

Code No: RT32022

R13

SET - 1

III B. Tech II Semester Regular Examinations, April - 2016

SWITCHGEAR AND PROTECTION

(Electrical and Electronics Engineering)

Time: 3 hours

Maximum Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1 a) What are various rating of a circuit breaker? [3M]
- b) What is protective relay? Give its fundamental requirements. [4M]
- c) What is earth fault? [4M]
- d) What is differential protection? [4M]
- e) List the advantages of static relays. [3M]
- f) Explain the need for a lightning arrester. [4M]

PART -B

- 2 a) Discuss the rate of rise of restriking voltage and explain its importance in arc extinction. [8M]
- b) Explain the working of a SF₆ circuit breaker. [8M]
- 3 a) Explain the working of differential relays. [4M]
- b) Describe the functionality of a mho relay. [7M]
- c) Compare various types of distance relays. [5M]
- 4 a) What are various faults that occur in the rotor of an alternator and how the rotor is to be protected from these faults? [8M]
- b) Explain in detail about Bucholtz relay with a neat sketch. [8M]
- 5 a) Draw the schematic diagram of the carrier current protection scheme of lines. Also explain its working principle. [8M]
- b) What is the principle of differential relays? Explain their characteristics and limitations? [8M]
- 6 a) List the advantages and disadvantages of microprocessor based relays. [8M]
- b) With the help of neat diagram explain the principle of static differential relay? [8M]
- 7 a) Describe the construction, principle of operation and application of valve type lightning arrester? [8M]
- b) What are the different types of grounding? Explain the reactance grounding? [8M]



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PART -A

- 1 a) What is meant by current chopping? [3M]
- b) Why directional feature provided for impedance relay cannot be used for reactance relay? [3M]
- c) List the different types of Generator faults. [4M]
- d) What is magnetizing inrush current? [4M]
- e) Explain the importance of zero cross detector in static relays. [3M]
- f) Why is grounding required? [4M]

PART -B

- 2 a) Describe the construction and working of an SF₆ circuit breaker? [9M]
- b) A 11 KV, 400 MVA circuit breaker suddenly closes on to a fault. Determine [7M]
 - (i) symmetrical breaking current
 - (ii) Asymmetrical breaking current assuming 50% DC component
 - (iii) Peak making current.
- 3 a) Discuss with necessary circuit diagram, the principle of operation of an induction disc relay. What are the advantages of induction cup relays over induction disc relays? [8M]
- b) What is universal torque equation? Using this equation derive the characteristics of [8M]
 - (i) impedance relay (ii) reactance relay (iii) mho relay.
- 4 a) Explain the construction and principle of operation of a Buchholz relay. [8M]
- b) Describe with a neat sketch the percentage differential protection of a modern alternator. [8M]
- 5 a) Explain in detail about the Merz price voltage balanced system with a neat single line diagram. [8M]
- b) Describe in detail the protection of parallel feeder and ring mains. [8M]
- 6 a) Describe the basic functional blocks of a digital relay. [8M]
- b) Explain the working of a static over current relay. [8M]
- 7 a) What is the function of surge absorber? In what way it is different from lightning arrester? [8M]
- b) State the advantages of neutral grounding of an electrical system. Give a connection diagram of typical arc suppression coil. [8M]



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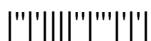
- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answering the question in **Part-A** is compulsory
 3. Answer any **THREE** Questions from **Part-B**

PART -A

- | | | | |
|---|----|---------------------------------------------------------------------|------|
| 1 | a) | Define restriking voltage? | [3M] |
| | b) | What type of relays is affected by power swings? | [4M] |
| | c) | What type of relay is used for loss of excitation of an alternator? | [4M] |
| | d) | What is the commonly used protection for 3 phase feeders? | [4M] |
| | e) | What are the advantages of static over current relays? | [3M] |
| | f) | What is expulsion gap lightning arrester? | [4M] |

PART -B

- | | | | |
|---|----|--------------------------------------------------------------------------------------------------------------------|-------|
| 2 | a) | Explain the reason for initiation of electric arc during contact separation. | [7M] |
| | b) | Describe with the aid of neat sketch the working of a air blast circuit breaker. | [9 M] |
| 3 | a) | Explain the requirement of primary and back up protection in any equipment. | [8M] |
| | b) | Explain in detail about the Induction disc type relay with a neat sketch. | [8M] |
| 4 | a) | Explain a scheme of protection for failure of alternator excitation. | [8M] |
| | b) | Discuss the different types of transformer faults. What are various protective schemes available for transformers? | [8M] |
| 5 | a) | Explain in detail about the time graded and current graded system. | [8M] |
| | b) | Explain the construction and principle of operation of a translay relay applied to a single phase system. | [8M] |
| 6 | a) | Write the pseudo code for programming the distance relays on the microprocessor. | [8M] |
| | b) | Explain in detail about the static over current relay. | [8M] |
| 7 | a) | Discuss the causes of over voltages in a power system. | [8M] |
| | b) | Explain the different methods of neutral grounding. | [8M] |



III B. Tech II Semester Regular Examinations, April - 2016

SWITCHGEAR AND PROTECTION

(Electrical and Electronics Engineering)

Time: 3 hours

Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. Answering the question in **Part-A** is compulsory3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1 a) Define recovery voltage [3M]
- b) What are the merits of over current relays? [4M]
- c) List the faults that occur in Rotor of a generator. [4M]
- d) What type of relay is used for feeder protection [4M]
- e) What are the disadvantages of microprocessor relays? [3M]
- f) What is lightning discharge? [4M]

PART -B

- 2 a) Explain in detail about Air blast circuit breaker with a neat circuit diagram. [4M]
- b) The following data refers to a 3 phase, 50 Hz generator. EMF between the lines 7.5 kV, reactance of generator and connected systems 4 Ohm, distributed capacitance to neutral 0.01microfarad, calculate the frequency of restriking voltage transient. [8M]
- c) Discuss performance of a circuit breaker when capacitive currents are interrupted [3M]
- 3 a) Explain the characteristics of distance relays. [8M]
- b) Explain the importance of under voltage/ over voltage relays with an example for each. [8M]
- 4 a) Explain split-phase relaying protection of a 3 phase alternator with relevant diagrams? [8M]
- b) Explain the protective scheme for the transformer that takes care of magnetizing inrush current without affecting the sensitivity. [8M]
- 5 a) Elaborate on various methods for protection of feeders. [8M]
- b) What is the importance of bus-bar protection? What are the requirements of protection of lines? [8M]
- 6 a) Explain the construction and working of static distance relay. [8M]
- b) Explain the different components of static relay with a neat block diagram. [8M]
- 7 a) Discuss the causes of over voltages in a power system. [8M]
- b) Explain the characteristics of standard impulse voltage. Why is it needed for testing? [8M]



Code No: RT32032

R13

SET - 1

III B. Tech II Semester Regular Examinations, April - 2016
INTERACTIVE COMPUTER GRAPHICS
(Mechanical Engineering)

Time: 3 hours

Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1 a) List various output devices used in computers. [3M]
- b) Derive the transformation matrix for rotation about X&Z axis. [4M]
- c) Explain about window to viewport and viewport to window transformations. [3M]
- d) What is a closed and open curve? [4M]
- e) Explain about visible surface detection. [4M]
- f) Explain about backface detection. [4M]

PART -B

- 2 a) Explain the functioning of a Plasma display system. [8M]
- b) Explain various hardcopy output devices. [8M]
- 3 Explain flood fill algorithm with an example showing stack position at each step. [16M]
- 4 Demonstrate Sutherland-Hodgeman polygon clipping algorithm with an example. [16M]
- 5 Derive the blending functions for a Bezier surface 3x3. [16M]
- 6 Derive the transformation matrix to reflect an object about an arbitrarily selected plane. [16M]
- 7 Write short notes on
 - a) Animation specification involving accelerations. [5M]
 - b) Motion specifications in animation. [5M]
 - c) Homogeneous coordinates. [6M]



III B. Tech II Semester Regular Examinations, April - 2016
INTERACTIVE COMPUTER GRAPHICS
(Mechanical Engineering)

Time: 3 hours

Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

PART -A

- | | | |
|---|------------------------------------------------------------------------|------|
| 1 | a) Explain the difference between random scan and raster scan devices. | [3M] |
| | b) Derive the transformation matrix for rotation about X&Y axis. | [4M] |
| | c) Explain the cohen-sutherland clipping algorithm. | [4M] |
| | d) Explain about wireframe modeling. | [4M] |
| | e) Explain the need for concatenation of matrices. | [3M] |
| | f) Discuss about motion specification. | [4M] |

PART -B

- | | | |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 2 | Explain various input and output devices. | [16M] |
| 3 | Prove that a uniform scaling ($S_x = S_y$) and a rotation form a commutative pair of operations but that, in general, scaling and rotation are not commutative operations. | [16M] |
| 4 | Compare the number of arithmetic operations performed in the Cohen-Sutherland and the Cyrus-Beck line-clipping algorithms for two different line orientations relative to a clipping window. | [16M] |
| 5 | Determine the blending functions for uniform, periodic B-spline curves of degree 3. | [16M] |
| 6 | Write the depth buffer algorithm and demonstrate with an example. | [16M] |
| 7 | Write short notes on | |
| | a) Key frame systems. | [5M] |
| | b) General computer animation functions. | [5M] |
| | c) Parallel and perspective projections. | [6M] |



III B. Tech II Semester Regular Examinations, April - 2016

INTERACTIVE COMPUTER GRAPHICS

(Mechanical Engineering)

Time: 3 hours

Maximum Marks: 70

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2. Answering the question in **Part-A** is compulsory3. Answer any **THREE** Questions from **Part-B**

PART -A

- | | | |
|---|----------------------------------------------------------------------------|------|
| 1 | a) Explain the functioning of CRT monitor. | [4M] |
| | b) Derive the transformation matrix for rotation about Y&Z axis. | [4M] |
| | c) Explain the liang barsky algorithm. | [4M] |
| | d) Write the shortcomings of Bezier curves. | [3M] |
| | e) Derive the relation for rotation about XY plane, YZ plane and XZ plane. | [4M] |
| | f) Explain about keyframe system. | [3M] |

PART -B

- | | | |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 2 | Explain in detail about any four input devices. | [16M] |
| 3 | Show that transformation matrix for a reflection about the line $y = x$, is equivalent to a reflection relative to the x axis followed by 2 counterclockwise rotation of 90° . | [16M] |
| 4 | a) Derive the window-to-viewport transformation equations by first scaling the window to the SIZE of the viewport and then translating the scaled window to the viewport position. | [16M] |
| 5 | Derive blending functions for a B-spline surface of degree 3x3. | [16M] |
| 6 | Derive the transformation matrix for scaling an object by scaling factor S in a direction defined by the directional angles α, β, γ . | [16M] |
| 7 | Write short notes: | |
| | a) Generation of in-betweens key frames using linear interpolation | [5M] |
| | b) Raster animation | [5M] |
| | c) Back face detection. | [6M] |



III B. Tech II Semester Regular Examinations, April - 2016

INTERACTIVE COMPUTER GRAPHICS

(Mechanical Engineering)

Time: 3 hours

Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. Answering the question in **Part-A** is compulsory3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1 a) Explain various input devices used. [4M]
- b) Explain DDA algorithm. [4M]
- c) Explain about viewing function. [4M]
- d) Explain about CSG modeling. [3M]
- e) Explain about Z buffer algorithm. [4M]
- f) Explain about animation sequence. [3M]

PART -B

- 2 Explain the functioning of any two monitors with applications. [16M]
- 3 Show that transformation matrix, for a reflection about the line $y = -x$, is equivalent to a reflection relative to the y axis followed by a counterclockwise rotation of 90° . [16M]
- 4 Carefully discuss the rationale behind the various tests and methods for calculating the intersection parameters u_1 and u_2 in the Cyrus-Beck line-clipping algorithm. [16M]
- 5 Explain about any two shading algorithms in detail. [16M]
- 6 Write scan line algorithm for visible surface detection and explain with an example. [16M]
- 7 Write short notes on
 - a) Animation specification implementing the acceleration-deceleration calculation. [5M]
 - b) Computer animation languages. [5M]
 - c) 3-D clipping. [6M]



III B. Tech II Semester Regular Examinations, April - 2016
DATA WARE HOUSING AND MINING
 (Common to CSE and IT)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answering the question in **Part-A** is compulsory
 3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1 a) What is a Data warehouse? Briefly describe the need for data warehousing. [4M]
 b) What is Data integration? [4M]
 c) Describe different types of OLAP servers. [4M]
 d) Describe random sub sampling. [3M]
 e) Define a frequent set. [3M]
 f) Describe different types of clustering. [4M]

PART -B

- 2 a) What is data mining? Briefly explain the Knowledge discovery process. [8M]
 b) Discuss about Data Mining Task Primitives. [8M]
 3 With examples, discuss in detail about the available techniques for concept hierarchy generation for categorical data. [16M]
 4 a) Explain the three-tier data warehouse architecture. [8M]
 b) What is a concept hierarchy? Describe the OLAP operations in the Multidimensional data model. [8M]
 5 a) Why pruning is useful in decision tree induction? What is a separate set of tuples to evaluate pruning? [8M]
 b) Why naive Bayesian classification is called naïve? Briefly outline the major ideas of naive Bayesian classification. [8M]
 6 a) Explain difference between partitions based Apriori and Apriori algorithm. [8M]
 b) Write an algorithm for finding frequent item-sets using candidate generation. [8M]
 7 With a suitable example, explain K-Means Clustering algorithm. [16M]



III B. Tech II Semester Regular Examinations, April - 2016
DATA WARE HOUSING AND MINING
 (Common to CSE and IT)

Time: 3 hours

Max. Marks: 70

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 3. Answer any **THREE** Questions from **Part-B**

PART -A

- | | | |
|---|------------------------------------------------------------------|------|
| 1 | a) Describe about object-relational databases. | [3M] |
| | b) What is data reduction? What is dimensionality reduction? | [4M] |
| | c) Describe snowflake and fact constellations. | [4M] |
| | d) What is Classification? Describe the need for classification. | [4M] |
| | e) Define a FP-tree. | [3M] |
| | f) Write a note on Hierarchical clustering. | [4M] |

PART -B

- | | | |
|---|----------------------------------------------------------------------------------------------------|------|
| 2 | a) Describe different data mining functionalities. | [8M] |
| | b) Draw and explain the architecture of a typical data mining system. | [8M] |
| 3 | a) What is noisy data? Explain the binning methods for data smoothening. | [8M] |
| | b) What is data integration? Discuss the issues to be considered for data integration. | [8M] |
| 4 | a) Differentiate OLTP and OLAP. | [8M] |
| | b) Explain the three-tier data warehouse architecture. | [8M] |
| 5 | a) What is Eager classification and Lazy classification? Write their advantages and disadvantages. | [8M] |
| | b) Explain the issues regarding classification and prediction. | [8M] |
| 6 | a) Explain difference between partitions based Apriori and Apriori algorithm. | [8M] |
| | b) Write an algorithm for finding frequent item-sets using candidate generation. | [8M] |
| 7 | a) What is density based clustering? Describe DBSCAN clustering algorithm. | [8M] |
| | b) What is partitioning method? Describe any one partition based clustering algorithm. | [8M] |



III B. Tech II Semester Regular Examinations, April - 2016
DATA WARE HOUSING AND MINING
(Common to CSE and IT)

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PART -A

- | | | |
|---|------------------------------------------------------------------|------|
| 1 | a) Describe heterogeneous and legacy databases. | [4M] |
| | b) Describe how correlation coefficient is computed? | [3M] |
| | c) What is a Data warehouse? | [4M] |
| | d) What is Classification? Describe the need for classification. | [4M] |
| | e) Define Apriori property. | [3M] |
| | f) Distinguish between classification and clustering. | [4M] |

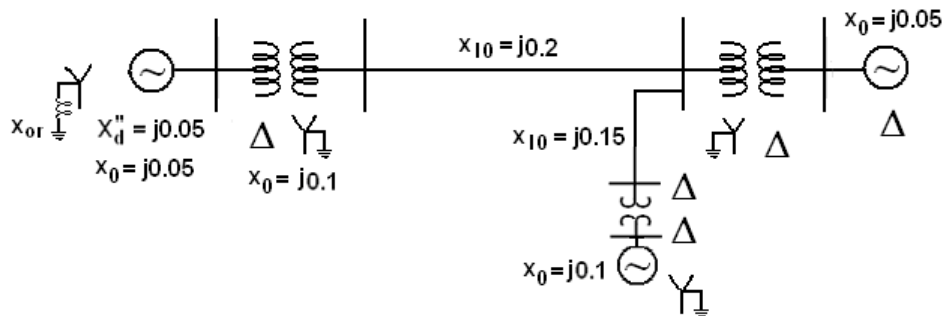
PART -B

- | | | |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 2 | a) What are the major issues in Data Mining? Explain. | [8M] |
| | b) Draw and explain the architecture of a typical data mining system. | [8M] |
| 3 | a) What is data cleaning? Describe the approaches to fill missing values. | [8M] |
| | b) Briefly describe various forms of data pre-processing. | [8M] |
| 4 | Briefly discuss about the following data warehouse implementation methods:
(a) Indexing OLAP data (b) Metadata Repository. | [16M] |
| 5 | a) Describe the criteria used to evaluate classification and prediction methods. | [8M] |
| | b) Explain the following accuracy measures:
(i) F-measure (ii) Confusion matrix (iii) Cross-validation (iv) Bootstrap | [8M] |
| 6 | a) Briefly explain about FP- growth algorithm. Write its advantages over other mining algorithms. | [8M] |
| | b) Write an algorithm for finding frequent item-sets using candidate generation. | [8M] |
| 7 | a) What is clustering analysis? Give the different types of clustering techniques. | [4M] |
| | b) Consider five points $\{X_1, X_2, X_3, X_4, X_5\}$ with the following coordinates as a two dimensional sample for clustering :
$X_1 = (0.5, 2.5)$; $X_2 = (0, 0)$; $X_3 = (1.5, 1)$; $X_4 = (5, 1)$; $X_5 = (6, 2)$;
Illustrate the K-means partitioning algorithms using the above data set. | [12M] |



III B.Tech II Semester Supplementary Examinations, April - 2016**POWER SYSTEM ANALYSIS
(Electrical and Electronics Engineering)****Time: 3 hours****Max. Marks: 75****Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) What are the merits and demerits of per unit system? [5]
b) Explain how base quantities can be selected, and derive the formula for per unit quantities off power system. [6]
c) Write the procedure for developing the single line diagram. [4]
- 2 a) Define the following terms with suitable examples: [6]
i) Tree ii) Cutset iii) Twig iv) Co-Tree v) Basic loop vi) Path.
b) Develop an algorithm for Gauss-Seidel power flow method when all buses are considered. [9]
- 3 a) Compare the Gauss–Seidal and Newton–Raphson power flow methods. [7]
b) Explain with a flow chart, the computational procedure for load flow solution using fast decoupled method. [8]
- 4 Derive the formula for Z_{BUS} by building an algorithm if the new element is a link with a mutual coupling to any other element. [15]
- 5 a) Develop fault impedance matrix in sequence component form for a three phase fault at a bus in a power system for short circuit studies. [7]
b) Three 6.6 KV alternators of rating 3 MVA, 5 MVA and 7 MVA having per unit reactances of 0.09, 0.16, and 0.18 respectively are connected to a common bus. From the bus, a feeder cable of reactance 0.135 ohm connects to a sub-station. Calculate the fault MVA, if a 3-phase symmetrical fault occurs at the sub-station. [8]
- 6 a) What are symmetrical components? Why they are necessary? [6]
b) Draw zero sequence network for the system shown in figure below: [9]



- 7 a) Draw the connection of sequence networks for the following types of faults. [7]
a) Single line to ground, b) Double line to ground and c) Symmetrical fault LLL-G.
- b) A three phase 6.9kV, 20MVA alternator has $x'' = x_2 = 25\%$ and $x_0 = 5\%$. The neutral is grounded through a reactor of 0.3610 ohm. Find the sub transient current in the faulted phase, when a single line to ground fault takes place. [8]
- 8 a) Describe the latest methods to improve the transient state stability. [7]
- b) A 50 Hz generator is delivering 60% of the power that is capable of delivering through transmission system to an infinite bus. A fault occurs that increases the reactance between generator and infinite bus to 500% of the value before the fault. When fault is isolated the maximum power that can be delivered is 85% of the original maximum value. Determine critical clearing angle. [8]



Code No: R32032

R10

Set No. 1

III B.Tech II Semester Supplementary Examinations, April - 2016

ROBOTICS

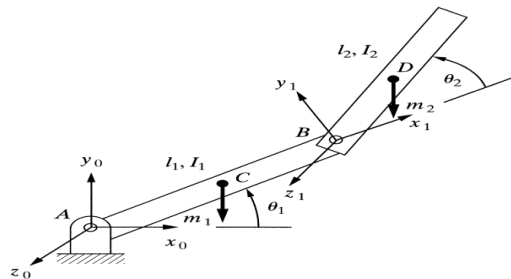
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

- 1 a) Explain about the controllers in detail.
b) Explain about the Robot Anatomy and configuration.
- 2 Explain with neat sketch about
(a) Vacuum gripper (b) Mechanical grippers.
- 3 a) In general explain about representation of combined transformation.
b) A point $P(7,5,1)^T$ is attached to a frame and is subjected to following transformations.
Find the coordinates of the point relative to reference frame
(i) Rotation of 90° about z-axis
(ii) Rotation of 90° about y-axis
(iii) Followed by translation $(4,-3,7)^T$
- 4 Derive Euler matrix orientation and find out values of α, θ, Ψ .
- 5 Using the Lagrangian method, derive the equations of motion for the two-degree of freedom robot arm.



- 6 Explain in detail about
(a) General considerations in path description and generation.
(b) Trajectory planning.
- 7 Explain about various position sensors with neat sketch.
- 8 a) Discuss the material transfer applications of robot.
b) Discuss the machine loading/unloading applications of robot.



Code No: R32052

R10

Set No. 1

III B.Tech II Semester Supplementary Examinations, April - 2016

COMPUTER ARCHITECTURE

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) Give a brief note on SIMD Supercomputers. [7]
- b) Discuss the Evolution of Computer Architecture. [8]
- 2 Explain the need for having a hierarchical memory organization and explain the hierarchy in detail with a block diagram. [15]
- 3 a) Briefly explain the Design space of processors. [8]
- b) Write the Characteristics of typical RISC architecture processor. [7]
- 4 a) List and explain the types of pipelined processor. [7]
- b) Explain various phases involved in Instruction execution. [8]
- 5 a) Draw and explain the Crossbar Switch and Multiport Memory. [7]
- b) Explain the Multistage and Combining Networks with a neat diagram. [8]
- 6 a) Discuss the three approaches to Multi-cast Routing. [7]
- b) How to use virtual channel for breaking deadlock? [8]
- 7 a) Explain MIMD with Shared Memory with a neat diagram. [7]
- b) Describe the Symmetric Multiprocessors with an example. [8]
- 8 Make a comparison between the Structural Parallelism versus Instruction Level Parallelism. [15]



Code No: V3223

R07

Set No. 1

III B.Tech II Semester Supplementary Examinations, April - 2016

COMPILER DESIGN
(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

- 1 a) Explain the role of lexical analyzer. Also differentiate pattern, lexeme and token? [8]
b) Write regular expression to generate identifiers with suitable examples. [8]
- 2 a) Discuss the problems associated with top-down parsers. [6]
b) What is ambiguity? Explain how to resolve ambiguity from context free grammars with suitable examples. [10]
- 3 a) What do you understand by ambiguity of a grammar? [6]
b) Write an algorithm for constructing CLR(1) parsing table. [10]
- 4 a) Explain about attributed grammars. [8]
b) Explain how three address codes are used in Intermediate code generator. [8]
- 5 a) Describe the contents of a symbol table. How is the Symbol table involved in the interactions between the different components of the compiler and in error detection? [8]
b) Explain heap storage allocation scheme with suitable example. [8]
- 6 a) Explain about code optimization techniques with examples. [8]
b) Explain the following with examples: [8]
 - i. Local Optimization
 - ii. Loop Optimization.
- 7 a) Explain about copy propagation algorithm in detail. [8]
b) Explain live variable analysis with a suitable flow graph. [8]
- 8 a) What does the register descriptor contain? How are these useful in code generation? [8]
b) Give an example to show how reordering of intermediate code statements can improve code generation. [8]

