AR13

CODE: 13CE4029 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2018

GROUND IMPROVEMENT TECHNIQUES

(Elective-2)

(Civil Engineering)

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

PART – A

ANSWER ALL QUESTIONS

1X 10 = 10 M

1. a) What is dewatering?
   b) Write short notes on Selection of grout characteristics.
   c) Write a short note on sand drains.
   d) State the function of stone column.
   e) What is soil stabilization?
   f) What is the basic mechanism of reinforced Earth.
   g) What are the different forms of Geogrids?
   h) How Geomembrane is different from Geotextile.
   i) What is an expansive soil?
   j) Write the tests for identification of expansive soil.

PART – B

Answer one question from each unit

5 x 12=60 M

UNIT – I

2. Explain briefly various methods of well point system. [12M]

(OR)

3. Explain with neat sketches the various applications of grouting. [12M]

UNIT – II

4. Explain in detail the in-situ densification methods in granular soils. [12M]

(OR)

5. (a) What is pre-compression of soils? What are its advantages and disadvantages? [6M]
   (b) Explain theory of 3-Dimensional consolidation, what is its practical use. [6M]

UNIT – III

6. (a) Discuss the principle and mechanism of soil-lime stabilization. [6M]
   (b) Explain the components of reinforced earth. [6M]

(OR)

7. Describe the procedure of designing a reinforced earth wall? [12M]

UNIT – IV

8. (a) Explain how Geotextiles can be used as separators. [6M]
   (b) Explain the function of Geogrids and its application in ground improvement. [6M]

(OR)

9. (a) Explain about important physical and mechanical properties of Geotextiles. [6M]
   (b) Describe the functions and applications of geogrids. [6M]

UNIT – V

10. (a)State the consequences of swelling of soil on structures. [6M]
    (b) What are the causes of swelling and shrinkage of soils? [6M]

(OR)

11. Decribe different techniques in construction of foundation can be used in areas covered by swelling soils? [12M]

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AR13

Code: 13EC4019 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech I Semester Supplementary Examinations, January-2018

MICROPROCESSORS AND MICROCONTROLLERS
(Electrical and Electronics Engineering)

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

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) What is importance of Carry flag of 8086 flag register **1M**
   b) What is meant by general purpose registers **1M**
   c) List Addressing Modes of 8086 **1M**
   d) Describe PUSH and POP instructions **1M**
   e) List any four important features of advanced microprocessors **1M**
   f) Write about data types of 80386 Microprocessors **1M**
   g) List the applications of Programmable Interrupt Controller (PIC) **1M**
   h) Define USART? **1M**
   i) List the applications of Microcontrollers **1M**
   j) Explain Register addressing Mode of 8051 Microcontrolling **1M**

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Explain in detail about assembler directives of a 8086 Microprocessor 8M
   b) Draw timing diagram of 8086 Processor and explain 4M

(OR)

3. a) Describe in detail about addressing modes of 8086 Microprocessor with an example 8M
   b) With neat sketches explain flag register of a 8086 Microprocessor 4M

UNIT-II

4. a) Deduce the mechanism of a interrupt in 8086 Microprocessor and explain the different types of interrupts in detail 8M
   b) Write and ALP for 8086 processor to find the largest value in a given array of numbers 4M

(OR)

5. a) Write and ALP for 8086 processor to perform the addition of two word using register addressing mode. 6M
   b) Describe in detail about Stack and its operation of 8086 Microprocessor with an example. 6M

UNIT-III

6. a) Describe in detail Architectural features of a 80386 Microprocessor 6M
   b) The contents of the following registers are [CS] = 1111H, [DS] = 3333H, [SS] = 2526H, [IP] = 1232H, [SP] = 1100H and [DI] = 0020H. Calculate the corresponding physical address for the address bytes in CS, DS and SS 6M

(OR)

7. a) Explain in detail about Memory segmentation and paging of a 80386 Microprocessors 8M
   b) Write short notes on 80486 Microprocessors 4M

UNIT-IV

8. a) Articulate the mechanism of key board controller interface to a 8086 Microprocessor 8M
   b) With a neat sketch explain the block diagram of 8255 PPI 4M

(OR)

9. a) With neat sketches explain how DMA controller is interfaced to 8086 Microprocessor 6M
   b) With a neat sketch explain the USART 6M

UNIT-V

10. a) Explain in detail about how timer of 8051 Microcontroller is programmed. 6M
    b) Describe the interrupts of 8051 Microcontroller with an example 6M

(OR)

11. a) With neat sketches explain how external memory is interfaced to 8051 Microcontroller 8M
    b) Write short notes on the advanced Microcontrollers 4M

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AR13

CODE: 13ME4029 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech I Semester Supplementary Examinations, January-2018

POWER PLANT ENGINEERING
(Mechanical Engineering)

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

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1.	a)	Explain hydrological cycle	1M
	b)	List out the commonly used starting systems in large diesel engines	1M
	c)	List the types of coal available in India.	1M
	d)	" The collection efficiency of dust collector is the amount of dust removed per unit weight of dust." Choose True or False and give reason for your selection.	1M
	e)	List the factors which go in favour of nuclear energy.	1M
	f)	Explain the significance of load curve.	1M
	g)	"The load factor of industrial consumer may be taken as 70 to 80 %." Choose True or False and give reason for your selection.	1M
	h)	List the different types solar collectors and their use	1M
	i)	Explain the principle of thermionic converter.	1M
	j)	Explain the Thermal Discharge Index (TDI).	1M

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2.	a)	Explain with a neat sketch the working of horizontal wind mill.	6M
	b)	What are the merits and demerits of a fuel cell?	6M
		(OR)	
3.	a)	Discuss in detail about MHD power generation with neat sketch	6M
	b)	What are the functions & use of wind mills? State different types of wind mills?	6M

UNIT-II

4.	a)	Mention the points to be considered while selecting the site for a steam power station.	6M
	b)	Explain with neat sketch about Fluidised Bed Combustion (FBC)	6M
		(OR)	
5.	a)	Explain with a neat layout the working of ash handling and dust collection systems.	6M
	b)	Explain with a neat sketch the working of chain grate stoker.	6M

UNIT-III

6. a) Explain the essential components of Diesel power plant. 6M
   b) Discuss the working of closed cycle gas turbines in detail. 6M

(OR)

7. a) Explain how the overall efficiency of Diesel power plant can be improved with cogeneration unit. 6M
   b) Write short notes on Fuels used in gas turbines, Pollution from gas turbines 6M

UNIT-IV

8. a) Discuss the advantages and disadvantages of hydro power plants. 4M
   b) At a particular site the mean monthly discharge is as follows:

Month	Discharge m^3/s	Month	Discharge m^3/s
Jan	100	July	1000
Feb	225	Aug	1200
Mar	300	Sept	900
Apr	600	Oct	600
May	750	Nov	400
June	800	Dec	200

8M

Draw the (i) Hydrograph and (ii) flow duration curve

(OR)

9. a) Describe with a neat sketch the construction and working of a BWR plant. 4M
   b) Write notes on (i) Fission (ii) Fertilization (iii) Isotopes (iv) Heavy water 8M

UNIT-V

10. a) The maximum (peak) load on a thermal power plant of 60 MW capacity is 50 MW at an annual load factor of 50%. The loads having maximum demands of 25 MW, 20 MW, 8 MW and, 5 MW are connected to the power station. Determine: (a) Average load on power station (b) Energy generated per year (c) Demand factor (d) Diversity factor 8M
    b) What is the difference between demand factor and diversity factor? 4M

(OR)

11. a) A power station has to supply load as follows:

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

8M

Draw the load curve and load duration curve. Calculate the load factor and plant capacity factor.

    b) Explain the following terms in detail: (i) Connected load (ii) Diversity factor (iii) Plant capacity factor. 4M

AR13

CODE: 13EC4030 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2018

TELECOMMUNICATION SWITCHING SYSTEMS AND NETWORKS

(Electronics & Communication Engineering)

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

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Name the signalling provided by switching system.
   b) Write advantages of ISDN
   c) What is non-interrupt vector
   d) Define time division time switching
   e) What is echo suppressors?
   f) what is circuit switching network
   g) What is the transmission rate of B channels
   h) Draw the diagram of LAN
   i) Which type of protocol used in signalling networks
   j) What is ISDN

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Explain the classification of switching systems 6M
   b) Explain the working of a half-duplex telephone circuit. 6M

(OR)

3. a) Explain 3×3 crossbar switching 6M
   b) Explain the categorisation of telecommunication networks 6M

UNIT-II

4. a) Explain the concepts of stored program control. 6M
   b) Compare the availability figures of single and dual processor system. 6M

(OR)

5.	a)	Explain basic time division space switching.	6M
	b)	Explain two-stage time-space switch	6M

UNIT-III

6.	a)	Explain four possible approaches for dialling procedures.	6M
	b)	Explain the working of two-wire to four-wire conversion.	6M
		(OR)	
7.	a)	Illustrate different modes of operation of Common channel Signalling.	6M
	b)	Over a 20-minute observation interval, 40 subscribers initiate calls. Total duration of the calls is 4800 seconds. Calculate the load offered to the network by the subscribers and the average subscriber traffic.	6M

UNIT-IV

8.	a)	Explain in details about bridges	6M
	b)	Explain OSI reference model	6M
		(OR)	
9.		Explain in detail about packet switched networks	12M

UNIT-V

10.	a)	Explain functional grouping in ISDN	6M
	b)	Write short notes on i) BISDN ii)addressing in ISDN	6M
		(OR)	
11.	a)	Describe DSL technology	6M
	b)	Explain about Cable modems	6M

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AR13

CODE: 13CS4031 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2018

IMAGE PROCESSING

(ELECTIVE – II)

(Computer Science & Engineering)

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

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) What is the gray scale range of binary and gray images? 1M
   b) What is the significance of Rods and Cones in an human eye? 1M
   c) Define image enhancement. 1M
   d) What is meant by weighted averaging? 1M
   e) List various redundancies present in an image. 1M
   f) Define compression ratio. 1M
   g) Distinguish between morphological dilation and erosion. 1M
   h) Define structuring element. 1M
   i) Give Sobel masks for edge detection. 1M
   j) Give various line detection masks. 1M

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a Explain basic relationship between image pixels. 6M
   b Explain about RGB and CMYK color models. 6M

(OR)

3. a Explain fundamental steps in image processing system. 8M
   b Explain about image shrinking and zooming. 4M

UNIT-II

4. a Explain any four logical operations performed on images. 4M
   b Perform Histogram specification on the 8x8 image shown below:

Gray level	0	1	2	3	4	5	6	7
Number of pixels	8	10	10	2	12	16	4	2

Target histogram: 8M

Gray level	0	1	2	3	4	5	6	7
Number of pixels	0	0	0	0	20	20	16	8

(OR)

5.	a	Explain image enhancement by sharpening.	4M
	b	Explain various gray level intensity transformations.	8M

UNIT-III

6.	a	With the help of block diagram, explain about image compression model.	7M
	b	Explain bit-plane coding with an example.	5M

(OR)

7.	a	Obtain the LZW code for the word 'ABBABBA'	8M
	b	Distinguish between Lossy and Lossless image compression.	4M

UNIT-IV

8.	a	Explain boundary detection using morphological operations.	4M
	b	Explain the concepts of image opening and closing along with their properties.	8M

(OR)

9.	a	Explain about Hit-Miss transformation.	5M
	b	Explain Region filling morphological algorithm with an example.	7M

UNIT-V

10.	a	Explain the concept of region splitting and merging algorithm.	7M
	b	Explain the need of image segmentation.	5M

(OR)

11.	a	Explain about image segmentation using thresholding.	7M
	b	Explain edge detection using gradients and Laplacian operators.	5M

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