AR13

CODE: 13CE3017 **SET-I**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH II SEMESTER REGULAR EXAMINATIONS, MAY-2016

GEOTECHNICAL ENGINEERING -II
(CIVIL ENGINEERING)

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

PART-A

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

1. a) Define recovery ratio of the sampler?
   b) List any TWO important parts of a pressure-meter?
   c) Which slopes of an earth dam become critical when there is a rapid drawdown and under steady seepage conditions?
   d) What is the difference between Standard Method of Slices and Bishop's Simplified method?
   e) Write the formula of active earth pressure coefficient in terms of tangent trigonometric function?
   f) What is the formula to determine the active earth pressure behind a retaining wall due to surcharge?
   g) Define punching shear failure of foundations on soils?
   h) Mention one or two steps to be taken to reduce the harmful effects of settlements
   i) List the various methods of finding the efficiency of a pile group?
   j) List any two methods for determining the dynamic load capacity of piles?

PART-B

Answer one question from each unit **[5 x 12 = 60M]**

UNIT-I

2. Describe the static cone penetration test 12M

(OR)

3. a. A plate load test was conducted on a 20cm diameter plate on a soil subgrade. The deformation observed is 0.45cm when the pressure was 125kPa. Determine the of sub grade's elastic modulus? 5M
   b. What is soil exploration and what is the need for carrying it? What might happen if soil exploration is not carried out/ carried out half-heartedly? 7M

UNIT-II

4. a. Describe the method of slices to analyse a slope? 8M
   b. A deep cut of 7m has to be made in clay with unit weight 16kN/m^3 and a cohesion of 25kN/m^2. What will be the factor of safety. if the slope angle is 30°. Stability number is given to be 0.178 (from Taylor's chart) for a depth factor of 3. 4M

(OR)

5. Explain the stability of slopes of earth dams under different conditions? 12M

UNIT-III

6. Briefly discuss the Coulomb's theory of earth pressure. 12M

(OR)

7. A retaining wall of height 5m retains a 3m thick soil ($\Phi'=25^0$, $c'=12kPa$, $\gamma=20kN/m^3$), below which there is a 2m thick soil layer ($\Phi'=30^0$, $c'=0kPa$, $\gamma_{sat}=22kN/m^3$). The water level coincides with the interface of the two soil layers. Determine the value of active earth pressure at the base of the wall. Also draw the earth pressure distribution diagram. 12M

UNIT-IV

8. Discuss the various factors that affect the bearing capacity of a shallow footing. How do you ascertain whether a foundation soil is likely to fail in local shear or in general shear? 12M

(OR)

9. A footing, 2.5m square, is founded at a depth of 2m in a sand deposit, for which the corrected value of N is 30. The water table is at a depth of 2m from the surface. Determine the net allowable bearing pressure, if the permissible settlement is 40mm and a factor of safety of 3 is desired against shear failure. 12M

UNIT-V

10. Explain the pile load test? 12M

(OR)

11. A group of 16 piles (diameter = 45cm, length =10m, centre to centre spacing= lm) are arranged in a square pattern and passes through a recent fill (thickness = 2.5m) overlying a soft clay deposit (thickness = 6m) which is consolidating under the fill load and rests in a stiff clay strata. All the strata are saturated. The soil properties of different strata are given below. Determine the ultimate load carrying capacity of the pile group. Angle of internal friction for all the layers is zero. 12M

Soil type	γ (kN/m^3)	c_u (kPa)	Adhesion factor
Fill	17	45	0.55
Soft clay	18	35	0.35
Stiff clay	22	75	0.50

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AR13

CODE: 13EE3018 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.TECH II SEM REGULAR EXAMINATIONS, MAY, 2016

POWER ELECTRONICS

(Electrical and Electronics Engineering)

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

PART-A

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

1. (a) Mention any one example of half controlled device?
   (b) Define finger voltage of SCR?
   (c) State the advantage of using freewheeling diode in a line commutated converter?
   (d) What is the PIV of SCR in a fully controlled midpoint converter?
   (e) State the difference between fully controlled converter & dual converter?
   (f) What is the conduction period of each SCR in a 6 pulse converter?
   (g) State the difference between SCR & TRIAC?
   (h) What is the type of commutation employed in step up cyclo converter?
   (i) Mention the limitation of basic series inverter?
   (j) Mention any one application of DC-DC converter?

PART-B

Answer one question from each unit **[5 x 12=60M]**

UNIT-I

2. List & define voltage ratings & current ratings of SCR? [12M]

(OR)

3 (a) Explain two transistor analogy of SCR? [6M]
(b) Describe the operation of UJT firing circuit used for triggering of SCRs? [6M]

UNIT-II

4. Explain the operation of single phase fully controlled bridge converter with RLE load under discontinuous conduction with neat circuit diagram & relevant waveforms? [12M]

(OR)

5. (a) Explain the operation of line commutated inverter? [6M]
(b) Explain the operation of semi converter with R-load? [6M]

UNIT-III

6. Explain the operation of three phase full bridge converter with RL load and draw relevant waveforms for a firing angle of $\alpha=60^{o}$? [12M]

(OR)

7. (a) Describe the operation of 3-Ø, 3 pulse converter with circuit diagram & waveforms? [6M]
(b) Mention few applications of dual converters? [6M]

UNIT-IV

8. (a) Explain various modes of operation of TRIAC? [6M]
(b) Describe the operation of 1-Ø ac voltage controller employing TRIAC? [6M]

(OR)

9. Explain the operation of 1-Ø step down cycloconverter with bridge configuration assuming RL load under continuous & discontinuous conduction modes? [12M]

UNIT-V

10. Explain the principle of operation of Buck & Boost converters? [12M]

(OR)

11. (a) List various PWM techniques employed in inverters? [6M]
(b) Explain the principle of operation of basic parallel inverter? [6M]

AR13

CODE: 13ME3019 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH II SEMESTER REGULAR EXAMINATIONS, MAY-2016

INDUSTRIAL ENGINEERING AND AMANAGEMENT
(MECHANICAL ENGINEERING)

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

PART-A

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

1. a) What is policy of Organization?
   b) Define Management?
   c) What do you mean by 'globalization'?
   d) Describe the VED analysis?
   e) What is virtual factory?
   f) What is job shop production?
   g) Define Inventory.
   h) What is 'Value Analysis'?
   i) What is EOQ?
   j) Define 'quality control'.

PART-B

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

UNIT-I

2. a) Define organization and explain various organization structures. **6M**
   b) Explain the line and staff organizational relationships. What precautions should be taken to avoid the conflicts between the two? **6M**

(OR)

3. a) What do you mean by organization? State any six characteristics of functional organization. **6M**
   b) Point out the factors that affect delegation of authority. How does delegation differ from decentralization of authority? **6M**

UNIT-II

4. a) Explain different operations strategies in case of location choice for existing organization. **7M**
   b) Explain the objectives of plant layout. **5M**

(OR)

5. a) Explain the physical facilities required in an organization/factory. **6M**
   b) Explain the factors considered for an industrial building. **6M**

AR13

CODE: 13ME3019 **SET-2**

UNIT-III

6.	a)	Explain different types of charts and diagrams used in methods study.	**8M**
	b)	Discuss the principles of motion study.	**4M**
		(OR)	
7.	a)	Discuss the recording technique of motion study.	**6M**
	b)	Discuss the various techniques of work measurement.	**6M**

UNIT-IV

8.	a)	Discuss the scope of materials management.	**4M**
	b)	Discuss the parameters of purchasing. Explain the purchasing procedure.	**8M**
		(OR)	
9.	a)	Explain the reasons for keeping inventories.	**4M**
	b)	Discuss the selection of suppliers. What are the ten 'R's of purchasing?	**8M**

UNIT-V

10.	a)	Explain the different methods of inspection.	**6M**
	b)	Explain the quality control techniques .	**6M**
		(OR)	
11.	a)	Discuss the seven tools for quality control	**6M**
	b)	Explain the '9 M''s of quality of product or service.	**6M**

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AR13

CODE: 13EC3020 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH II SEMESTER REGULAR EXAMINATIONS, MAY, 2016

DIGITAL SIGNAL PROCESSING
(Electronics and Communication Engineering)

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

PART-A

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

1. a) What is Zero-Padding and mention its importance.
   b) Determine whether the following signals is power signals or energy signals or neither $x(n) = (j)^{\frac{n}{4}}$
   c) Determine whether the corresponding system is causal or not $y(n) = \sin(x(n))$
   d) Discuss conjugate symmetry property of DFS.
   e) Mention any two ROC properties of Z-Transform.
   f) Mention the relation between DTFT and Z-Transform.
   g) Mention the use of Bilateral Z-transform.
   h) Compare IIR and FIR filters.
   i) What is the disadvantage that occur in Bilinear transformation and how it can be eliminated.
   j) Write the windowing equation for Bartlett window.

PART-B

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

UNIT-I

2. The following systems have input x(n) and output y(n). for each system determine whether it is memory less, stable, causal, linear or time-invariant. **12M**

   (i) $y(n) = |x(n)|$

   (ii) $y(n) = \text{sgn}(x(n))$

(OR)

3. a) Determine the Fourier series coefficients of the signal x(n) and plot its magnitude and Phase spectra. **6M**

$$x(n) = 1 + \sin(\frac{2\pi}{N}n) + 3\cos(\frac{2\pi}{N}n) + \cos(\frac{4\pi}{N}n + \frac{\pi}{2})$$

   b) A Discreet-time periodic signal x(n) is real valued and has a fundamental period N=5. The non-zero Fourier series coefficients for x(n) are **6M**

$X_0=1$; $X_2=X^*_{-2}e^{\frac{j\pi}{4}}$; $X_4= X^*_{-4}= 2e^{\frac{j\pi}{3}}$.

Express x(n) in the form $x(n) = A_0 + \sum_{k=1}^{\infty} A_k \sin(\omega_k n + \phi_k)$.

AR13

CODE: 13EC3020 **SET-2**

UNIT-II

4. Let X(k) be a 14-pint DFT of a length-14 real sequence x(n). The first eight samples are given by X(0)=12; X(1)= -1+3j; X(2)=3+j4; X(3)=1-j5; X(4)= -2+j2; X(5)=6+j3; X(6)= -2-j3; X(7)=10. Determine the remaining samples of X(k). Evaluatet he following functions of x(n) without computing the IDFT of X(k). **12M**

(i) x(0) (ii) x(7) (iii) $\sum_{n=0}^{13} x(n)$ (iv) $\sum_{n=0}^{13} e^{\frac{j4\pi n}{7}} x(n)$ (v) $\sum_{n=0}^{13} |x(n)|^2$

(OR)

5. a) Compute the 8-point DFT of the sequence $x(n) = \cos(\frac{n\pi}{2})$ using the DIT-FFT algorithm . Show all intermediate results. **9M**

b) Differentiate between DIT-FFT and DIF-FFT. **3M**

UNIT-III

6. a) Convert the analog filter with system function $H(s) = \frac{s+0.1}{(s+0.1)^2+16}$ into a digital filter by means of Bilinear Transformation. The digital filter is to have a resonant frequency $\omega_r = \frac{\pi}{2}$. Find the location of poles and zeros. **6M**

b) Determine the poles of Butterworth LPF for N=4. Sketch the poles of $H_a(s)$, $H_a(-s)$ and determine the Butterworth LPF system function $H_a(s)$. **6M**

(OR)

7. a) Design a Chebyshev analog filter with a maximum pass-band attenuation of 2.5 dB at $\Omega_p = 20 rad/s$ and a minimum stop-band attenuation of 30 Db at $\Omega_s = 50 rad/s$. **9M**

b) Compare Butterworth and Chebyshev filters. **3M**

UNIT-IV

8. Desired frequency response of HPF is given by **12M**

$H_d(e^{j\omega}) = e^{-j34}$ $\omega_c \le |\omega| \le \pi$

0 $|\omega| \le \omega_c$ Design a linear phase FIR filter using Hanning Window for M=7 and ω_c=2rad/sample.

(OR)

9. a) Explain the sampling rate conversion by a rational factor($\frac{L}{M}$) . **6M**

b) Prove that interpolator is linear time variant system. **6M**

UNIT-V

10. a) Explain about Memory access schemes in DSP processor. **6M**

b) Explain about :(i) Bit reversed addressing mode **6M**
(ii) Circular addressing mode
(iii) Register indirect addressing mode.

(OR)

11. a) Explain about TMS320C5X. **6M**

b) Explain about MAC and concept of pipelining. **6M**

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AR13

CODE: 13CS3017 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH II SEMESTER REGULAR EXAMINATIONS, MAY, 2016

NETWORK SECURITY AND CRYPTOGRAPHY
(COMPUTER SCIENCE ENGINEERING)

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

PART-A

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

1. a) What do you mean by session hijacking?
   b) What is security attack?
   c) Define message authentication.
   d) Define the principles of elliptic key cryptography.
   e) What is SMTP?
   f) Write down the Authentication Procedures.
   g) What is the use of Hand Shake Protocol?
   h) Define SET.
   i) What is Virus?
   j) Write down the intrusion techniques.

PART-B

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

UNIT-I

2. a) What are the services of computer security? 6M
   b) What is security attack? Differentiate between passive and active security threat. 6M

(OR)

3. a) How cryptographic systems are characterized? 6M
   b) Explain the different substitution techniques. 6M

UNIT-II

4. Discuss about DES encryption and decryption method. 12M

(OR)

5. a) Differentiate between conventional and public key encryption. 6M
   b) Describe in general terms an efficient procedure for picking up a prime number. 6M

AR13

CODE: 13CS3017 **SET-1**

UNIT-III

6.	a)	Explain X.509 certificate format.	6M
	b)	Explain the secure authentication dialogue of Kerberos	6M

(OR)

7.	a)	Give examples of reply attacks. List three general approaches to deal with reply attacks.	6M
	b)	What entities constitute a full-service Kerberos environment? In the context of Kerberos, what is a realm?	6M

UNIT-IV

8.	a)	What are the benefits of IP security?	6M
	b)	List and briefly define the parameters that define an SSL session state.	6M

(OR)

9.	a)	Write short notes on DKIM.	6M
	b)	Explain the SSL record protocol operation.	6M

UNIT-V

10.	a)	Explain design principles of Firewalls	6M
	b)	What are firewalls? List the characteristics of firewalls.	6M

(OR)

11.	a)	Explain intrusion detection techniques.	6M
	b)	Describe trusted system.	6M

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AR13

CODE: 13IT3002 **SET-I**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH II SEMESTER RGULAR EXAMINATIONS, MAY-2016

COMPUTER NETWORKS
(INFORMATION TECHNOLOGY)

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

1. a) What is Full Duplex Mode?
   b) What is point-point Connection?
   c) What is analog data?
   d) What is wavelength?
   e) What is a burst error?
   f) What is piggybacking?
   g) What is the purpose of Checksum?
   h) Name any Random Access Protocol?
   i) What is the difference between passive hub and active hub?
   j) What is GEO?

PART-B

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

UNIT-I

2.	a)	Compare Star, Ring, Mesh and Bus topologies?	6M
	b)	Compare OSI Model and TCP/IP Model?	6M
		(OR)	
3.	a)	Compare LAN, MAN, WAN Network Categories?	6M
	b)	Discuss Data Link layer responsibilities	6M

UNIT-II

4.	a)	What is Line coding and write short notes on line encoding schemes.	6M
	b)	What is Multiplexing ?Classify different Multiplexing techniques	6M
		(OR)	
5.	a)	Classify different transmission modes	6M
	b)	What is switched Network? Classify different switching techniques	6M

UNIT-III

6.	a)	Discuss flow control and error control?	6M
	b)	Compare Go-Back-NARQ Protocol with Selective-Repeat ARQ	6M
		(OR)	
7.		Explain HDLC frame Formats in detail?	12M

UNIT-IV

8.		Present the detailed taxonomy of Multiple Access protocols	12M
		(OR)	
9.	a)	Examine different Ethernet Standards?	6M
	b)	Explain 802.3 frame format?	6M

UNIT-V

10.	a)	Categorize different connecting devices with respect to Layers?	8M
	b)	Compose brief description about Satellite Networks?	4M
		(OR)	
11.		Explain the applications and architecture of Blue tooth?	12M

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RA / AR13

CODE: 13HS3006 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH I SEMESTER REGULAR EXAMINATIONS, MAY-2016
INDUSTRIAL MANAGEMENT SCIENCE
(INFORMATION TECHNOLOGY)

NOTE: Present Value tables are permitted for Q.No: 4 (b)

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

PART-A

[1X10=10M]

ANSWER ALL QUESTIONS

1 a) Leader
b) Organization
c) Business
d) Fixed Capital
e) Demand Forecasting
f) Expert Opinion Method
g) Isoquant
h) Variable Cost
i) Perfect Competition
j) Price Control

PART-B

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

UNIT-I

2 a) Define Management. What is its importance to any Organization. [2+2]
b) Discuss Mayo's Hawthrone Experiment. What are the conclusions arrived by the research team? What is its impact on the workers of the organization? [3+3+2]

(OR)

3 a) Explain Herzberg's two factor theory of motivation. [4]
b) Are the Indian public sector enterprises and undertakings responsible towards the development of the society? If so, discuss with corporate examples. [8]

UNIT-II

4 a) Who is a sole proprietor? Explain features and merits of a sole proprietorship form of Organization? [2+2+2]
b) Calculate the net present value of two projects and suggest which of the two projects should be accepted assuming a discount rate of 10% [6]

Particulars	Project-A	Project-B
Initial Investment	Rs 30,000	Rs 50,000
Estimated Life	5 years	5 years
Scrap Value	Rs 2,000	Rs 4,000

Years	1	2	3	4	5
Cash Inflows					
Project-A	10,000	15,000	8,000	6,000	4,000
Project-B	40,000	30,000	10,000	5,000	4,000

(OR)

5 a) What is a Joint Stock Company. Explain its merits and limitations. [2+2+2]

b) A business firm is planning of choosing the right machines for their purpose after financial evaluation of their proposals. The initial cost and the net cash flow over 5 years to the business firm have been computed for each machine and are as follows:

Particulars	**Machine(X) (in Rs)**	**Machine (Y) (in Rs)**
Initial Cost	20,000	28,000
Net Cash Flow 1 year	8,000	10,000
2 year	12,000	12,000
3 year	9,000	12,000
4 year	7,000	9,000
5 year	6,000	9,000

Choose the machine based on a) Payback period method [2]

b) Accounting rate of return method [4]

UNIT -III

6 a) Explain the nature and scope of managerial economics. [2+4]

b) What is demand? Mention the various determinants of demand. [2+4]

(OR)

7 a) What is law of demand. Are they any exceptions? If so, explain. [2+4]

b) Define Managerial Economics. What is its importance to Engineers? [2+4]

UNIT-IV

8 a) Explain the production function with reference to law of variable proportions and substitutability of factors. [6]

b) Discuss Internal and External economies of scale. [6]

(OR)

9 a) What is breakeven point. Explain how you determine it through a break-even chart. [2+4]

b) A firm manufactures two products P & Q. The total fixed costs during the year are Rs 2,00,000 and sales are Rs 16,00,000. The firm wants to drop product Q as it is yielding less contribution per unit and add product R. By adding product R, the new fixed cost is likely to be Rs 2,50,000 and sales volume will increase to Rs 18,00,000. Consider the following additional data and recommend whether the firm should change or not. [6]

Existing Product Mix

Product	Selling Price(in Rs)	Variable Cost(in Rs)	% Share
P	80	32	60
Q	100	40	40

Proposed Product Mix

Product	Selling Price(in Rs)	Variable Cost(in Rs)	% Share
P	80	32	30
R	120	48	70

UNIT- V

10 a) What is a market? Mention the features and factors governing market structure. [2+3]

b) Classify markets on the basis of competition and discuss briefly. [3+4]

(OR)

11 a) What is perfect competition? How equilibrium price can be determined under short-run and long-run under perfect competition. Discuss with a diagrammatic representation. [2+3+3]

b) What is monopoly? Discuss its features. [2+2]