

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Regular Examinations, May, 2023

DESIGN OF STEEL STRUCTURES

(CIVIL ENGINEERING)

Time: 3 Hours

Max Marks: 60

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

Assume suitable data if necessary

		Marks	CO	Blooms Level
<u>UNIT-I</u>				
1.	Identify the number of bolts required for a lap joint between two plates of size 100mm x 16mm and 100mm x 12mm thick so as to transmit a factored load of 150 kN using a single row of M20 bolts of grade 4.6 and grade 410 plates.	10	1	2
(OR)				
2. a	Write about various types of butt welding.	4	1	2
b	Two plates 120 mm x 10 mm are overlapped and connected together by transverse fillet weld to transmit pull equal to full strength of the plate. Design the suitable welding. Allowable stress in the weld is 110 N/mm ² . Allowable stress in tension in the plate is 0.4 fy N/mm ² .	6	1	4
<u>UNIT-II</u>				
3.	Design a simply supported beam to carry a U.D.L. of 44 kN/m. The effective span of the beam is 8 m. The effective length of the compression flange of the beam is also 8 m. The ends of the beam are not free to rotate of the bearings.	10	2	4
(OR)				
4.	ISMB 550 @1.037 kN/ m has been used as simply supported over a span of 4m. The ends of beam are restrained against torsion but not against lateral bending. Evaluate the safe UDL per metre, which the beam can carry..	10	2	3
<u>UNIT-III</u>				
5.	Design a tension member to carry load of 600kN. two angles placed back to back with long leg outstanding are desirable. The length of the member is 3.5m	10	3	4
(OR)				
6.	A tension member of a roof truss carries a factored axial tension of 430Kn. Design the section and its connection (a) using lug angles (b) without using lug angles	10	3	3

UNIT-IV

7. Design a column with single lacing system to carry a factored axial load of 1000kN. The effective length of column is 4m. Use two channels placed toe to toe. 10 4 4
- (OR)**
8. A steel column 10m long and carries an axial load of 1500 kN. The column is hinged at both the ends. Design an economical built up section, with double lacing. Design the lacing also. 10 4 4

UNIT-V

9. Design a simply supported gantry girder for the following data: 10 5 4
- i. Weight of crane = 320kN
 - ii. Crane capacity = 320kN
 - iii. Weight of crab and crane = 300kN
 - iv. Span of gantry girder = 4m
 - v. Minimum approach of crane hook = 1.2m
 - vi. Distance between c/c gantries = 16m
 - vii. Distance between c/c of wheel = 3.2m
 - viii. Weight of rails = 300N/m
 - ix. height of rails = 75mm
- (OR)**
10. A gabled asbestos roofing is supported on steel trusses of 9m span, rise 2.25m spaced at 3m/c. The dead load is 1250N/m² of roof area and the wind load is 1000N/m² normal to roof. Taking 4 purlins one at each end on the slope and the others equally spaced, design an unequal angle purlin with long leg perpendicular to slope of roof. 10 5 4

UNIT-VI

11. Design a welded plate girder for an effective span of 40m carrying a UDL 15kN/m and a concentrated loads of 120kN acting at 12m from left support. The girder is simply supported 10 6 4
- (OR)**
12. Design a welded plate girder of to support a 15kN UDL and 550kN concentrated load at mid span. The girder is simply supported with a span of 16m and has sufficient lateral support for compressive flange. Use 410 grade steel. 10 6 4

Time: 3 Hours**Max Marks: 60**

Answer ONE Question from each Unit

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	<u>UNIT-I</u>	Marks	CO	Blooms Level
1. a)	Write about HTML form creation process with five basic features.	5	CO1	L3
b)	Discuss about Standard HTML Document Structure.	5	CO1	L2
	(OR)			
2. a)	Explain different types of selectors in CSS.	5	CO1	L2
b)	Write about table creation process in HTML with an example.	5	CO1	L3
	<u>UNIT-II</u>			
3. a)	Demonstrate the primitive data types that Java script uses.	5	CO2	L2
b)	Explain Document object model in Java Script with an example.	5	CO2	L3
	(OR)			
4. a)	Explain about objects in Angular JS with an example.	5	CO2	L3
b)	Discuss about arrays in Angular JS.	5	CO2	L2
	<u>UNIT-III</u>			
5. a)	Write short note on XML schemas.	5	CO3	L3
b)	Discuss the various terms related to Document Type Definition.	5	CO3	L2
	(OR)			
6. a)	Write about SAX Parser.	5	CO3	L2
b)	Compare and contrast between DOM and SAX parsers.	5	CO3	L2
	<u>UNIT-IV</u>			
7. a)	Write and explain about JDBC Drivers.	5	CO4	L2
b)	Discuss about the execute, executeQuery, and executeUpdate.	5	CO4	L3
	(OR)			
8. a)	What is JDBC PreparedStatement?	5	CO4	L2
b)	Discuss about JDBC and its importance.	5	CO4	L2
	<u>UNIT-V</u>			
9. a)	Explain the Lifecycle of Servlet with neat sketch.	5	CO5	L3
b)	Write the differences between Generic Servlet and HTTP Servlet.	5	CO5	L2
	(OR)			
10. a)	Discuss about the reading parameters of servlet.	5	CO5	L3
b)	Write short notes on javax.servlet Package?	5	CO5	L2
	<u>UNIT-VI</u>			
11. a)	What are the JSP lifecycle phases.	5	CO6	L2
b)	Discuss about JSP Scripting Elements.	5	CO6	L2
	(OR)			
12. a)	Explain about JSP Implicit Objects.	5	CO6	L2
b)	Write a JSP program to demonstrate arithmetic operations.	5	CO6	L4

Time: 3 Hours

Max Marks: 60

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

			Marks	CO	Blooms Level
UNIT-I					
1.	a	Show that the following system is nonlinear and time invariant $y(n+2) + 2y(n) = x(n+1) + 2$	(5M)	CO1	4
	b	Determine the frequency response, magnitude and phase responses and time delay of the systems given by $y(n) - \frac{1}{2}y(n-1) = x(n)$	(5M)	CO1	3
(OR)					
2.	a	Explain causality and stability of a linear time invariant system.	(5M)	CO1	2
	b	State and prove the time shifting and convolution properties of Z-Transform	(5M)	CO1	2
UNIT-II					
3.		State and prove the shifting and convolution Properties of DFT.	(5M)	CO2	2
		Find the linear convolution of the sequences $x[n]=\{1,4,0,9,-1\}$ and $h[n]=\{-3,-4,0,7\}$ using DFT.	(5M)	CO2	3
(OR)					
4.		Find 8 point DFT of the sequence $x(n)=[1,2,1,0,2,3,0,1]$	(5M)	CO2	3
		State and prove any four Properties of discrete Fourier series	(5M)	CO2	2
UNIT-III					
5.		Determine the DFT of the following sequence using FFT DIF $X(n) = \{1,2,3,5,5,3,2,1\}$	(10M)	CO3	3
(OR)					
6.		Compute the FFT for the sequence $x(n) = n+1$ where $N=8$ using DIT algorithm	(10M)	CO3	3
UNIT-IV					
7.	a	The analog transfer function $H(s) = 2/(s+1)(s+2)$. Determine $H(z)$ using impulse invariance method.	(6M)	CO4	3
	b	Distinguish the Butterworth and Chebyshev filters	(4M)	CO4	2
(OR)					
8.	a	Compare bilinear transformation and impulse invariant mapping.	(6M)	CO4	2
	b	Obtain direct form-I and cascade form realization of following system $y(n) = 0.75y(n-1) - 0.125y(n-2) + 3x(n) + 7x(n-1) + x(n-2)$	(4M)	CO4	3
UNIT-V					
9.	a	Determine the direct form and cascade form realization of FIR with system function $H(Z) = 1 + 2Z^{-1} - 3Z^{-2} - 4Z^{-3} + 5Z^{-4}$	(4M)	CO5	2
	b	Compare IIR and FIR filters.	(6M)	CO5	2
(OR)					
10.	a	Explain FIR filter design using windowing method.	(4M)	CO5	2
	b	Design a FIR high pass filter using Hamming Window $H_d(e^{j\omega}) = 1$ for $\pi/4 \leq \omega \leq \pi$ 0 for $ \omega \leq \pi/4$ Find the value of $h(n)$ for $N=11$, Find $H(z)$.	(6M)	CO5	4
UNIT-VI					
11.	a	What are the DSP computational building blocks? Explain with diagrams any two of them.	(5M)	CO6	2
	b	Explain the addressing modes of DSP processor.	(5M)	CO6	2
(OR)					
12.	a	What are interrupts? What are the classes of interrupts available in the TMS320C54xx processor? Discuss in detail.	(5M)	CO6	2
	b	Explain the MAC unit and Pipelining concepts in detail	(5M)	CO6	2

Time: 3 Hours

Max Marks: 60

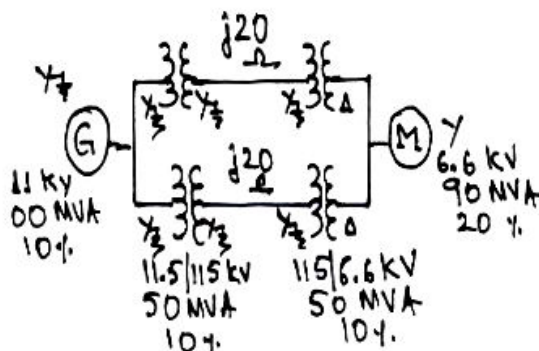
Answer ONE Question from each Unit

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UNIT-I

1. Draw the per unit reactance diagram for the system shown in figure below. Choose a base of 11 KV, 100 MVA in the generator circuit.



(OR)

2. a Show that p.u. impedance of a transformer referred to either HV or LV side is same 5 1 L2
b From Y_{Bus} for the network, using: (i) by direct inspection method 5 1 L3

Element	Positive sequence reactance
1 - 2	$j1.0$
2 - 3	$j0.4$
2 - 4	$j0.2$
3 - 4	$j0.2$
3 - 1	$j0.8$
4 - 5	$j0.08$

UNIT-II

3. a How the buses are classified in power system? Discuss the significance of slack bus in power systems 5 2 L2
b Develop an algorithm for G-S load flow method including PV buses in the power system 5 2 L3

(OR)

4. For the two-bus system of Fig. 8-8, with the data as shown and with $Y_{11} = Y_{22} = 1.6/-80^\circ$ pu and $Y_{21} = Y_{12} = 1.9/100^\circ$ pu, determine the per-unit voltage at bus 2 by the Gauss-Seidel method. 10 2 L3

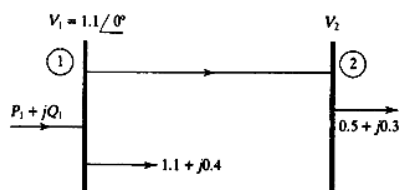


Fig. 8-8.

UNIT-III

5. a Develop the power flow model using Decoupled method. Draw the flow chart and explain 5 3 L2
b Compare NR, G-S methods with respect to: 5 3 L2
i. Number of equations ii. Memory iii. Time for iteration
iv. Convergence characteristics v. Number of iterations

(OR)

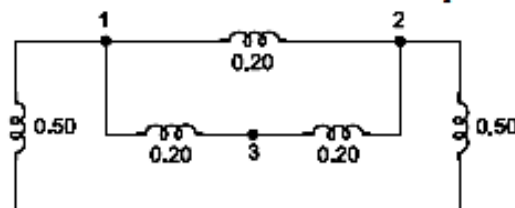
6. Explain clearly with detailed flowchart, the computational procedure for load flow solution using Newton-Raphson method when: 10 3 L3

Case I: P-V buses are absent

Case II: P-V buses present

UNIT-IV

7. Fig. 8.26 shows a three bus network. Obtain impedance matrix Z_{BUS} . 10 4 L3

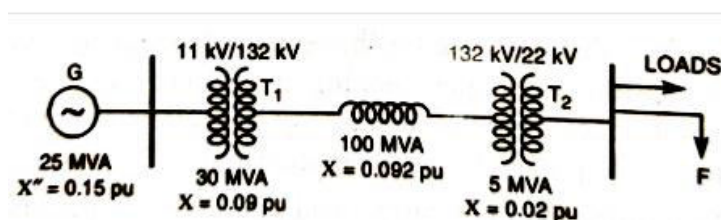


Reference bus r.

Fig. 8.26: Three bus network.

(OR)

8. a Calculate the fault current of the three-phase symmetrical short circuit fault occurring at 22 kV bus bar indicated by 'F' 10 4 L3

UNIT-V

9. a Show that the power expended in a 3 – phase unbalanced circuit is invariant when there is a symmetrical component transformation has been done 5 5 L3
- b Given $V_a = 5\angle 53^\circ$, $V_b = 7\angle -164^\circ$, $V_c = 7\angle 105^\circ$, find the symmetrical components. The phase components are shown in the phasor form in Fig. 7.3 5 5 L3

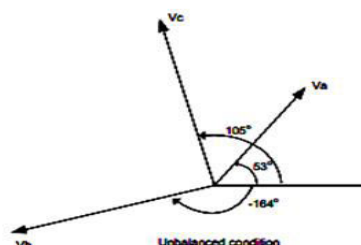


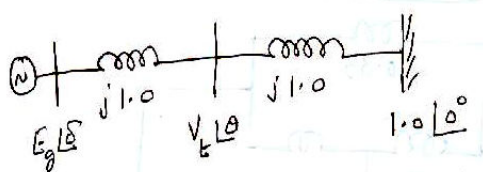
Fig. 7.3

(OR)

10. a Describe the positive, negative and zero sequence impedance diagrams of unloaded alternator 5 5 L2
- b Derive the expression for the fault current and terminal voltage for a line to line fault occurs at the terminal of an unloaded 3-phase alternator. Assume that the alternator has an isolated neutral 5 5 L3

UNIT-VI

11. a Draw and explain power angle curve of a synchronous machine 5 6 L2
- b Determine the steady state stability limit of the system shown in Fig., if $V_t = 1.0$ pu and the reactances are in pu. 5 6 L3



(OR)

12. Explain the application of equal area criterion to determine stability of a synchronous machine connected to an infinite bus. 10 6 L3

Time: 3 Hours**Max Marks: 60**

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

		Marks	CO	Blooms Level
<u>UNIT-I</u>				
1.	What is demand? Explain the law of demand and its exceptions. (OR)	10	1	L2
2.	What is elasticity? Explain the different types of elasticities.	10	1	L2
<u>UNIT-II</u>				
3.	What is demand forecasting? Explain the methods of demand forecasting. (OR)	10	2	L2
4.	What is test marketing? Explain the benefits of test marketing.	10	2	L2
<u>UNIT-III</u>				
5.	What is the Isoquant? Explain properties of the isoquant curve. (OR)	10	3	L2
6.	What is the Cobb-Douglas production function? Explain with an example.	10	3	L2
<u>UNIT-IV</u>				
7.	What are the features of perfect competition in microeconomics? (OR)	10	4	L2
8.	What is monopoly? Explain the price and output determination in it?	10	4	L2
<u>UNIT-V</u>				
9.	What do you mean by capital budgeting? Explain methods used in capital budgeting. (OR)	10	5	L2
10.	What is project evaluation? Explain different types of project evaluation methods.	10	5	L2
<u>UNIT-VI</u>				
11.	What is the accounting process? Explain the steps in accounting process. (OR)	10	6	L2
12.	Define the following terms a. Journal. b. Ledger. c. Double-Entry bookkeeping. d. Trading account. e. Balance sheet.	10	6	L1

Time: 3 Hours

Max Marks: 60

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

		Marks	CO	Blooms Level
<u>UNIT-I</u>				
1.	a) Explain the basic structure of HTML Document.	5	CO1	L2
	b) What is Inline styles? How you create an HTML form?	5	CO1	L3
(OR)				
2.	a) Explain about the following terms with examples (i) Unordered Lists (ii) Ordered Lists.	5	CO1	L2
	b) Discuss about Box Model in CSS.	5	CO1	L3
<u>UNIT-II</u>				
3.	a) State the two approaches of Pattern matching used in JavaScript.	5	CO2	L2
	b) Illustrate about Control statements used in JavaScript with example	5	CO2	L3
(OR)				
4.	a) Explain Java Script form validation with example.	10	CO2	L2
<u>UNIT-III</u>				
5.	a) Explain about Arrays in Angular JS with example.	5	CO3	L2
	b) Discuss about Objects in Angular JS with example.	5	CO3	L3
(OR)				
6.	a) Illustrate about Strings in Angular JS with example.	5	CO3	L3
	b) Explain about Expressions in Angular JS with example.	5	CO3	L2
<u>UNIT-IV</u>				
7.	a) Explain about Document type Definition (DTD) with example.	5	CO4	L2
	b) Discuss about SAX parsers with example.	5	CO4	L3
(OR)				
8.	a) Illustrate the concept of XML Schemas	5	CO4	L2
	b) Discuss about DOM with example.	5	CO4	L3
<u>UNIT-V</u>				
9.	a) Explain briefly about types of JDBC drivers.	5	CO5	L3
	b) Explain about javax.servlet.http package.	5	CO5	L2
(OR)				
10.	a) Discuss about JDBC API?	5	CO5	L3
	b) Explain about Reading servlet Parameters with example.	5	CO5	L2
<u>UNIT-VI</u>				
11.	a) Explain about JSP Directives with example.	5	CO6	L2
	b) Discuss about JSP Implicit Objects.	5	CO6	L3
(OR)				
12.	a) Illustrate the anatomy of JSP page with example program.	5	CO6	L4
	b) Explain about standard action elements in JSP?	5	CO6	L2

AR13

CODE: 13CS3016

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.TECH II SEM SUPPLEMENTARY EXAMINATIONS, MAY,2023

**WEB TECHNOLOGIES
(COMPUTER SCIENCE & ENGINEERING)**

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Differentiate between GET method and POST method.
- b) List the different objects in java script.
- c) What is DTD?
- d) How to parse the XML files.
- e) What is a web server and web browser?
- f) Define cookie and session.
- g) What is <jsp:forward> Action?
- h) How to declare variable in JSP.
- i) Which type driver is a java native interface (JNI) call on database specific native client API?
- j) Does the JDBC-ODBC Bridge support multiple concurrent open statements per connection?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Create a simple HTML page which demonstrates the use of 6M
various types of lists. Try adding a definition list which uses
an unordered list to define term.
- b) Create a HTML document that has your image and your 6M
friend's image with a specific height and width. Also when
clicked on the images it should be navigate to their respective
profiles.

(OR)

3. a) Describe the different ways that CSS styles can be added to a 6M
page.
- b) Write a JavaScript which validates registration form. 6M

UNIT-II

4. a) Define an XML Schema. Show how an XML schema can be created. 6 M
b) Explain the following built –in objects of java Script. 6 M
i) window ii) document

(OR)

5. a) Discuss the differences between DOM and SAX Parsers. 6 M
b) Discuss in detail about well formed XML and Valid XML. 6 M

UNIT-III

6. a) Distinguish between CGI and Servlet. 6 M
b) What is a Servlet? Explain Servlet life cycle methods. 6 M

(OR)

7. a) Explain how to use session tracking mechanisms using Servlet API. 6 M
b) Write a simple application in which the HTML form can invoke the servlet. 6 M

UNIT-IV

8. a) Describe and discuss the Different JSP Implicit Objects? 6 M
b) Explain about scripting elements. 6 M

(OR)

9. a) Explain Error Handling and debugging with an example. 6 M
b) Write a JSP code for passing control between two JSP pages. 6 M

UNIT-V

10. a) Explain JDBC Driver types. 6 M
b) Write a short note on Javax.sql package 6 M

(OR)

11. Write a JSP program for accessing the database and displaying all the records from the database. 12 M

**Design and drawing of Steel Structures
(CIVIL ENGINEERING)****Time: 3 Hours****Max Marks: 70**

Answer ONE Question from each Unit

All Questions Carry Equal Marks

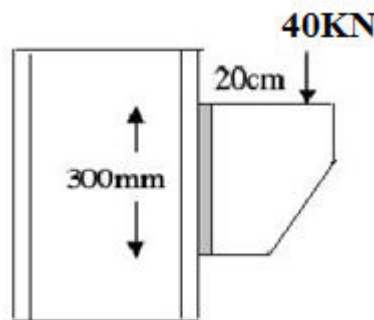
All parts of the Question must be answered at one place

UNIT-I

1. a) Write the advantages and disadvantages of steel as structural member. 5M
- b) A tie member of a roof truss consists of 2 ISA 100x75x8mm. The angles are connected to either side of a 10mm gusset plate and the member is subjected to a working pull of 325kN. Design the welded connection. Assume connections are made in the workshop. 9M

(OR)

2. a) With neat sketches explain different types of welds? 5M
- b) Determine the depth of the fillet weld required to join a plate bracket with flange of a stanchion as shown in figure. 9M
(Load = 40 kN)

**UNIT-II**

3. Design a beam of effective span 6.0m and subjected to a bending moment of $100.6 \times 10^6 \text{ Nmm}$. The compression flange is laterally unsupported throughout. Check for deflections and shear. Assume $f_y = 250 \text{ MPa}$ 14M
4. Design a simply supported beam of span 5 m and it has to carry a factored UDL of 35kN/m (excluding the self-weight). The beam is laterally supported throughout. Use $f_y = 250 \text{ MPa}$. 14M

(OR)

UNIT-III

5. a) Explain the different modes of failure of tension members. 6M
b) Design a tension member to carry a factored load of 340 kN. The two angles placed back to back with long legs out standing are desirable. The length of the member is 3.0m. 8M

(OR)

6. a) A column 3.9m long has to support a factored load of 6000 kN. The column is effectively held at both ends and restrained at one of the ends. Design the column using beam sections and plates. 10M
b) Write the design considerations of columns. 4M

UNIT-IV

7. A hand operated 60 kN overhead crane is provided in a workshop. The details are given below: Centre to centre between gantry girders = 15 m, Span of the gantry girder = 5.5 m, Weight of the crane = 45 kN, Wheel spacing = 3 m, Weight of the crab = 15 kN, Maximum edge distance = 1 m, Design a simply supported gantry girder, assuming the flange is laterally supported 14M

(OR)

8. Explain the design procedure of gantry girders. 14M

UNIT-V

9. Design an 20m long simply supported welded plate girder carrying a uniformly distributed load of 50kN/m excluding self-weight and two concentrated loads of 250kN each at quarter points of the span. Assume that girder is laterally supported throughout. 14M

(OR)

10. Design a welded plate girder to carry a superimposed load of 14.5 tonnes per metre on an effective span of 20 metres. Assume necessary data 14M

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****III B.Tech II Semester Supplementary Examinations, May,2023****Web Technologies
(Common to CSE & IT)****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. Define form. Explain form elements for registration page of any exam 14M
(OR)
2. a) What is the purpose of frame and design a web page layout with an 7M
b) Contrast the types of list with suitable example. 7M

UNIT-II

3. a) Write a javascript program for array reversing. 7M
b) Define an event. With suitable examples demonstrate the events focus 7M
(OR)
4. Explain the steps to be followed by a programmer involved in 14M
processing an Ajax based application.

UNIT-III

5. Write a program to display the data stored in an XML document by 14M
using CSS for an online book collection portal.
(OR)
6. a) Define DOM. Generate an XML DOM tree for specification of a hard 7 M
disk. 7 M
b) Explain the types of nodes in DOM used to represent an XML
document.

UNIT-IV

7. a) Recall the architecture of JDBC type 4 driver and list out its 7 M
b) Write a servlet code for login page. 7 M
(OR)
8. a) Illustrate the architecture of JDBC type 1 driver and list out its 7 M
b) Write a servlet code to store the employee details in to the database. 7 M

UNIT-V

9. a) Compare and contrast JSP over servlet. 7 M
b) Illustrate and explain the JSP model- 1 architecture. 7 M

(OR)

10. Write JSP code to retrieve the student semester result from the data base 14M
database.

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UNIT-I

1. a) Form Ybus for the network by direct inspection method:

8M

Element	5-1	5-2	1-2	2-3	1-4	3-6	4-6
Positive sequence reactance	0.04	0.05	0.04	0.03	0.02	0.07	0.10

- b) List the advantages of the p.u form of representation?

6M

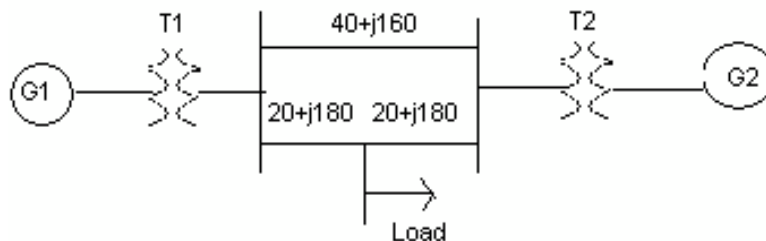
(OR)

2. Prepare a per phase schematic of the system in fig. and show all the impedance in per unit on a 100 MVA, 132 KV base in the transmission line circuit. The necessary data are given as follows.

14M

G1 : 50MVA, 12.2KV, $X=0.15$ pu.G2 : 20MVA, 13.8KV, $X=0.15$ pu.T1 : 80MVA, 12.2/161KV, $X=0.1$ pu.T2 : 40MVA, 13.8/161KV, $X=0.1$ pu.

LOAD: 50MVA, 0.8 power factor lag operating at 154KV. Draw p.u diagram and Determine the pu impedance of the load.

**UNIT-II**

3. Explain the step by step computational procedure for the Fast Decoupled Load Flow method of load flow studies and also draw the flow chart.

14M

(OR)

4. a) Compare Gauss-Seidel method and Newton-Raphson method of load flow studies.

6M

- b) For a system shown in below figure 1
- st
- bus is slack bus. Determine the power flow using Newton-Raphson Method after the end of first iteration

8M

Bus code	Bus Impedance
1-2	j0.5
2-3	j0.4
3-1	j0.3

Bus loading data

Bus no.	P _G	Q _G	V	P _L	Q _L	Description
1	-	-	1.06 ∠ 0	-	-	Slack bus
2	3	1	1.0	0	-	PV bus
3	-	-	-	4	2	PQ bus

UNIT-III

5. a) Form bus impedance matrix for the data given below. 8M

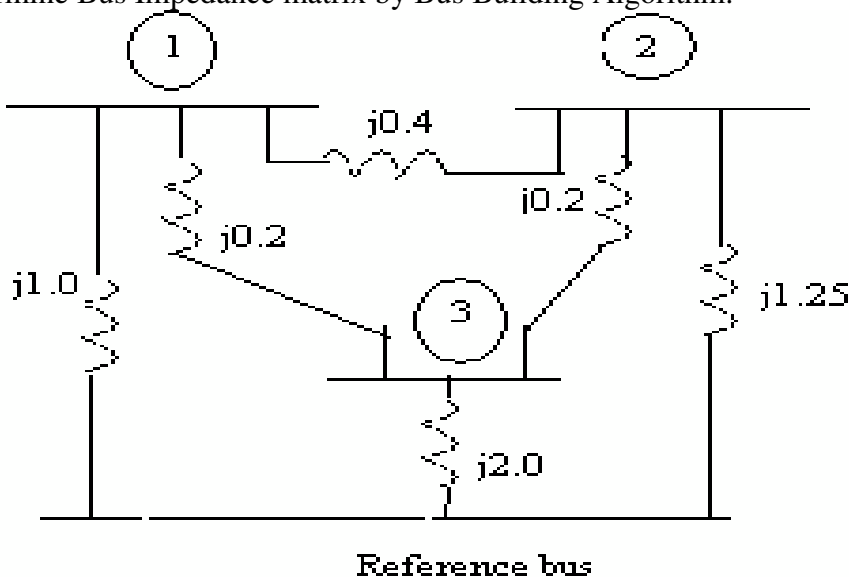
Element number	Bus code From bus – To bus	Self-impedance
1	2-3	0.6 p.u.
2	1-3	0.5 p.u.
3	1-2	0.4 p.u.

- b) Explain the need for short circuit studies. 6M

(OR)

6. a) Define Bus impedance matrix. Describe the construction of Bus impedance matrix Z_{Bus} using Bus building algorithm for lines without mutual coupling. 7M

- b) Determine Bus Impedance matrix by Bus Building Algorithm. 7M



UNIT-IV

7. a) Draw the relationship between the phase components and the sequence components. 7M

- b) The line currents in a 3-phase supply to an unbalanced load are respectively, $I_a = 5 + 15j$, $I_b = 10 - 5j$, $I_c = -4 - 2j$ Amp, phase sequence is abc. Determine the sequence components of currents. 7M

(OR)

8. Classify the various types of faults? Discuss their frequency of occurrence and severity? Find the fault current when an L-L-G fault occurs at the terminals of an unloaded generator. 14M

UNIT-V

9. a) Explain critical clearing time and critical clearing angle, deriving the expressions. 7M

- b) Describe various methods to improve steady state stability 7M

(OR)

10. a) State and explain equal area criterion. How do you apply equal area criterion to find the maximum additional load. 7M

- b) Discuss the various factors affecting the transient stability of the system. 7M

AR18

CODE: 18CSE324

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Supplementary Examinations, May, 2023

**Cryptography and Network Security
(Professional Elective – II)
(COMPUTER SCIENCE AND ENGINEERING)**

Time: 3 Hours

Max Marks: 60

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) Briefly describe a model for network security with the help of a diagram 6M
b) Explain about Software Vulnerabilities 6M
- (OR)
2. a) How SQL Injection takes place and explain how vulnerabilities were considered 6M
b) Categorize the substitution Techniques and explain any two? 6M

UNIT-II

3. a) State and explain the Conventional Encryption Principles 6M
b) Discuss AES algorithm 6M
- (OR)
4. a) Illustrate the encryption and decryption process of Cipher Block Chaining Mode. 6M
b) Explain single round of DES algorithm with neat sketch. 6M

UNIT-III

5. a) Compute cipher text for $M=88$, $p=17$ and $q=11$ using RSA. 6M
b) Compare symmetric encryption algorithms with public key algorithms. 6M
- (OR)
6. Users A and B use Diffie –Hellman key exchange algorithm using prime $q=71$ and primitive root $\alpha=2$. (12M)
(i) User 'A' has private key $X_A=5$, What is A's public key Y_A ?
(ii) If user 'B' has private key $X_B=12$, what is B's public key Y_B ?
(iii) What is the shared secret key?

UNIT-IV

7. a) Describe the structure of Private and Public key rings used in PGP. 6M
b) Why does ESP include a padding field? Explain. 6M
- (OR)
8. a) Give brief history of PGP. Cite the reasons for the growth of PGP. 6M
b) Summarize the PGP services. 6M

UNIT-V

9. a) Write short notes on Change Cipher Spec Protocol 6M
b) Discuss Alert Protocol 6M
- (OR)
10. a) What are transaction types supported by SET? 6M
b) Illustrate the various types of firewalls with neat diagrams. 6M

AR18

CODE: 18MET313

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Regular (RA) / Supplementary Examinations, May,2023

**CAD/CAM
(MECHANICAL ENGINEERING)**

Time: 3 Hours

Max Marks: 60

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) Summarize the benefits and applications of CAD. 6M
- b) State the functions of an interactive computer graphics in CAD/CAM. 6M

(OR)

2. a) Explain briefly about product life cycle . 6M
- b) Explain about the following 3D transformations: 6M

(i) Translation and (ii) Rotation

UNIT-II

3. a) What are the requirements of geometric modelling? 6M
- b) Distinguish between 2D and 3D wireframe models. 6M

(OR)

4. a) Define the cubic spline and Bezier curves. Which of them is more popular in CAD and why? 6M
- b) Distinguish between solid modelling using CSG technique and B-rep technique. 6M

UNIT-III

5. a) With a neat sketch, explain the functioning of a NC machine. State three important differences between NC and CNC. 6M
- b) Differentiate between CNC and DNC and list down its advantages. 6M

(OR)

6. a) Describe various G and M codes used in CNC machines? 6M
- b) What are the features of CNC machining centre? 6M

UNIT-IV

7. a) Explain Retrieval type CAPP system with the help of a block diagram. 6M
- b) What is group technology? Classify a component using any one type of coding system. 6M

(OR)

8. a) Explain about OPITZ coding system in group technology. 6M
- b) Briefly explain the need of CAPP (Computer Aided Process Planning). 6M

UNIT-V

9. a) List out the objectives of Flexible Manufacturing Systems. 6M
- b) Discuss about various workstations that are used in FMS. 6M

(OR)

10. a) With a neat sketch explain about machine layouts used in FMS. 6M
- b) With a neat sketch discuss about various parts of Flexible Manufacturing Systems. 6M

AR18

CODE: 18CET317

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Supplementary Examinations, May, 2023

**Basic Design of Steel Structures
(CIVIL ENGINEERING)**

Time: 3 Hours

Max Marks: 60

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 various types of bolts and bolted joints with neat sketches. 6 M
b) Write a brief note on Specifications of bolted joints. 6 M
(OR)
2. a) Design the size of end fillet weld to connect two plates with cross-section of 125×8 mm and 125×12 mm which are subjected to a tension of 100 kN at working load. The ultimate strength of the plates. $f_u = 410$ MPa. 12 M

UNIT-II

3. a) Explain the terms 6 M
a) Beam b) Design beam strength c) Design shear strength d) Web buckling
b) List different rolled steel sections used in the construction of steel structures with designation. Also mention economical sections for beams and truss members. 6 M
(OR)
4. a) Design a rolled steel beam using I-section for a simply supported beam of span 5.5 m to carry a uniformly distributed load of 20 kN/m excluding self-weight. Assume that the compression flange of the beam is laterally restrained and $f_y = 250$ MPa. 12 M

UNIT-III

5. a) Select a suitable angle section to carry a factored tensile force of 300 kN, assuming a single row of M20 bolts. Take $f_y = 250$ N/mm² 12 M
(OR)
6. a) Design a rolled steel column section to carry an axial load of 1000 kN. The column is 4 m long and adequately held in position but not in direction at both ends. 12 M

UNIT-IV

7. a) Design a hand operated travelling crane simply supported by gantry girder for the given data: 12 M
Span of gantry girder = 5 m
Span of crane girder = 15 m
Crane capacity = 200 kN
Self weight of crane girder excluding trolley = 200 kN
Self weight of trolley = 30 kN
Minimum hook approach = 1m
Distance between wheels = 3.5m c/c
Self weight of rails = 0.3 kN/m
(OR)

8. a) Design a suitable Purlin for an industrial building to support a galvanized corrugated iron sheet given
spacing of the trusses = 6 m,
Inclination of the main rafter = 30° ,
Spacing of purlins = 1.5 m,
Weight of corrugated sheeting = 130 N/m^2 ,
Live load = 0.6 kN/m^2 ,
Wind load = 1.8 kN/m^2 , suction,
Yield stress in steel = 250 MPa 12 M

UNIT-V

9. a) Design a welded plate girder subjected to a maximum factored moment of 2500 kN.m and a factored shear force of 400 kN. Use intermediate stiffener only. Draw the cross section and longitudinal section of the plate girder. 12 M
- (OR)**
10. a) Design a welded plate girder of span 12 m to carry a superimposed load of 30 kN/m without bearing and intermediate stiffeners. Draw the cross section and longitudinal section of the plate girder. 12 M

AR18

CODE: 18ECT316

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Supplementary Examinations, May, 2023

**DIGITAL SIGNAL PROCESSING
(ELECTRONICS AND COMMUNICATION ENGINEERING)**

Time: 3 Hours

Max Marks: 60

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) Determine whether the following system is: i) Linear ii) Causal and iii) Stable 6M
 $y[n] = \log_{10} |x[n]|$. Justify your answer.
- b) Define time invariant system. Determine the following systems 6M
are time invariant or not: (i) $y[n] = x[n] + nx[n - 2]$ (ii) $y[n] = x[n/2]$.

(OR)

2. a) Find the z-transform and ROC of the signal $x[n] = [3(3)^n - 4(2)^n] u[n]$. 6M
- b) Determine whether the following systems are causal or not: (i) $y[n] = x[n] + x^2[n-1]$ 6M
and (ii) $y[n] = \frac{1}{2} \left[x[n-1] + \frac{x[n]}{x[n-1]} \right]$.

UNIT-II

3. a) Explain the procedure to compute 8-point DFT using DIT FFT algorithm. 6M
- b) Determine the output response $y[n]$ if $h[n] = \{1, 1, 1\}$ and $x[n] = \{1, 2, 3, 1\}$ using linear 6M
convolution.

(OR)

4. a) Find the 4-point IDFT of $[k] = \{10, -2 + j2, -2, -2 - j2\}$ using DIF FFT 6M
algorithm.
- b) Distinguish between linear convolution and circular convolution. 6M

UNIT-III

5. a) Explain steps for designing of Butterworth digital filters. 6M
- b) Distinguish between FIR and IIR filters. 6M

(OR)

6. a) Implement the IIR filter with difference equation $y[n] = -0.1[n-1] + 0.72y[n-2]$ 6M
 $+ 0.7x[n] - 0.252x[n-2]$ in parallel form.
- b) Obtain direct form I and cascade realizations of system described by 6M
the equation, $y[n] = y[n-1] - (1/2)y[n-2] + x[n] - x[n-1] + x[n-2]$

UNIT-IV

7. a) Explain the properties of LMS algorithm. 6M
- b) Explain the concept of Direct form linear prediction filtering. 6M

(OR)

8. a) Explain how Wiener smoothing is used in noise cancellation. 6M
- b) Explain about prediction filters. 6M

UNIT-V

9. a) Explain the short direct addressing and circular addressing modes in 6M
programmable DSP's.
- b) Write a short notes on the following: (i) Multiple access memory (ii) Multiported 6M
memory

(OR)

10. a) Draw and explain the architecture of TMS320C54XX DSP Processor. 12M

AR18

CODE: 18EET315

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Supplementary Examinations, May, 2023

**POWER SYSTEM ANALYSIS
(ELECTRICAL AND ELECTRONICS ENGINEERING)**

Time: 3 Hours

Max Marks: 60

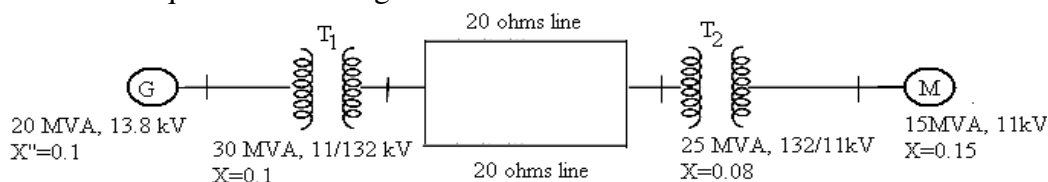
Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

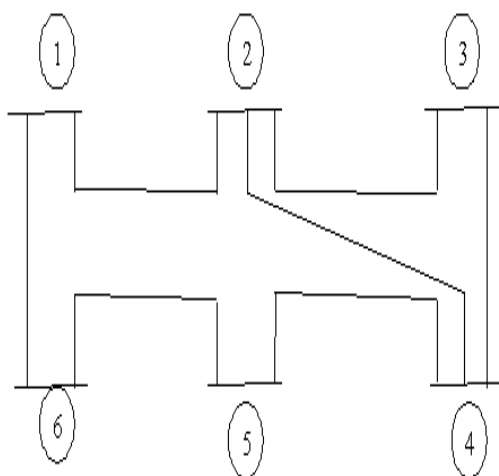
UNIT-I

1. a) Identify and list the merits and Demerits of Per Unit Representation. 6M
b) Develop the per unit impedance diagram of the network shown in the figure. Choose base quantities as the generator values?



(OR)

2. a) Derive an expression for Bus Admittance Matrix by using Singular Transformation Method. 6M
b) For the system as shown in figure, construct Y_{BUS} by using Direct Inspection method. The parameters of various elements are given in table. Take node 1 as reference node.



Element	Reactance in p.u
1-2 (1)	0.04
1-6 (2)	0.02
2-4 (3)	0.03
2-3 (4)	0.02
3-4 (5)	0.08
4-5 (6)	0.06
5-6 (7)	0.05

6M

UNIT-II

3. a) Briefly Explain about the classification of Buses in Power System. 6M
b) Derive the Static Load Flow Equations for n Bus System. 6M

(OR)

4. The system data for load flow solution are given in the following tables. Determine the voltages at various buses at the end of the first iteration by using GS method. Take $\alpha=1.6$ 12M

Bus code	Admittance
1-2	2-j8
1-3	1-j4
2-3	0.666-j2.664
2-4	1-j4
3-4	2-j8

Table-2: Bus specifications				
Bus code	P	Q	V	Remarks
1	-	-	1.06	Slack bus
2	0.5	0.2	-	PQ bus
3	0.4	0.3	-	PQ bus
4	0.3	0.1	-	PQ bus

UNIT-III

5. Build step by step algorithm for modification of Z - Bus (Neglecting Mutual Coupling) 12M
- (OR)
6. a) Derive the Maximum Momentary Current when a transient occurred on transmission line due to short Circuit. 6M
- b) The short circuit MVA at the bus bars for a power plant A is 1200 MVA at 33KV and for another plant B is 1000 MVA at 33 KV. If these two are to be interconnected by a tie-line with reactance 1.2 ohm. Determine the possible short circuit MVA at both the plants. 6M

UNIT-IV

7. a) Explain the sequence networks of a three-phase alternator. 6M
- b) In a 3-phase, 4-wire system, the currents in R, Y and B lines under abnormal conditions of loading are as under: $I_R = 100 \angle 30^\circ$ A ; $I_Y = 50 \angle 300^\circ$ A ; $I_B = 30 \angle 180^\circ$ A Calculate the positive, negative and zero sequence currents in the R-line and return current in the neutral wire? 6M
- (OR)
8. a) Derive an expression for the fault current for a double line fault as an unloaded generator and draw its equivalent circuit. 6M
- b) A 25 MVA, 13.2 kV alternator with solidly grounded neutral has a sub transient reactance of 0.25 p.u. The negative and zero sequence reactance's are 0.35 and 0.1 p.u. respectively. A single line to ground fault occurs at the terminals of an unloaded alternator; determine the fault current. Neglect resistance. 6M

UNIT-V

9. Show that if the X of the line could be varied with resistance R remaining constant, the maximum steady state power that could be transmitted over the line would be greater when $X = \sqrt{3}R$. 12M
- (OR)
10. Elaborate the recent methods to improve the transient state stability. 12M