

Roll No. ....

**3333**

**B. Tech. 6th Semester (CSE)  
Examination – May, 2025**

**COMPILER DESIGN**

**Paper : PCC-CSE-302G**

**Time : Three Hours ] [ Maximum Marks : 75**

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is *compulsory*.

1. Explain the following question :  $6 \times 2.5 = 15$

- (a) Define finite automata with output briefly.
- (b) What is context free language ?
- (c) Tokens, Patterns and Lexemes
- (d) What is input buffering.
- (e) Three address code

3333-3150-(P-4)(Q-9)(25)

P. T. O.

- (f) Write down the five properties of compiler.

**SECTION - A**

2. (a) Construct a Finite Automata equivalent to the regular expression : 10  
 $ba + (a + bb)a^*b$
- (b) What do mean by regular expression ? Explain in detail. 5
3. (a) Explain how different phases of compilation will operate and convert following statement

interest = principal \* rate/100

assume data type of rate its float. 10

- (b) Explain applications of compiler technology. 5

**SECTION - B**

4. (a) Derivation and Parse Tree :  $2 \times 7.5 = 15$

Let G be a Context Free Grammar for which the production Rules are given below :

$S \rightarrow aB/bA$

$A \rightarrow a|aS|bAA$

$B \rightarrow b|bS|aBB$

Drive the string aaabbabba using the above grammar (using Left Most Derivation and Right most Derivation).

- (b) Define left recursion. Is the following grammar left recursive ?  $E \rightarrow E + E | E^*E | a | b$
5. Define a Parser. What is the role of grammars in Parser construction ? Construct the Predictive parsing table for the grammar  $G : E \rightarrow E + T | T, E \rightarrow T^*F | F, F \rightarrow (E)$  lid 15

**SECTION - C**

6. Compare and contrast SLR with LALR. Show the following grammar is LALR(1)  $S \rightarrow Aa | bAc | dc | bda A \rightarrow d$ . 15
7. What is an LR(0) item ? Construct an SLR parsing table for the grammar  $G : S \rightarrow L = R | R, L \rightarrow *R | id, R \rightarrow L$ . Is it SLR(1) grammar ? 15

**SECTION - D**

8. (a) What is the role of code Optimizer in compiler ? Is it a mandatory phase ? 8
- (b) What is DAG and flow graph ? Explain their role in compilation process. 7

9. Explain the following with example :  $2 \times 7.5 = 15$

- (a) Symbol tables : Its contents and data structure for symbol tables.
- (b) Errors, lexical phase error, syntactic phase error, semantic error.

Roll No. ....

**3334**

**B. Tech. 6th Semester (CSE)  
Examination – May, 2025**

**ARTIFICIAL INTELLIGENCE**

**Paper : PCC-CSE-304-G**

*Time : Three hours ] [ Maximum Marks : 75*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt *five* questions in all selecting *one* question from each Unit. Question no. 1 is *compulsory*. All questions carry equal marks.

1. (i) What is production system ?  $3 \times 5 = 15$   
(ii) Write disadvantages of Hill Climbing Algorithm.  
(iii) What is Skolemization.  
(iv) Differentiate between BFS and DFS  
(v) Define rote learning.

3334-3,000-(P-3)(Q-9)(25)

P. T. O.

**UNIT - I**

- 2. (a) Define the term Artificial intelligence. Write down the application of AI in various fields. 7
- (b) Explain the AO\* algorithm in detail. What are the application of AO\*. 8
- 3. (a) What is Game playing. Explain Min-Max Algorithm in detail. 7
- (b) Explain the Ant Colony optimization technique in detail. 8

**UNIT - II**

- 4. (a) Explain the Knowledge representation issue with supporting examples. 8
- (b) What is frame. How knowledge is represented using frame. 7
- 5. What are the different types of knowledge representation schemes. Explain in detail. 15

**UNIT - III**

- 6. (a) Explain Bayes theorem. How it is used in inference? 8
- (b) Explain the partial order planning algorithm by giving suitable example. 7

3334-3,000-(P-3)(Q-9)(25) (2)

- 7. Explain Dempster Shaffer theory. How does it remove the disadvantages of Bayes theorem. 15

**UNIT - IV**

- 8. (a) What is an Expert System ? Explain the architecture in detail. 8
- (b) What do you understand by learning by Analogy. 7
- 9. Explain Artificial Neural Network architecture in detail. Also discuss the application of ANN in various fields. 15

3334-3,000-(P-3)(Q-9)(25) (3)

Roll No. ....

**3335**

**B. Tech. 6th Semester (CSE)  
Examination – May, 2025**

**ADVANCED JAVA**

**Paper : PCC-CSE-306G**

**Time : Three Hours ]**

**[ Maximum Marks : 75**

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Write short notes on the following :  $2.5 \times 6 = 15$
- (a) Define Cookie.
  - (b) Describe Android Architecture.
  - (c) Transaction Management in Hibernate.
  - (d) URL Rewriting
  - (e) Life Cycle of JSP

3335-2850-(P-3)(Q-9)(25)

P. T. O.

- (f) Differentiate between forward and include method.

#### UNIT - I

2. Explain in detail how CRUD application is created in Servlet. 15
3. (a) How Pagination is done in JSP. Discuss with the help of example. 8
- (b) Explain JSP Scripting Elements. 7

#### UNIT - II

4. (a) Explain Architecture and Flow of Struts 2. 7
- (b) Differentiate between Model 1 and Model 2 MVC Architecture. 8
5. Explain in details steps to send email using Java Mail API. Also, demonstrate the program displaying these steps. 15

#### UNIT - III

6. Explain Hibernate Second Level Cache with the help of example. 15
7. (a) Explain Spring Dependency Injection. 8
- (b) Elaborate how to perform Remoting in Spring Framework. 7

3335-2850-(P-3)(Q-9)(25) (2)

#### UNIT - IV

8. Write a program describing the use of Android Alarm Manager to access the system alarm. 15
9. Write short notes on any *three* of these : 5 × 3 = 15
- (a) Creational Pattern
- (b) Behavioural Pattern
- (c) Structural Pattern
- (d) J2EE Pattern
- (e) Presentation Layer

3335-2850-(P-3)(Q-9)(25) (3)

Roll No. ....

**3336**

**B. Tech. 6th Semester (CSE)  
Examination – May, 2025**

**MOBILE & WIRELESS COMMUNICATION**

**Paper : ESC-CSE-308-G**

**Time : Three Hours ] [ Maximum Marks : 75**

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is **compulsory**. All questions carry equal marks.

1. Write a short note on the following :  $6 \times 2.5 = 15$
- (a) Wireless local loop.
  - (b) PKMA
  - (c) WiMax
  - (d) IPV6
  - (e) Traditional TCP
  - (f) Support for Mobility

3336-3,000-(P-3)(Q-9)(25)

P. T. O.

**SECTION - A**

2. What is Cellular System ? Explain Reference Model of Mobile & Wireless Communication in detail. 15
3. (a) Explain Multiple access techniques in detail. 8
- (b) What is broadcasting ? Explain its types. 7

**SECTION - B**

4. Write short note on the following :
- (a) GSM Architecture 8
- (b) IEEE 802.11 Architecture. 7
5. Explain Bluetooth Networking its security and Link management in detail. 15

**SECTION - C**

6. Explain Tunneling, Encapsulation Reserve Tunneling and DHCP in detail. 15
7. Explain DSDV (Destination Sequence Distance Vector) and DSR (Dynamic Source Routing) in detail. 15

**SECTION - D**

8. Explain the following : 3 × 5 = 15
- (a) GEO satellite system
- (b) LEO satellite system
- (c) MEO satellite system
9. (a) Explain WAP architecture in detail. 8
- (b) Write the objectives of WAP forum. 7

Roll No. ....

**3337**

**B. Tech. 6th Semester (CSE) (Elective - II)  
Examination – May, 2025**

**ADVANCED DATABASE MANAGEMENT SYSTEM**

**Paper : PEC-CSE-310-G**

*Time : Three Hours ]*

*[ Maximum Marks : 75*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Write short notes on the following : 5 × 3 = 15
- (a) Difference between DBMS & ADBMS.
  - (b) Query's Evaluation
  - (c) Armstrong Axioms
  - (d) Distributed database
  - (e) Foreign key & its significance.

3337-1550 -(P-3)(Q-9)(25)

P. T. O.

**UNIT - I**

- 2. (a) Explain architecture of DBMS in detail. 7.5
- (b) Describe with the help of an SQL query requiring join operation, selection & projection. 7.5
- 3. (a) What is Normalization ? What is its need ? Define & discuss 3NF. 7.5
- (b) Explain two phase Locking protocol with suitable example. 7.5

**UNIT - II**

- 4. (a) What is concurrency control ? Explain multiversion icon currency control technique is different from locking scheme. 10
- (b) What is disaster recovery ? Explain. 5
- 5. (a) Discuss Buffer management logging schemes. 10
- (b) Discuss check point based recovery. 5

**UNIT - III**

- 6. (a) List possible type of failure in distributed system. 7.5
- (b) What are advantages of distributed database management over a centralized DBMS. 7.5
- 7. (a) What is Distributed Deadlock ? Explain. 5
- (b) Explain different Data Replication Technique by DDBMS. 10

**UNIT - IV**

- 8. What are mining multidimensional association rule from relational database & data warehouse ? 15
- 9. Write short note on the following :
  - (a) Specialization & Generalization. 7.5
  - (b) Aggregation and Associations 7.5

Roll No. ....

**3341**

**B. Tech. 6th Semester (CSE) (Elective-III)  
Examination – May, 2025**

**DISTRIBUTED SYSTEM**

**Paper : PEC-CSE-316-G**

Time : Three Hours ]

[ Maximum Marks : 75

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Explain the following : 6 × 2.5 = 15
- (a) Goals of Distributed System
  - (b) Threads
  - (c) Mutual Exclusion
  - (d) Shared Memory
  - (e) Atomic Transactions
  - (f) Access control in Distributed system

3341- 350 -(P-2)(Q-9)(25)

P. T. O.

### UNIT - I

2. What is distributed system ? Explain hardware and software concepts in D.S. 15
3. (a) Explain various design issues in Distributed system. 7  
(b) Explain RPC in detail. 8

### UNIT - II

4. Define scheduling in distributed system. Explain various scheduling algorithms with example. 15
5. What is the need of clock synchronization in distributed system ? Explain synchronization algorithms in detail. 15

### UNIT - III

6. (a) What are latest trends in distributed system ? Explain in detail. 7  
(b) What are the various goals and features of Distributed file system. 8
7. Explain consistency models with suitable example. 15

### UNIT - IV

8. Explain Architecture of Distributed web-based systems in detail. 15
9. Explain the following :
  - (a) Security issues in distributed system. 7
  - (b) Network file system. 8

Roll No. ....

**3343**

**B. Tech. 6th Semester (CSE) (Elective - III)  
Examination – May, 2025**

**DATA SCIENCE**

**Paper : PEC-CSE-320-G**

*Time : Three Hours ]*

*[ Maximum Marks : 75*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

*Note : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.*

1. Write short notes on : 2.5 × 6 = 15
- (a) Statistical modeling.
  - (b) Line chart
  - (c) AI & data science
  - (d) Text analytics
  - (e) Numpy
  - (f) Classification problems

3343-2050 -(P-2)(Q-9)(25)

P. T. O.

### UNIT - I

2. (a) Define web scrapping & state how it can be used for data collection. 10  
(b) Traits of big data. 5
3. Describe the concept of data science. Also explain the related applications & myths of data science. 15

### UNIT - II

4. What is data visualization ? Define how to draw bar charts & scatter plots using matplotlib. 15
5. Explain how NLTK library is useful for natural language processing. 15

### UNIT - III

6. With a clean diagram & example, explain data science methodology. 15
7. Describe the approach of data requirements, collection and preprocessing. 15

### UNIT - IV

8. What is prediction analysis ? Also specify the type of problems where it can be applied. 15
9. Brief notes : 7.5 × 2 = 15
  - (a) Clustering
  - (b) Recommendations systems