

AR13

CODE: 13CE3016

SET-2

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

III B.Tech II Semester Regular & Supplementary Examinations, April, 2018

DESIGN OF STEEL STRUCTURES

(Civil Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Draw a neat sketch of single U-butt joint and double U-butt joint
- b) State the defects that will arise in welding process.
- c) What are the modes of failures considered in beams?
- d) What is meant by laterally supported beams?
- e) List the types of tension members?
- f) What is the use of lacing and battening systems?
- g) Write the formula for bending moment reduction factor.
- h) Write the formula for design bending compressive stress.
- i) What is the criterion for consideration of self weight of plate girder.
- j) Write the formula for moment capacity and shear capacity of plate girder.

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. Design a welded seat angle connection between a beam ISMB 300 and 12M a column ISHB 200 for a reaction of beam 100 kN, assuming Fe 410 grade steel and site welding.
- (OR)
3. a With neat sketches explain different types of welds 6M
- b Explain the advantages and disadvantages of welding connections 6M

UNIT-II

4. A beam of span of 5 m carrying a load of 20 kN/m on the left half and a concentrated load of 50 kN at the quarter span on the right half. 12M Assume that full torsional and warping restraints are provided at the ends of the beam if the beam is laterally unsupported.
- (OR)
5. Design a simply supported beam of 9 m effective span carrying a load 12M of 40 kN/m. The depth of the beam should not exceed 450 mm. The compression flange of the beam is laterally supported. Assume stiff end bearing is 80 mm.

UNIT-III

6. Design a single angle to carry a tension of 100 kN. The end connection is to be done using M20 bolts of product Grade C and property class 4.6. The yield and ultimate strengths of the steel are 250MPa and 410 MPa, respectively. 12M

(OR)

7. Design a built up column of the effective length of 5 m to carry an axial load of 900 kN using lacing. Design the connections using fillet welds. The grade of the steel is E250. 12M

UNIT-IV

8. a) Explain the design steps involved in design of gantry girder. 6M
b) Explain in detail the loads that are considered in design of gantry girder. 6M

(OR)

9. Design a simply supported gantry girder of 6m effective span to carry two cranes of the capacity of 100 kN each working in tandem. The weight of each crane excluding the crab is 150 kN and the weight of each crab is 20 kN. The weight of rail is 300 N/m. The minimum approach of the crane hook is 1.0 m. The wheel base is 3.8 m. The height of the rail is 75 mm. Assume that the gantry girder is laterally unsupported. The expected number stress cycles = 2×10^6 . 12M

UNIT-V

10. Design a welded plate girder 24 m in span and laterally restrained throughout. It has to support a uniform load 100 kN/m throughout the span excluding self weight. Design the girder without intermediate transverse stiffeners. The steel for the flange and web plates is of grade Fe 410. Design the cross section, the end load bearing stiffener and connections. 12M

(OR)

11. a) Explain the necessity of using plate girder and using a neat sketch explain various components of plate girder. 6M
b) Explain the following shear buckling design methods: (i) Simple post critical method and (ii) tension field method. 6M

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SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech II Semester Regular & Supplementary Examinations, April, 2018

POWER SYSTEMS-III

(Electrical and Electronics Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Give the expression for RRRV?
b) Which of the following circuit breakers is preferred for EHT application?
 - i) Air blast circuit breakers
 - ii) Minimum oil circuit breakers
 - iii) Bulk oil circuit breakers
 - iv) SF6 oil circuit breakers
- c) For the protection of Short transmission lines which relay can be used ?
- d) List out various types of distance relays?
- e) What are various faults that occur in the rotor of an alternator?
- f) The most important stator winding fault of an alternator is fault.
 - i) Earth
 - ii) Phase to phase
 - iii) Inter turn
 - iv) all
- g) The frequency of the carrier in the case of carrier current-pilot scheme is in the range of
 - (A) 1 KHz to 10 KHz
 - (B) 15 KHz to 25 KHz
 - (C) 25 KHz to 50 KHz
 - (D) 50 KHz to 500 KHz.
- h) Reactance relay can be used ----- transmission lines
- i) Lightning arresters are used for
 - i) Protection of equipment from external lightning
 - ii) Protection of equipment from short circuits
 - iii) Protection of equipment from open circuits
 - iv) All of the above
- j) What are the various types of grounding methods?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Discuss the energy balance theory of arc interruption in a circuit breaker.
b) Classify Air blast circuit breakers? And explain the operation of each breaker with neat diagram?
- (OR)
3. a) In a short circuit test on a 132 kV three phase system, the breaker gave the following results: power factor of the fault 0.5, recovery voltage 0.92 of the full line voltage; the breaking current is symmetrical and the re striking transient had a natural frequency of 14 KHZ. Determine the rate of rise of re striking voltage. Assume that the fault is grounded.
b) Explain in detail about resistance switching

UNIT-II

4. a) Explain the fundamental operation of a relay with neat diagram
b) Determine the time of operation of a relay of rating 5 amps, 2.2 sec, IDMT and having relay setting of 125% . It is connected to a supply circuit through a C.T 400/5 ratio. The fault current is 4000amps.

(OR)

5. a) Discuss about various characteristics of a protective relay?
b) Discuss the operation of Watt-hour type relay

UNIT-III

6. a) A 11 kV, 100 MVA alternator is grounded through a resistance of 5 ohms. The current transformers have a ratio of 1000/5. The relay is set to operate when there is an out of balance current of 1 A. Find the percentage of generator winding protected by percentage differential protection?
b) Explain the differential protection scheme to protect the transformers

(OR)

7. a) Discuss the protection of Inter turn faults of generator?
b) For a 10 MVA, 132 kV/6.6 kV power transformer with delta-star connections, obtain the number of turns each current transformer should have for the differential protection scheme to circulate a current of 5 A in the pilot wires.

UNIT-IV

8. a) Discuss the merits and demerits of impedance relays.
b) Elaborate any one method for protection of feeders.

(OR)

9. a) Discuss how the bus bars are protected by differential protection
b) Explain the carrier current protection scheme with neat diagram?

UNIT-V

10. a) Illustrate the need of grounding? Explain the methods of grounding?
b) With a neat diagram describe the operation of valve type arresters?
(OR)
11. a) Compare grounded and ungrounded system?
b) Discuss the basic operation of Lightning arresters? And list types of arresters?

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Regular & Supplementary Examinations, April, 2018
INSTRUMENTATION AND CONTROL SYSTEMS
(Mechanical Engineering)

Time: 3 Hours

Max Marks:70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Write down some basic sources of error in measuring instruments?
- b) What is the principle behind the working of manometer?
- c) Write down at least three differences between open loop and closed loop systems?
- d) What are different types through which temperature measurement can be made?
- e) What is a dominant pole of the transfer function?
- f) Define gain margin and phase margin ?
- g) What is a controller?
- h) What is McLeod gauge?
- i) Write the disadvantages of Routh Hurwitz criteria?
- j) Define force, torque, speed? And also write one instrument to measure them?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Write various types of gauges to measure low pressure and also briefly discuss those? 6
 - b) What are the different types of errors in measuring instruments? Explain the dynamic performance characteristics? 6
- (OR)
3. a) Write down the different calibration techniques of McLeod pressure gauge? 6
 - b) Write in detail the principle and working of manometers with suitable diagrams? 6

UNIT-II

4. a) Write about the measurement of temperature using a resistance thermometer? 6
b) How can we determine the flow by using Hot-wire anemometer? 6
(OR)
5. a) Give different types of meters to measure the flow and discuss them briefly? 6
b) What is gauge factor and discuss how to measure tensile strain? 6

UNIT-III

6. What are the different ways by which we can measure displacement. 12
Elaborate ?
(OR)
7. a) Discuss an accelerometer which uses the principle of Seismic instruments? 6
b) i) Discuss about Stroboscope? 6
ii) What are torsion meters used for and how?

UNIT-IV

8. a) What are the effects of adding poles and zeroes to the transfer function and how can this be useful? 10
b) What is root-locus technique and write at least two advantages of this technique? 2
(OR)
9. a) Comment on stability of closed loop system having unity feedback whose open loop gain is $G(s) = 10/(s(s+1)(s+2))$. 8
b) Write the step by step procedure to draw root locus? 4

UNIT-V

10. a) Give Nyquist's stability criteria and comment on stability of the system $G(s) = 10/(s+1)(s+2)$. 10
b) What do you mean by relative stability and how can we decide this based on frequency domain specifications? 2
(OR)
11. a) Write the P, PID control algorithms and how can we control a system? 8
b) Define any two frequency domain specifications. 4

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CODE:13EC3019

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech II Semester Regular & Supplementary Examinations, April, 2018

MICROPROCESSOR AND MICROCONTROLLERS
(Electronics & Communication Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Define an Interrupt
- b) What is the Difference between parallel port and serial port
- c) What are the functions of BIU of 8086
- d) What is the purpose of segment registers in 8086 microprocessor
- e) Give on chip RAM size of 8051 microcontroller
- f) What is a T-state
- g) When Zero Flag will be set in the Flag Register of 8086
- h) How many I/O lines available in Intel 8255
- i) What is the need of DMA
- j) Explain Synchronous Data Transfer Scheme

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a Explain the Special functions of General Purpose Registers of 8086 Microprocessor 6
- b Explain memory segmentation of 8086 micro processor and its advantages. 6

(OR)

3. a Classify the assembler directives and explain with suitable examples 5
- b Explain the addressing modes related to memory with suitable example 7

UNIT-II

4. a Explain instructions related to stack memory and show the stack segment memory 6
 - b Write an ALP in 8086 to determine sum of even numbers 6
- (OR)
5. a Explain the Interrupt structure of 8086 6
 - b Write an ALP in 8086 to determine average of the given n- numbers 6

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SET-1

UNIT-III

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| 6. | Explain Signals of 80386 Microprocessor and show the pin diagram | 12 |
| | (OR) | |
| 7. | a Explain the Paging Mechanism of 80386 Microprocessor | 8 |
| | b List the architectural features of 80386 Microprocessor | 4 |

UNIT-IV

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|----|--|---|
| 8. | a Explain internal architecture of Intel 8257 DMA Controller | 8 |
| | b Show the interface how Intel 8257 can be interfaced to 8086 microprocessor | 4 |
| | (OR) | |
| 9. | a Explain the operation of Intel 8259 Programmable Interrupt Controller. | 7 |
| | b Discuss operating modes of 8255. | 5 |

UNIT-V

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|-----|--|---|
| 10. | a Explain the signals of 8051 with the help of pin diagram | 6 |
| | b Write the addressing modes of 8051 and explain with suitable example | 6 |
| | (OR) | |
| 11. | a Explain parallel ports of 8051 | 6 |
| | b Describe the interrupts of 8051 | 6 |

2 of 2

WEB TECHNOLOGIES

(Common to CSE & IT)

Time: 3 Hours

Max.Marks: 70

PART-A

Answer all Questions

[1 x 10=10M]

1. a) Write an HTML document to provide a form that collect name and telephone numbers.
b) How to write and read XML documents. how XML structures documents?
c) Explain the various CSS properties
d) Explain DHTML.
e) Create a Web page ,which accept user information and user comments on the web site to check if all the Text fields have being entered with data else display an alert.
f) Discuss the features of Persistent Cookie? Why it used?
g) What is the use of JSP?
h) What are the scripting elements? Mention the purpose of each scripting element.
i) What is the purpose of the forward and use bean tags in JSP's?
j) Define ORDER BY Clause

PART-B

Answer one question from each unit

[5X12=60M]

UNIT-I

2. Write a java script program to accept the given number and verify that number is even or odd and finally print the given number is even or odd.
(OR)
3. What is CSS? List out the Various CSS Properties. Explain the various concepts of CSS properties with neat

UNIT-II

4. Describe in detail about XML DOM with an example of Student details?
(OR)
5. Write XML file which will display the book information which includes
(i) Title of Book (ii) Author Name (iii) ISBN Number (iv) Edition

UNIT-III

6. Explain the concept of Servlets with an example program?
(OR)
7. (a) Explain the usage of cookies in servlet with examples.
(b) Explain the life cycle of the servlet with example.

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UNIT-IV

8. a) Explain the implicit objects in JSP?
b) Develop an HTML document to generate ballot form for an election. The votes submitted are recorded on the server by a servlet handling the form. Cookies must be used to prevent multiple votes by the same client.
(OR)
9. a) Explain about anatomy of JSP page with an example program.
b) Explain about sharing data between JSP page with a program.

UNIT-V

10. Write a JDBC program to store and retrieve student details (Name, Branch, ID) by using prepared statement.
(OR)
11. Write a JSP program for accessing the Bank database and displaying the customer records from the record?