AR16

CODE: 16CE4034 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech II Semester Supplementary Examinations, November-2021

AIR POLLUTION CONTROL
(Civil Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Explain natural and artificial classification of pollutants of pollution in detail	8M
	b)	Explain Line and aerial sources of air pollutants.	6M
		(OR)	
2.	a)	Explain air pollution episode with examples?	6M
	b)	Distinguish between 'primary and secondary air pollutants.	8M

UNIT-II

3.	a)	Explain effects of air pollutants on human Health? Explain in detail	8M
	b)	Explain causes and effects of Green House effect.	6M
		(OR)	
4.	a)	Explain about economical effects of air pollution in detail.	8M
	b)	What is Acid rain? What are its effects?	6M

UNIT-III

5.	a)	Discuss the general methods for monitoring of SO_2 emissions.	6M
	b)	What is meant by stack monitoring? Explain purpose and parameters of stack monitoring for flue gases.	8M
		(OR)	
6.	a)	Explain Ambient Air Quality Standards in India	8M
	b)	Explain Micro-meteorology Monitoring System in detail.	6M

UNIT-IV

7.	a)	What are various strategies to control of particulates? Explain Equipment modifications in detail.	6M
	b)	Explain the working process of Electro Static Precipitator in detail with neat sketch.	8M
		(OR)	
8.	a)	Explain working principle and applications of a Reverse Flow Cyclones.	6M
	b)	Explain about Dry and Wet scrubbers in detail.	8M

UNIT-V

9.	a)	Discuss the Combustion Control method for NO_2 emissions.	7M
	b)	Explain Adsorption methods of control of gaseous pollutants.	7M
		(OR)	
10.	a)	Explain wet methods of removal SO_2 emissions.	6M
	b)	Explain control of NO_2 by Oxidation and reduction.	8M

AR16

CODE: 16EE4030 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, November-2021

DIGITAL CONTROL SYSTEMS

(Electrical and Electronics Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	What is quantization? What is it used for in discete systems	7M
	b)	Elaborate on the properties of Z-plane	7M
		(OR)	
2.	a)	What are the limitations of Z-transforms	7M
	b)	What is zero order hold?	7M

UNIT-II

3.	a)	Obtain inverse Z transform of $X(Z)=Z(Z-1)/(Z+2)(Z+1)^3$	7M
	b)	Derive the pulse transfer function of zero-order hold	7M
		(OR)	
4.		Solve the difference equation $Y(n+2)-3Y(n+1)+2Y(n)=X(n)$; $Y(0)=0;Y(1)=1,X(n)=3^n$	14M

UNIT-III

5.	a)	Outline the rules for routh stability criterion for digital systems.	7M
	b)	Determine the stability of the system $F(z)=2z^2-z-100=0$	7M
		(OR)	
6.	a)	Determine the stability of the system $F(z)=z^2+z-1=0$	7M
	b)	Elaborate on the transformations using diagrams for bilinear transformation.	7M

UNIT-IV

7.		Derive the solution for the state equation for a generalized discretized system model	14M

(OR)

8. a) Obtain the state transition matrix for the following system represented below 7M

$$G(z) = \frac{z^{-1}(1+z^{-1})}{(1+0.5z^{-1})(1-0.5z^{-1})}$$

b) What is cayley Hamilton theorem, how is it used with state equations 7M

UNIT-V

9. Obtain the observable and controllable canonical forms for the following pulse transfer function 14M

$$G(z) = \frac{z^{-1}(1+z^{-1})}{(1+0.5z^{-1})(1-0.5z^{-1})}$$

(OR)

10. Determine the diagonal canonical form of state model for the following pulse transfer function. 14M

$$\frac{Y(z)}{U(z)} = \frac{Z}{z^2+1.8z+64}$$

AR16

CODE: 16ME4039 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, November-2021

POWER PLANT ENGINEERING

(Mechanical Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	What are the conventional and non- conventional sources of energy?	7M
	b)	What are the advantages and limitation of tidal power generation	7M
		(OR)	
2.	a)	Explain the working of thermo electric power generation	7M
	b)	Explain the working of vertical axis wind turbine with a neat sketch.	7M

UNIT-II

3.	a)	Enumerate and explain the steps involved in coal handling.	7M
	b)	What are the different ash handling systems? And explain mechanical handling system.	7M
		(OR)	
4.	a)	Explain the working of central pulverized coal burning system with a neat sketch.	7M
	b)	With a neat sketch and explain the working of (i) Chain stoker (ii) Spreader stoker	7M

UNIT-III

5.	a)	Draw a neat line diagram of a diesel power plant showing all the systems and explain the working	7M
	b)	Mention the advantages and disadvantages of diesel power plant over a gas turbine power plant?	7M
		(OR)	
6.	a)	Discuss the advantages of combined cycle power generation. Explain the working of GT-ST combined cycle plant.	7M
	b)	What are the various factors to be considered while selecting the site for diesel engine power plant?	7M

UNIT-IV

7. a) What is a spillway? Why are spillways required? What are the different types of spillways? 7M

   b) Explain with a neat sketch a pumped storage hydro plant, state its advantages 7M

(OR)

8. a) Enumerate and explain the essential components of a nuclear reactor. 7M

   b) Explain about sodium-graphite reactor with a neat sketch 7M

UNIT-V

9. A power station has to supply load as follows:

Time (hrs)	0-6	6-12	12-14	14-18	18-24
Load (Mw)	30	90	60	100	50

14M

(i) Draw the load curve
(ii) Draw the load-duration curve
(iii) Give a scheme of suitable generating units to supply the level
(iv) Calculate load factor, capacity of the plant and plant capacity factor

(OR)

10. a) What do you understand by load factor and capacity factor? When are they numerically equal? 7M

    b) What are the various costs involved in power plant? Discuss briefly. 7M

AR16

CODE: 16IT4003 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, November-2021

MACHINE LEARNING

(Information Technology)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Discuss in detail "designing a learning system".	7M
	b)	List and explain any four applications of machine learning.	7M
		(OR)	
2.	a)	Compare and contrast FIND-S algorithm and candidate elimination algorithm.	6M
	b)	What is concept learning? Discuss about Concept learning as search through a hypothesis space.	8M

UNIT-II

3.	a)	What is decision tree learning? Explain ID3 algorithm.	8M
	b)	Discuss the appropriate problems for decision tree learning,	6M
		(OR)	
4.	a)	Construct decision tree for the data given in Table 1	10M
	b)	Explain about the issues in decision tree learning.	4M

UNIT-III

5.	a)	Illustrate maximum likelihood hypothesis for predicting probabilities.	7M
	b)	Write a short note on Bayes belief networks.	7M
		(OR)	
6.	a)	Apply Naïve Bayes classifier for the data given in Table 1 and classify the sample X = (age <= 30 , income = medium, student = yes, credit_rating = fair)	10M
	b)	Discuss in detail Bayes optimal classifier.	4M

UNIT-IV

7.	a)	Compare and contrast sample complexity for finite hypothesis and infinite hypothesis	7M
	b)	What is PAC learnability? Explain in detail.	7M
		(OR)	
8.	a)	Discuss about Distance-Weighted Nearest Neighbor Algorithm.	7M
	b)	What is case-based reasoning? Discuss in detail.	7M

UNIT-V

9. a) Define sequential covering algorithm. Explain Learn-One-Rule concept. 6M
   b) What is Horn Clauses? Write about First-Order Horn Clauses. 8M

(OR)

10. a) How to Generate Candidate Specializations in FOIL? Explain in detail. 7M
    b) Discuss about Inverting Resolution. 7M

Table 1

age	income	student	Credit_rating	Buys_computer (Class label)
<=30	High	No	Fair	No
<=30	High	No	Excellent	No
31…40	High	No	Fair	Yes
>40	Medium	No	Fair	Yes
>40	Low	Yes	Fair	Yes
>40	Low	Yes	Excellent	No
31…40	Low	Yes	Excellent	Yes
<=30	Medium	No	Fair	No
<=30	Low	Yes	Fair	Yes
>40	Medium	Yes	Fair	Yes
<=30	Medium	Yes	Excellent	Yes
31…40	Medium	No	Excellent	Yes
31…40	High	Yes	Fair	Yes
>40	Medium	No	Excellent	No