

Hall Ticket Number :

--	--	--	--	--	--	--	--	--	--	--

R-11 / R-13

Code : 1G271

IV B.Tech. I Semester Supplementary Examinations May 2017

Fundamentals of HVDC & FACTS Devices

(Electrical & Electronics Engineering)

Max. Marks: 70

Time: 03 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

1. a) With neat sketches explain the different kinds of D.C links available. 7M
b) Draw schematic diagram of a typical HVDC converter station and explain the functions of various components available. 7M
2. a) Discuss about the principles of DC link control. 7M
b) Explain the three different variations of the equidistance pulse control scheme. 7M
3. a) Why harmonics get generated in power systems? What are their harmful effects? How can they be removed from the systems? 7M
b) Discuss the need for reactive power control in HVDC power stations. 7M
4. How DC/AC converters are modeled for power flow studies? Describe simultaneous approach for load flow studies of AC/DC systems. 14M
5. a) Explain power flow in parallel paths. 7M
b) What are the basic types of FACTS controllers explain each? 7M
6. a) Explain the principle of operation of STATCOM. Show that the steady state stability margin can be enhanced. 7M
b) Compare STATCOM with SVC. 7M
7. a) Explain the different modes of operations of TCSC? 7M
b) Draw V-I and X-I characteristics curves for single modules TCSC and two modules TCSC. 7M
8. a) Explain the basic operating principles of UPFC. 7M
b) Explain how the UPFC can control real and reactive power flow in the transmission line. 7M

Hall Ticket Number :										
----------------------	--	--	--	--	--	--	--	--	--	--

R-11 / R-13

Code: 1GA71

IV B.Tech. I Semester Supplementary Examinations May 2017

Management Science

(Common to EEE & CSE)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questions
 All Questions carry equal marks (**14 Marks** each)

- 1. a) Write any six principles of management, as given by Fayol, in brief. 7M
- b) What are the elements of scientific management? 7M
- 2. a) Explain the factors influencing plant location. 4M
- b) Construct \bar{X} and R charts for the following data of a process and identify whether the process is in control. The sample size is 5 units and drawn at an interval of 30 min from a manufacturing process.

Sample	1	2	3	4	5	6	7	8	9	10
\bar{X}	20	34	45	39	26	30	15	40	37	23
R	20	39	15	5	20	15	15	11	30	10

10M

- 3. What is marketing mix? How does it influences decisions of a marketing manager? 14M
- 4. a) What is the difference between job evaluation and merit rating? 7M
- b) Discuss selection and induction functions of Human Resource Management. 7M
- 5. Identify the critical path for the network and how far the project can be crashed.

Activity	Preceding activity	Time (in weeks)		Cost (Rs)	
		Normal	Crash	Normal	Crash
A	-	6	4	5000	6200
B	-	4	2	3000	3900
C	A	7	6	6500	6800
D	A	3	2	4000	4500
E	B,C	5	3	8500	10000

14M

- 6. a) What is the significance of SWOT Analysis?
- b) Explain the stages in the strategy formulation and implementation process.
- 7. Discuss in brief any three of the approaches:
 - i. Just-in-Time
 - ii. Supply Chain Management
 - iii. Enterprise Resource Planning
 - iv. Value Analysis
 - v. Total Quality Management 14M
- 8. a) How can an organization's culture influence the ethics of its members? 5M
- b) Discuss in brief ethical issues in an organization and characteristics of an ethical organization 9M

Hall Ticket Number :										
----------------------	--	--	--	--	--	--	--	--	--	--

R-11 / R-13

Code : 1G275

IV B.Tech. I Semester Supplementary Examinations May 2017

Renewable Energy Sources

(*Electrical & Electronics Engineering*)

Max. Marks: 70

Time: 03 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

1. a) Explain in detail the different types of solar energy measuring instrument 8M
b) Explain the working of a Pyrano meter 6M
2. a) Explain the principal of operation of Fresnel lens collector 8M
b) What are the advantages and disadvantages of flat plate collector 6M
3. a) Explain mechanical solar energy storage systems 8M
b) What are the advantages and disadvantages of PV solar energy conservation system 6M
4. a) With the help of neat sketch, explain Horizontal axis wind mills 8M
b) What are the main applications of wind energy 6M
5. a) Explain the classification of biogas plants 6M
b) Explain the operation of IC engine with biogas and discuss their performance characteristics 8M
6. a) Explain the application of geothermal energy 6M
b) With the help of a neat diagram, Explain the working of liquid dominated single flash steam system 8M
7. a) What are the advantages and limitations of wave energy 6M
b) Explain in detail about mini Hydel plants 8M
8. a) Explain the advantages and disadvantages of direct energy conservation 6M
b) Explain the working of a Seebeck effect thermocouple 8M

Code: 1G47C*IV B.Tech. I Semester Supplementary Examinations May 2017***Soft Computing Techniques**
(Electrical & Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (14 Marks each)

1. a) Outline and state the importance of bipolar activation function. Compute the output of the neuron Y for the input $[x_1, x_2, x_3] = [0.8, 0.6, 0.4]$ and the weights are $[w_1, w_2, w_3] = [0.1, 0.3, -0.2]$ with bias $b = 0.35$. Use binary and bipolar sigmoidal activation function. 7M
b) State the significance of clustering and classification algorithms with examples. 7M
2. a) Explain feed forward network with a neat diagram also explain the difference between discrete and continuous Perceptron Network. 7M
b) Draw the flowchart and explain the training and testing methodology of a Perceptron Network for binary class problem. 7M
3. a) Implement AND function using Adaline Network. with inputs: $x_1=[1 \ 1 \ -1 \ -1]$ and $x_2=[1 \ -1 \ 1 \ -1]$ consider the bias as $[1 \ 1 \ 1 \ 1]$ Target: $[1 \ -1 \ -1 \ 1]$ $w_1=w_2=b=\alpha=0.1$. Calculate the total mean square error for 2 epochs. 4M
b) Compute the new weights using BPN for the network presented using the following details:
 $[v_{11} \ v_{21} \ v_{01}] = [0.3 \ -0.2 \ 0.6]$; $[v_{12} \ v_{22} \ v_{02}] = [-0.7 \ 0.3 \ 0.4]$ and $[w_1 \ w_2 \ w_0] = [0.2 \ 0.3 \ -0.4]$. The network is depicted with the input pattern $[1 \ 0]$ and target output 1. Use learning rate as 0.2 and use binary sigmoidal as an activation function. 10M
4. a) Differentiate between auto Associative Memory and Bidirectional Associative Memory 7M
b) Explain the structure and learning rules of Hopfield Network. 7M
5. a) Explain the basic features involved in characterizing the membership function. State the process of fuzzyfication. 7M
b) List the set of operations performed on fuzzy set with example 7M
6. a) Consider a LAN connected workstations that communicate using Ethernet protocols at a maximum rate of 12 Mbits/s. The two fuzzy sets given below represent the loading of the LAN:
$$\mu_{\underline{S}}(x) = \left\{ \frac{1.0}{0} + \frac{1.0}{1} + \frac{0.8}{2} + \frac{0.2}{5} + \frac{0.1}{7} + \frac{0.0}{9} + \frac{0.0}{10} \right\}$$
$$\mu_{\underline{C}}(x) = \left\{ \frac{0.0}{0} + \frac{0.0}{1} + \frac{0.0}{2} + \frac{0.5}{5} + \frac{0.7}{7} + \frac{0.8}{9} + \frac{1.0}{10} \right\}$$
Where $\underline{S}(x)$ represents silent and $\underline{C}(x)$ represents congestion. Perform algebraic sum, algebraic product, bounded sum and bounded difference over the two fuzzy sets. 10M
b) Draw and explain the concept of decision making system. 4M
7. a) Compare and contrast traditional algorithm and genetic algorithm. 4M
b) Consider the following function for maximization using Genetic Algorithm, $f(x) = x^2$, where x varies between 0 and 31, $[12 \ 25 \ 5 \ 19]$. Use the following initial population of size 4, $[01100 \ 11001 \ 00101 \ 10011]$. Use Roulette wheel selection method for crossover, with a crossover probability to be 0.1, and perform mutation probability of 0.001. 10M
8. a) Explain the concept of load flow and genetic algorithms based economic dispatch. 7M
b) State and explain the flow chart of fuzzy logic based unit commitment 7M

Code : 1G272

IV B.Tech. I Semester Supplementary Examinations May 2017

Switch Gear and Protection*(Electrical & Electronics Engineering)***Max. Marks: 70****Time: 03 Hours**Answer any **five** questionsAll Questions carry equal marks (**14 Marks** each)

1. a) Explain the phenomenon of arc formation in a circuit breaker and define the following terms: Arcing time, Breaker interrupting time and Fault clearing time. 6M
 b) In a power system the rms voltage is 38.1kV, the inductance is 10mH and capacitance is 0.02 μ F. Determine (i) peak restriking voltage across the circuit breaker, (ii) frequency of restriking voltage transient and (iii) maximum value of RRRV. 8M
2. a) Describe the construction, operating principle and application of vacuum circuit breaker. 8M
 b) List out the advantages and disadvantages of SF₆ circuit breakers. 6M
3. a) Explain the working principle of induction type electromagnetic relay. 9M
 b) What are different types of distance relays? Compare their merits and demerits. 5M
4. a) With a neat circuit explain the principle of operation of static reactance relay using (i) amplitude comparator and (ii) phase comparator. 8M
 b) Write down the schematic block diagram of numerical overcurrent relay using microprocessors and describe the steps of operation with a flowchart. 6M
5. a) Explain percentage differential protection employed for stator protection of alternator. 6M
 b) A three-phase 132kV/33kV star-delta connected power transformer is protected by differential protection scheme. Determine the ratio of CTs on the HV side of the transformer, if that on the LV side is 300/5. Show the connection of CTs on either side of the transformer. 8M
6. a) Describe the application of time-graded overcurrent protection of radial, parallel and ring-main feeder systems. 9M
 b) With a schematic diagram explain the carrier-current transmission line protection. 5M
7. a) Explain the use of earthing transformer for providing earthing of a power transformer. 8M
 b) State the advantages of neutral grounding of an electrical system. Give a connection diagram of typical arc suppression coil. 6M
8. a) State the various causes of overvoltage in a power system. 5M
 b) Explain clearly valve type lightning arrester used for overvoltage protection of transmission lines. 9M
