 2017
SUBJECT: <u>DISASTER MANAGEMENT</u>
Branch: **EEE**

Time: **3 Hours**   Max Marks: **75 M**

PART-A

   I   **Answer All Questions**   **5 X 1M = 5 Marks**

1. Define environmental hazards
2. What is tephra?
3. What do the following acronyms stand for?
   a)WHO   b) NSDC
4. Expand IASPEI and UNESCO
5. Define Coastal Disaster.

II Answer all Questions   **10X2=20 Marks**
1. Give any four examples of physical environmental stressors

2. What is the difference between natural disasters and man-made disaster?

3. What is the difference between the continental and ocean plates?

4. What are the positive effects of volcanoes?
5. What are the three stages of disaster management?

6. Write the full forms of

a) NDRF   b) NDMF   c) EPTRI   d) NCDM

7. Write the objectives of WMO

8. Write the objectives of SCOPE

9. Write a short note on Environmental programmes in India

10. What are the problems of Land subsidence?

PART – B

Answer all questions   **5x10 = 50 Marks**
1. Indicate different approaches to reduce the environmental hazard with an aim to avoid human activities that lead to a disaster

OR
2. List man-made hazards that emanate from human activities ultimately leading to a disaster

3. Write a note on the different shapes of volcanoes

OR

4. What causes lighting? Explain its types. What are impacts of lighting?

5. Describe the various pre-disaster preparations that are necessary to avoid a major disaster

OR

6. Write an account on the impact of disasters to life and environment

7. Briefly explain about
   a) Education on disasters
   b) The adjustment of Human Population to Natural hazards & disasters, Role of Media monitoring Management

OR

8. Write in detail about the various institutions which are involved in disaster mitigation

9. Discuss in detail the environmental legislations in India

OR

10. Write in detail about the Ecological planning for sustainability & sustainable development in India

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IV B.Tech II sem Regular End Examinations, APRIL - 2017
SUBJECT: <u>EHV AC TRANSMISSION</u>
Branch: **EEE**

Time: **3 Hours**   Max Marks: **75 M**

PART-A

I   Answer All Questions   **5 X 1M = 5 Marks**

1.   What is the necessity of EHV AC Transmission? Explain its advantages.
2.   What are the properties of the bundled conductors?
3.   What do you mean by Corona discharge?
4.   Discuss the effects electrostatic induction on energized circuit of a double circuit 3-phase AC line.
5.   What is the purpose and significance of power circle diagram?

II   Answer All Questions   **10x2M=20 Marks**

1.   Explain in detail power-handling capacity of AC transmission lines and line losses?
2.   What are the different mechanical considerations in line performance and explain?
3.   Explain the surface voltage gradient?
4.   Explain the single-phase line for capacitance calculation
5.   How Corona Pulses are going to generate and explain their properties?
6.   Write short notes on frequency spectrum of the RI field of line in EHV lines
7.   What are the effects of high electrostatic fields on biological organisms and human beings?
8.   Explain the procedure to calculate the electrostatic filed?
9.   Explain Shunt Reactor Compensation?
10. Define compensation and explain Cascade connection?

PART- B

Answer all questions   **5X10M=50 Marks**

1.   Explain the following: i) the effect of conductor resistance of EHV lines. ii) Power Loss in Transmission. iii) Skin Effect Resistance in Round Conductor

(OR)

2.   The configurations of some EHV lines for 400 kV to 1200 kV are given. Calculate req. for each. (i) 400 kV: N = 2, d = 2r = 3.18 cm, B = 45 cm (ii) 750 kV: N = 4, d = 3.46 cm, B = 45 cm (iii) 1000 kV: N = 6, d = 4.6 cm, B = 12 d (iv) 1200 kV: N = 8, d = 4.6 cm, R = 0.6 m.

3. Write short notes on (i) Field of sphere gap (ii) Field of line charges & their properties?

(OR)

4. Derive general expression for the charge-potential relations for multi conductor lines: i) Maximum Charge Condition on a 3-Phase Line. ii) Numerical values of Potential Coefficients and charge of Lines.

5. What is the relation between Single-Phase and 3-Phase Audible Noise levels?

(OR)

6. Draw the circuit diagram for measuring Radio Influence Voltage (RIV) with respect to E.H.V. lines.

7. Explain the traveling wave concept for step response of transmission line: i) Losses neglected ii) Losses and attenuation included.

(OR)

8. A transmission line is 300 km long and opens at the far end. The attenuation of surge is 0.9 over one length of travel at light velocity. It is energized by (i) a step of 1000 kV, and (ii) a sine wave of 325 kV peak when the wave is passing through its peak. Calculate the open-end voltage up to 20 ms.

9. A 50-Hz 750 kV line with $L = 0.866$ mH/km is 500 km long. It is provided with 50% series compensation connected in the middle of line. The power delivered at 750 kV is 2000 MW 3-phase per circuit at unity power factor. Neglect shunt capacitance and line resistance and assume the line inductance to be lumped. Calculate (a) the reactance and capacitance of series capacitor, (b) the voltage drop across it at full load, (c) the current flowing through it and the voltage across it during a sustained short circuit occurring (i) on the source-side terminal of the capacitor, (ii) on the load side terminal of the capacitor, and (iii) across the load. (d) The same as in (c) without the series capacitor.

(OR)

10. Find the generalized constants for transmission line with series-Capacitor Compensation at middle of line.

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IV B.Tech II sem Regular End Examinations, APRIL - 2017
SUBJECT: <u>ELECTRICAL POWER QUALITY</u>
Branch: **EEE**

Time: **3 Hours**   Max Marks: **75 M**

PART-A

I   **Answer All Questions**   5 X 1M = 5 Marks

1. Define transient?
2. Define short Interruption?
3. Define voltage sag?
4. Explain equipment behavior of power electronic loads?
5. What is Electromagnetic compatibility?

II   **Answer All Questions**   10x2M=20 Marks

1. What are voltage fluctuations?   Explain briefly.
2. State the objectives of power quality monitoring
3. What is the difference between failure and interruption?
4. Explain causes for long interruption?
5. What is meant by phase angle Jump? Explain
6. Explain various causes for voltage sags?
7. Mention any four types of sag mitigation devices?
8. How voltage sags can be mitigated
9. What are IEC electromagnetic compatibility standards?
10. Explain briefly about a shunt controller?

PART- B
Answer all questions   5X10M=50 Marks

Q1. What are major power quality issues? Explain in detail.
                                        (OR)
Q2. Explain the use of expert systems in power quality monitoring?

Q3. a) Define long interruption? Explain causes for long interruption?
     b) Give various methods for monitoring of short interruptions?

                                        (OR)
Q4. a) Explain various sources of sags and interruption?
     b) Briefly explain about fuse saving?

Q5. Explain different types of faults in power system?

(OR)

Q6. What is need of estimating sag performance? Explain the different methods of estimating voltage sag performance?

Q7. Explain the following causes of sag
   a) Voltage sag to induction motors
   b) Voltage sags to computers.

(OR)

Q8. a) Briefly explain adjustable speed AC drives and related power quality issues.
   b) Briefly explain adjustable speed DC drives and its operation

Q9. a) Necessity of installing mitigation equipment? What is equipment immunity?
   b) Explain series voltage controller to compute the voltage sag occurs in the power system

(OR)

Q10 a) What are different voltage sag mitigation techniques?
   b) Explain briefly IEC electromagnetic compatibility standards?

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IV B.Tech II sem Regular End Examinations, MARCH – 2017

SUBJECT: **Fundamentals of HVDC Transmission And FACTS Devices**

Branch: **EEE**

Time: **3 Hours**   Max Marks: **75 M**

PART-A

| I | Answer All Questions | 5 X 1M = 5 Marks |

1. List out the applications of HVDC

2. Write the equation of ac current and dc voltage harmonics

3. Define firing angle control

4. Write the different types of AC/DC power flow

5. Explain the concept of power flow in parallel paths.

| II | Answer All Questions | 10x2M=20 Marks |

1. What are the types of DC link

2. What is DC breaker? How it will be useful?

3. What is choice of converter configuration?

4. Define peak inverse voltage?

5. Define transformer tap changing

6. What is equidistant pulse control?

7. What is sequential method of DC power flow

8. What are the major steps in power flow analysis

9. State the basic concept of Voltage source converter

10. Draw single phase full wave bridge converter

PART - B

1. For a fixed power transmission explain how the economic choice of voltage level selected in dc transmission system

(OR)

2. With neat sketches explain the different kinds of dc link available

3. Draw the schematic circuit diagram of a 6 pulse Graetz circuit and explain its principle of operation

(OR)

4. Show the rating of the valve used in Graetz circuit is 2.094Pd where Pd is dc power transmitted

5. Explain the individual characteristics of a rectifier and an inverter with sketches

(OR)

6. With the block diagram, discuss the principle of operation of a basic power controller

7. What are the constraint that limits the power flow and discuss the ways to overcome these limits. What are the benefits from the FACTS controllers?

(OR)

8. Derive an equation for harmonic voltage and current for single tuned filter and discuss the influence of network admittance.

9. Explain briefly operation of Three-phase full-wave bridge converter with neat diagrams

(OR)

10 Explain briefly about Square-wave voltage harmonics for a single phase Bridge

Code No.: **302D1**

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IV B.TECH II SEM REGULAR END EXAMINATIONS, MARCH - 2017
SUBJECT: <u>Neural Networks and Fuzzy Logic</u>
Branch: EEE

Time: **3 Hours**   Max Marks: **75 M**

PART-A

I   Answer All Questions   **5 X 1M = 5 Marks**

1. What is the function of synaptic gap?

2. What are the classifications of activation function?

3. List out the limitations of perceptron learning model.

4. Write the energy function for discrete Hop-field network.

5. Define cardinality number.

II   Answer All Questions   **10x2M=20 Marks**

1. List out the differences between artificial neural networks and bio-logical neural networks.

2. How ANN resembles brain?

3. What is Reinforcement rule? What are its types?

4. Define training. State the need for training the neural network.

5. List out the four main steps in back propagation algorithm.

6. What is Perceptron learning rule?

7. Describe the applications of BAM.

8. Describe the function of linear associator.

9. List the operations of fuzzy relations.

10. Explain defuzzification method of center of sums.

PART- B

Answer all questions   **5X10M=50 Marks**

Q1. (a) Using Mc-Culloch Pitts model, implement the NAND & XOR logic gates, with truth tables.
   (b) Briefly explain the historical developments in ANN.

(OR)

Q2. (a) Explain the concept of biological neuron model and organization of brain.
   (b) Describe Integrate & fire neuron model in detail.

Q3. (a) Discuss supervised learning and unsupervised learning.
   (b) Draw and explain the architecture of ANN.

(OR)

Q4. (a) Write about Hebbian learning and Widrow-Hoft learning rule.
   (b) Describe about the neural dynamics in detail.

Q5. Draw a single layer network with continuous perceptions and present the delta learning rule.

(OR)

Q6. (a) "The choice of learning coefficient is a tricky task in back propagation algorithm."
Support your answer.

(b) Describe in detail about generalized delta learning rule.

Q7. (a) Give and explain about the BAM stability theorem.

(b) Discuss about storage and re-call algorithms in BAM training networks.

(OR)

Q8. (a) Discuss about the following

(i) Hamming distance

(ii) Association rules

(iii) Associative matrix

(iv) Content addressable memory

(b) Explain in detail about memory based learning algorithms.

Q9. (a) If $M_1 = \begin{bmatrix} 1 & 0 & 0.7 \\ 0.3 & 0.2 & 0 \\ 0 & 0.5 & 1 \end{bmatrix}$ and $M_2 = \begin{bmatrix} 0.6 & 0 & 0 \\ 0.6 & 0.6 & 1 \\ 0 & 1 & 0 \end{bmatrix}$ then, find max –min composition and max-product composition.

(b) Given, A = {(1/2) + (0.5/3) + (0.3/4) + (0.2/5)},
B = {(0.5/2) + (0.7/3) + (0.2/4) + (0.4/5)}
Calculate the several operations of the fuzzy set.

(OR)

Q10. Design a fuzzy logic controller, from fundamentals, for a system of your choice, with the help of diagrams representing various FLC blocks membership function, rule base matrix flow chart.