AR16

CODE: 16CE3013 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, November, 2018

DESIGN OF CONCRETE 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) Derive the stress block parameters? 7M
   b) Write the differences between working stress method and limit state method of design? 7M

(OR)

2. A singly reinforced concrete beam has a width 250 mm and overall depth 500 mm with a clear cover of 40mm is reinforced with 3bars of 25mm diameter. Find the flexural strength and hence the safe concentrated load at mid span on the simply supported beam of Span 6 m. Use M25 concrete and Fe250 steel. 14M

UNIT-II

3. A-T beam has flange dimensions of 1200×110mm.The width of rib is 250mm and rib depth is 390mm.If the beam is reinforced with 4 numbers 25 mm diameter bars in tension zone, determine the maximum allowable u.d.l inclusive of self weight over a simply supported span of 4.0 m.M20 grade concrete and Fe415 steel is used 14M

(OR)

4. Design for flexure and shear, a rectangular beam of cross section 230 mmx500mm effective depth with an effective span of 5 m Width of the support on each side shall be 230mm.The superimposed load on the beam is 40 KN/m. use M25 concrete and Fe415steel.Calculate the reinforcement at mid span section and quarter span section .Draw the reinforcement details also. 14M

UNIT-III

5. a) Write the differences between one way and two way slabs with neat sketches. 7M

   b) Explain whether two way slab requires any corner steel as reinforcement with a neat sketch. 7M

(OR)

6. Design the interior span of continuous one-way slab for an office floor continuous over T- beams spaced at 4 m centres. It carries a superimposed live load of 5KN/m^2. Use M25 and Fe415 grades. Also draw the reinforcement details. 14M

UNIT-IV

7. a) Explain the salient features in the interaction curve with a neat sketch. 7M

   b) Design a short column 40 cm square in cross section to carry an axial load of 1000KN. Using Fe415 grade steel and M30 grade concrete 7M

(OR)

8. Design a short circular column with helical reinforcement to carry an axial service load of 2000 KN. Use M25 grade concrete and Fe415 grade steel. 14M

UNIT-V

9. Design a rectangular isolated footing of a column of size 300×500 mm carrying an axial service load of 1200KN.The safe bearing capacity of the soil is 180kN/m^2. Adopt M20 grade concrete and HYSD barsof grade Fe415.Draw a neat sketch. 14M

(OR)

10. Design a suitable footing for a reinforced concrete column of size 300x300 mm transmitting an axial load of 700KN .The safe bearing capacity of the soils 220kN/$m^2$and the materials to be used are M20 grade concrete and HYSD steel grade Fe415.Draw reinforcement details 14M

AR16

CODE: 16EE3016 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, November, 2018

POWER ELECTRONICS

(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)	Draw and explain the operation of power BJT.	7M
	b)	Draw the V-I characteristics of a TRIAC and explain its working.	7M
		(OR)	
2.	a)	Draw and explain the construction and operation of a thyristor.	7M
	b)	Discuss the significance of Latching and holding currents of an SCR	7M

UNIT-II

3.		Derive an expression for i) Average load voltage ii) Average load current iii) RMS load voltage iv) input Power Factor of 1-phase half-controlled bridge converter with RL-load.	14M
		(OR)	
4.	a)	Differentiate semi converter and fully controlled converter in terms of performance parameters.	7M
	b)	A 1-phase fully controlled rectifier is fed from a 230 V, 50 Hz supply. The load current is constant and continuous with negligible ripple and firing angle is 45°. Determine the average output voltage, RMS load voltage and power factor.	7M

UNIT-III

5.		Explain the operation with output waveforms of a three phase half wave converter with inductive load. Also derive the expression for average output voltage.	14M
		(OR)	
6.	a)	Describe with a neat circuit diagram the basic principle of dual converter.	7M
	b)	Describe the operation of 3-phase dual converter with non-circulating current mode along associated waveforms and circuits.	7M

UNIT-IV

7.		Explain the operation of single phase ac voltage controller with RL load. And obtain expression for rms output voltage, rms output current and input power factor	14M
		(OR)	
8.		Describe principle of working of 1 – phase to 1 - phase step down midpoint type cyclo-converter for both continuous and discontinuous conductions. Draw voltage and current waveforms for both conditions.	14M

UNIT-V

9.		Describe the principle of operation of Boost and Buck-Boost converters?	14M
		(OR)	
10.	a)	Describe the working of single-phase full bridge inverter and draw the associated waveforms with R-Load.	7M
	b)	Discuss about the voltage control by means of PWM techniques.	7M

AR16

CODE: 16ME3015 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, November, 2018

METAL CUTTING AND MACHINE TOOLS

(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

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UNIT - I

1. a) Discuss various forces involved in machining operation? 8M
   b) Explain cutting tool geometry of single point cutting tool with neat diagram? 6M

(OR)

2. a) Explain in detail with neat sketch about "Merchants force diagram"? 6M
   b) In an orthogonal cutting operation, the cutting velocity is 30m/min and the chip velocity is 15m/min. if the rake angle of the tool is 10^0 , calculate the shear angle and shear velocity? 8M

UNIT-II

3. a) Explain in detail about turret indexing Mechanism? 6M
   b) Explain with neat sketches about taper turning methods? 8M

(OR)

4. a) Explain briefly about different types of lathe special attachments? 8M
   b) Differentiate between single spindle and multi spindle ? 6M

UNIT-III

5. a) Differentiate between up milling and down milling? 6M
   b) Briefly explain operations in planer with neat sketches? 8M

(OR)

6. a) Explain the horizontal pull broaching operation and vertical push broach operation? 8M
   b) Briefly explain the following operations? 6M
   i) Boring (ii) Broach construction iii) Hole making

UNIT-IV

7. a) Discuss the specification and factors to be considered in selection of a grinding wheel? 5M
   b) Briefly explain the following processes with neat sketches? 9M
   a) Super finishing b) Buffing iii) Gear hobbing

(OR)

8. a) Describe the working principle of cylindrical grinding with neat sketch? 8M
   b) Describe the following process with neat sketches 6M
   i) gear cutting) surface grinding

UNIT-V

9. a) Briefly explain "fits and their types" with neat sketches? 6M
   b) Explain the following terms with neat sketches? 8M
   i) Hole and shaft basis ii) unilateral tolerance and bilateral tolerance system

(OR)

10. a) Explain following in connection with gauge design? 6M
    (i) Wear allowance (ii) Gauge makers tolerance
    b) Determine the actual dimensions to be provided for a shaft and hole 90 mm size for H8e9 type clearance fit. Size 90 mm falls in the diameter step of 80-100 mm. Value of standard tolerance unit $i=0.45\sqrt[3]{D}+0.001D$. The values of tolerances for IT8 & IT9 grades are 25i & 40i respectively. Value of fundamental deviation for 'e' type shaft is -11D0.41. Also design the GO & NO GO gauges considering wear allowance as 10% of gauge tolerance? 8M

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AR16

CODE: 16EC3017 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Regular Examinations, November, 2018

DIGITAL IC APPLICATIONS
(Electronics and Communication 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) Design 2-input universal gates using CMOS technology. 7M
   b) What are HC, HCT, VHC and VHCT , FCT and FCT-T in connection with CMOS family? 7M

(OR)

2. a) Design AND & OR logic gates using diode logic and verify its functionality with truth table. 7M
   b) Draw the circuit diagram of two input low power schottky TTL NAND gate and verify its functionality. 7M

UNIT-II

3. a) Give the following details regarding 74 x 139 dual 2-to-4 decoder 7M
      (i) Traditional logic symbol
      (ii) Logic diagram including pin numbers for a standard 16-pin dual in-line package.
   b) Design a 3-bit comparator using three one bit comparators and logic gates. 7M

(OR)

4. a) Write a VHDL code for a 4-bit magnitude comparator using behavioral modelling. 7M
   b) Write a VHDL code for 8 x 1 multiplexer using case statement. 7M

UNIT-III

5. a) Explain the multiplication process of a 4 x 4 multiplier and design 4 x 4 combinational multiplier with carry save addition. 7M
   b) Draw the block diagram of binary adder and subtractor and explain its operation in detail. 7M

(OR)

6. a) Describe the behaviour of simple floating point encoder. 7M
   b) Write a VHDL code for half subtractor and full subtractor. 7M

UNIT-IV

7. a) Design a 3-bit binary synchronous counter using 74LS74 and explain its functional behaviour. 7M
   b) What is meant by clock skew? Explain how it leads to incorrect output in synchronous circuits. Design one logic circuit that reduces the clock skew. 7M

(OR)

8. a) Construct the 4-bit shift register using D-flip flop in the following modes 7M
      (i) Serial In Serial Out , (ii) Serial In Parallel Out ,
      (iii) Parallel In Parallel Out
   b) Write a VHDL code for 4 bit up/down counter. 7M

UNIT-V

9. a) Design a combinational circuit using a ROM. The circuit accepts a 3-bit number and generates an output binary number equal to the square of the input number. 7M
   b) Implement the following two Boolean functions with a PLA: 7M
      $F_1(A, B, C) = \Sigma(0, 1, 2, 4)$
      $F_2(A, B, C) = \Sigma(0, 5, 6, 7)$

(OR)

10. a) Implement the following with a PAL 7M
      $W(A,B,C,D) = \Sigma(2, 12, 13)$
      $X(A,B,C,D) = \Sigma(7,8,9,10,11,12,13,14,15)$
      $Y(A,B,C,D) = \Sigma(0,2,3,4,5,6,7,8,10,11,15)$
      $Z(A,B,C,D) = \Sigma(1,2,8,12,13)$
   b) Explain about CPLD and FPGA architectures. 7M

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AR16

CODE: 16CS3013 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Regular Examinations, November, 2018

SOFTWARE ENGINEERING
(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. a) Define a software process and describe the generic frame work for software engineering activities. [8M]
   b) List out the general principles of software engineering practice. [6M]

(OR)

2. a) Illustrate the differences between waterfall model versus evolutionary process model?. [8M]
   b) Explain levels of CMM model in detail?.How process improvement is obtained by the integration model?. [6M]

UNIT-II

3. a) Compare collaborative requirement gathering versus quality function deployment. [6M]
   b) Discuss functional and non-functional requirements with an example?. [8M]

(OR)

4. a) Describe briefly about the role played by viewpoints, interviewing, scenarios and use cases in requirements elicitation and analysis. [8M]
   b) Explain data models and object models by taking appropriate examples. [6M]

UNIT-III

5. a) Illustrate the steps in the evolution of software design models. [8M]
   b) What are the Mandel three golden rules for interface design. [6M]

(OR)

6. a) Compare data-centered architecture versus layered architecture with diagrams. [8M]
   b) List out the differences of architectural design elements versus interface design elements?. [6M]

UNIT-IV

7. a) Differentiate between Equivalence partitioning method versus boundary value analysis methods [8M]
   b) Explain validation testing and system testing?.What are the major differences?. [6M]

(OR)

8. a) List the objected oriented metrics. How they are different from CK metrics suit and MOODs metrics suit?. [8M]
   b) What is an empirical estimation model? Explain how complexity weights are estimated for object types. How the project effort is estimated?. [6M]

UNIT-V

9. a) What are two distinct types of risks?. Describe the checklist used for risk identification and the steps involved in risk estimation. [8M]
   b) What are software quality factors?. Explain the various standards followed to develop reliable software? [6M]

(OR)

10. a) Compare reactive versus proactive risk strategies? [8M]
    b) Explain i) RMMM plan ii) Software reliability. [6M]

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AR13

CODE: 13CE3012 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, November, 2018

DESIGN AND DRAWING OF CONCRETE STRUTURES -I
(Civil Engineering)

Time: 3 Hours **Max Marks: 70**
Use of IS 456: 2000 and SP 16 Charts for Column design are allowed.

PART-A

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

1. a) What is a transformed section?
   b) What is the partial safety factors adopted in Limit state design?
   c) What do you mean by M25 Concrete?
   d) What is nominal cover?
   e) What is a balanced section?
   f) Calculate reinforcement for a beam section of 230mm wide and 410mm effective depth, when Fe250 steel is used?
   g) What are the anchorage values of 45˚ bend and standard "U" type hook when the diameter of bar is 10mm?
   h) When do we provide side face reinforcement in a beam subjected to torsion?
   i) Define uniaxial bending?
   j) How much reinforcement to be provided in an edge strip of a two way restrained slab of 160mm thickness, when Fe415 Grade steel is used?

PART-B

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

UNIT-I

2. A simply supported beam of size 230mmx 600mm overall depth is reinforced with 4nos-12mm dia. bars. Find the safe uniformly distributed load on the beam in addition to its self weight on a span of 4.0m. Use M20 concrete and Fe415 steel. Adopt working stress method of design.

(OR)

3. A rectangular beam 230mmx400mm effective depth is subjected to a moment of 42kN-m. Effective cover of compressive reinforcement is 40mm. Find out the reinforcement steel. The materials are M20 concrete and Fe415 steel. Adopt working stress method of design.

UNIT-II

4. Draw stress strain curves for concrete and steel reinforcement of both Mild steel and HYSD bars and elaborate the assumptions for arriving design curves in Limit State Method.

(OR)

5. Determine the Moment of Resistance of a rectangular cross section of 230mm wide and 400mm deep with 3nos – 20mm dia. bars. Nominal cover to the reinforcement is 30mm. Use M25 concrete and Fe500 steel. Also work out M.R for M20 and Fe250 using the same cross section and steel reinforcement.

UNIT-III

6. Design a rectangular beam of 4.0m of clear span which is subjected to a Dead load of 15 kN/m and a live load of 14 kN/m. The beam is simply supported on a 300mm wide supports. Use M20 concrete and Fe250 steel. Sketch the details.

(OR)

7. A T-beam is subjected to a Factored shear force of 200 kN. The reinforcement in the section is provided with 3nos - 20mm dia bars at its bottom. The size of the flange is 1200mmx120mm and the web is 250mmx380mm. Take an effective cover of 40mm to the reinforcement. Use M20 concrete and Fe415 steel and Calculate the shear reinforcement.

UNIT-IV

8. Design a circular column of 400mm dia subjected to a working load of 1200kN. Use M25 concrete and Fe415 Steel. Use helicals as transverse reinforcement. Take unsupported length = effective length = 3.0m. Sketch the details.

(OR)

9. Design the reinforcement for a Short axially loaded square column of size 400x 400mm to support 1100 kN. Use M20 concrete and Fe 415 steel. Sketch the details.

UNIT-V

10. Design a simply supported one way slab of clear span 3.0m x 7.0m is supported on masonry walls of thickness 350mm. The live load on slab is 3.0 kN/sq.m. Use M20 concrete and Fe415 steel.

(OR)

11. A corner slab panel of 4.0mx 5.0m size with restrained edge beams. Design the slab using IS code method. Live load = 2.5 kN/sq.m and Floor finish = 1.0 kN/sq.m.

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AR13

CODE: 13EC3016 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.TECH I SEM SUPPLEMENTARY EXAMINATIONS, NOVEMBER, 2018

LINEAR AND DIGITAL IC APPLICATIONS
(Electrical and Electronics Engineering)

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

PART-A

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

1. a) List-out the ideal characteristics of an Op-Amp.
   b) Write the applications of Op-Amp.
   c) Define Bark-hausen criterion.
   d) What is a Sawtooth wave generator?
   e) Draw the frequency response curve of a Band pass filter.
   f) Explain the function of Reset in IC555 timer.
   g) An 8-bit DAC has a resolution of 20mV/bit. What is its analog output voltage?
   h) What is the maximum number of 3-input gates in a 16-pin IC ?
   i) Difference between a latch and a flip-flop.
   j) What are the applications of Shift registers?

PART-B

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

UNIT-I

2. a) Define the following terms 6M
   (i) SVRR (ii) Input bias current (iii) Output offset voltage
   b) Explain in detail about frequency compensation techniques of an Op-Amp. 6M

(OR)

3. a) Classify ICs on the basic of application,device used and chip complexity. 6M
   b) Find the maximum frequency for a sine wave output voltage of 10V peak with an op-amp whose slew rate is 1 V/μs . 6M

UNIT-II

4. a) Draw and explain Inverting and Non-inverting comparator circuits. 8M
   b) List the important characteristics of comparators. 4M

(OR)

5. a) What are the limitations of an ordinary op-amp differentiator? Draw the circuit of a practical differentiator that will eliminate these limitations. 6M

b) Explain with suitable examples the principle of working of RC oscillators. Why are they suitable only for low frequency operation? 6M

UNIT-III

6. a) Design a band pass filter with f_L=400Hz and f_H=1 kHz with the pass band gain 1. 6M

b) Draw the circuit of a PLL used as a frequency translation and explain its operation. 6M

(OR)

7. a) Draw the frequency response plot for a wide band reject filter having f_H=200Hz and f_L=1 kHz. Label the gain and frequency axes properly. 6M

b) Draw the block diagram of IC 566 VCO and explain its operation. 6M

UNIT-IV

8. a) Explain the operation of an op-amp based weighted resistor digital to analog converter (DAC) through a neat circuit diagram. 8M

b) Define the terms Accuracy & settling time of an analog to digital converter (ADC). 4M

(OR)

9. a) Draw the circuit of 2- input NAND gate using TTL. With the help of truth table explain its operation 6M

b) Explain the Tristate TTL with example. 6M

UNIT-V

10. a) Draw the logic diagram for converting an 8-bit Binary number to Gray code. 6M

b) Develop the timing diagram for a demultiplexer with specified data and data selection inputs. 6M

(OR)

11. a) Explain the difference between a 4-bit binary counter and a decode counter. 6M

b) Discuss and compare the operation of SR and JK filp flops with their truth tables. 6M

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AR13

CODE: 13ME3014 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, November, 2018
METAL CUTTING & MACHINE TOOLS
(Mechanical Engineering)

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

PART-A

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

1. a) List the types of chips
   b) What is the purpose of cutting fluid
   c) Define tool life
   d) Define feed in lathe machine
   e) What is a broaching operation?
   f) Distinguish between drilling and boring
   g) Name two commonly used abrasives in grinding wheel
   h) What do you mean by indexing?
   i) What is an automatic tool changer?
   j) What is a machining center?

PART-B

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

UNIT-I

2. a) Explain the seven elements of tool geometry for a single point cutting tool. 6M
   b) Describe Merchant's force diagram. 6M

(OR)

3. a) What are the desirable properties of cutting tool material ? Name any four cutting tool material. 6M
   b) Identify the mechanism by which the cutting tools wear during machining 6M

UNIT-II

4. Illustrate how following operations are performed on lathe with sketches. 12M
   (i) Centre drilling (ii) taper turning
   (iii) Thread cutting operation

(OR)

5. With the help of a diagram explain progressive action multi spindle automatic lathe. 12M

UNIT-III

6. a) Explain the features of a planing machine 6M
   b) Sketch the relative motions between tool and work piece in shaper, planer and slotter 6M

(OR)

7. a) Describe the features of a horizontal milling machine. 6M
   b) A square hole of20 mmX20 mm is to be created on a disc of 60 mm diameter and 6mm thick. Suggest a suitable process and sketch the tool required to accomplish the task. 6M

UNIT-IV

8. a) Explain grinding wheel specification. 6M
   b) Write about centre less grinding operation 6M

(OR)

9. a) Distinguish between forming and generation of gear cutting operation. 6M
   b) Propose a suitable abrasive machining process to achieve criss cross pattern on the inside surface of an IC engine cylinder. 6M

UNIT-V

10. Discuss the design considerations of CNC machines for improving the machining accuracy. 12M

(OR)

11. Explain the various words used in NC part programming. 12M

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AR13

CODE: 13EC3013 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, November, 2018
DIGITAL IC APPLICATIONS
(Electronics and Communication Engineering)

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

PART-A

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

1. a) What is a 3-state device?
   b) Define encoder
   c) Define propagation delay
   d) What is the main difference between function and procedure in VHDL?
   e) Draw the full adder circuit using half adder
   f) What is meant by race around condition?
   g) Write an application of counter
   h) Write an excitation table for SR flip-flop
   i) How many blocks are available in FPGA architecture?
   j) What is programmable interconnection element?

PART-B

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

UNIT-I

2. a) Explain how to estimate sinking current for low output and sourcing current for high output of CMOS gate — 6
   b) Explain the following terms with reference to CMOS logic i) Logic levels ii) D.C. noise margin iii) Fan-in & Fan-out iv) Propagation delay — 6

(OR)

3. a) Compare CMOS, TTL and ECL with reference to logic levels, DC noise margin, propagation delay and fan-out — 6
   b) Design a 4-input CMOS AND-OR-INVERT gate. Draw the logic diagram and function table — 6

UNIT-II

4. a) Design 16 x 1 multiplexer by using 2 x1 multiplier and explain its operation 6
   b) Design a two bit comparator circuit and explain its operation 6

(OR)

5. a) Design the procedure for converting Gray code to binary and draw its logic diagram 6
   b) Design a 4 to 16 decoder using two 74X138 IC's 6

UNIT-III

6. a) Draw the block diagram of barrel shifter and explain its operation 6
   b) Design 8-bit ALU circuit using two 74LS181 ICs 6

(OR)

7. a) Draw and explain the Dual priority encoder in detail 6
   b) Design a 8-bit adder using two 74LS283 6

UNIT-IV

8. a) Design a Ring counter and explain its operation 6
   b) Design a serial in and parallel out shift register and explain its operation 6

(OR)

9. a) Distinguish between the synchronous and asynchronous counters in detail 6
   b) Draw and explain the operation of positive edge triggered D flip flop 6

UNIT-V

10. a) Draw the programmable logic array circuit for simplified expression F(A,B,C,D)= $\sum(0,1,2,4,6,10,11,12,14)$ and explain its operation 6
    b) Explain briefly about design considerations of PLD's along with circuit diagram? 6

(OR)

11. a) Explain in detail about PROM with an example 6
    b) Design a BCD to Excess-3 code converter using PAL 6

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AR13

CODE: 13CS3011 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH I SEM SUPPLEMENTARY EXAMINATIONS, NOVEMBER, 2018

COMPILER DESIGN
(Common to CSE & IT)

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

PART-A

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

1. a) Draw the transition diagram to recognize signed integer.
   b) Define token, lexeme and pattern.
   c) Compare and contrast LR and LL Parsers.
   d) What is an LR (0) item? Give LR (0) items for A →xyz.
   e) Differentiate synthesis and inherited translation.
   f) What is an activation record?
   g) What is instruction scheduling?
   h) What is common sub expression elimination? Give an example.
   i) List out the issues of code generation.
   j) What is next use information?

PART-B

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

UNIT-I

2. a) Write a LEX program that recognizes the tokens in PASCAL and use the LEX compiler to construct a lexical analyzer for PASCAL. [6M]
   b) Illustrate the phases of a compiler with suitable example. [6M]

(OR)

3. a) Discuss in detail bootstrapping a compiler. [6M]
   b) Compare and contrast compiler and interpreter. [6M]

UNIT-II

4. a) What is top down parsing? What are the problems in top down parsing? Explain each with suitable example [6M]
   b) Consider the grammar S →aB / bA, A→a / aS / bAA, B →b / bS / aBB. Construct left most derivation, right most derivation and parse tree for the sentence "bbbaabaa". [6M]

(OR)

5. a) What is an LALR parser? Construct LALR parser for the grammar S → CC, C →cC, C → d. [6M]
   b) Illustrate the automatic parser generator tool YACC. [6M]

UNIT-III

6. a) Write an SDT scheme for Assignment statements. [6M]
   b) What is an intermediate code? Explain different types of intermediate codes forms and represent the following statement in different forms [6M]
   W = (A + B) – (C + D) + (A + B + C)

(OR)

7. a) Explain different data structures used in the construction of symbol table. [6M]
   b) Discuss run-time storage administration for block structured languages. [6M]

UNIT-IV

8. a) What is the purpose of code optimization? Explain in detail local optimization with example. [6M]
   b) Define basic block and flow graph. Write an algorithm to construct basic block. [6M]

(OR)

9. a) Construct Directed Acyclic Graph for the code: (a – b) + ((a – b) + c) [6M]
   b) Discuss about the following: [6M]
   i) induction variable ii) Dead-code Elimination and iii) algebraic simplification

UNIT-V

10. a) Write an algorithm for simple code generation. [6M]
    b) Generate the object code for the expression (a – b) + ((a – b) + c) [6M]

(OR)

11. a) Discuss in detail machine dependent code optimization [6M]
    b) Explain code generation using DAG. [6M]

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