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Code: 4G141

R-14

II B.Tech. II Semester Supplementary Examinations May 2018

# **Computer Organization**

|      |     | Computer Organization  |       |
|------|-----|--|-------|
| Max. | Mai | ( Common to CSE & IT ) rks: 70 Time: 3 Hou   | ırs   |
|      |     | er all five units by choosing one question from each unit ( $5 \times 14 = 70$ Marks)        |       |
|      |     | ******   |       |
| 1.   | 2)  | <b>UNIT-I</b> List and explain different interconnection structures used in multiprocessors? | 7M    |
| 1.   | a)  | Explain about sign magnitude and 2's complement approaches for representing                  | / IVI |
|      | b)  | the fixed point numbers. Explain why 2's complement approach is preferable                   | 7M    |
|      |     | OR   | 7 101 |
| 2.   | a)  | Simplify the following Boolean function in both Sum-of products and product-                 |       |
|      | ,   | of-sums form. $F(A,B,C,D) = (0,1,2,5,8,9,10)$  | 7M    |
|      | b)  | Explain about various buses such as internal, external, I/O, system, address                 |       |
|      |     | and data bus.  | 7M    |
|      |     | UNIT-II  |       |
| 3.   | a)  | What is Register Transfer Language? Explain few RTL statements for                           | 01.4  |
|      |     | branching from their actual functioning.   | 8M    |
|      | b)  | For the pattern $X= (A+B)^*(C+D)$ , explain three-, two-, one- and zero-address              | 01.4  |
|      |     | instructions by giving the syntax.   | 6M    |
| 4.   |     | OR Write short notes on the following:   |       |
| ٦.   |     | a) Register transfer language  |       |
|      |     | b) Instruction formats   |       |
|      |     | c) Addressing modes  |       |
|      |     | d) Reduced Instruction Set Computer  | 14M   |
|      |     | UNIT-III   |       |
| 5.   | a)  | Explain why hardwired control unit is faster than micro programmed control unit.             | 7M    |
|      | b)  | What are micro-subroutines? Explain.   | 7M    |
| 0    | ۵)  | OR   | 71.4  |
| б.   | ,   | Explain micro instruction sequencing in detail.  | 7M    |
|      | b)  | What is a micro-operation? Explain the four different types of micro-operations              | 7M    |
| 7.   | a)  | UNIT-IV  Draw a flow chart which explains multiplication of two signed magnitude fixed       |       |
| 7.   | u)  | point numbers.   | 7M    |
|      | b)  | Multiply 10101 and 10111 with the above procedure.   | 7M    |
|      | ٥,  | OR   |       |
| 8.   |     | What is Cache memory? Explain the different mapping techniques used in the                   |       |
|      |     | usage of Cache memory.   | 14M   |
|      |     | UNIT-V   |       |
| 9.   | a)  | What is an Input-Output processor? Explain the need for Input-Output processor               | 7M    |
|      | b)  | What is meant by pipelining? Explain   | 7M    |
| 40   | - \ | OR   | 78.4  |
| 10.  | a)  | List and explain different asynchronous data transfer modes                                  | 7M    |
|      | b)  | What is DMA? What is the need for DMA? Explain the working of DMA.                           | 7M    |

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|-----|----|----------------------------|-------------------|----------|------------|---------|---------------------|------------------|----------|---------|---------|---------------------|--|---|
|     | C  | ode: 5G142                 |                   |          | l          |         |                     |                  |          |         |         | Ţ                   | R-15                                   |   |
|     |    | II B.Tech. II Ser          | mester            | Real     | ılar &     | Sup     | plen                | nen              | tarv     | / Fx    | amii    | natior              | ns May 2018                            |   |
|     |    |                            |                   |          | and A      |         |                     |                  |          |         |         |                     | 10 11101 / 2010                        |   |
|     |    |                            |                   | _        | Comr       |         | -                   |                  | _        |         |         |                     |  |   |
|     | Ν  | 1ax. Marks: 70             |                   |          |            |         |                     |                  |          |         | ,       |                     | Time: 3 Hours                          |   |
|     |    | Answer all five            | units by          | choos    | sing on    | e qu    | estion<br>****      | n tror           | n ec     | ich i   | JNIt (  | 5 x 14              | = /0 Marks )                           |   |
|     |    |                            |                   |          |            | UN      | VIT-I               |                  |          |         |         |                     |  |   |
| 1.  | a) |                            | •                 | Comple   | exity of   | an al   | gorith              | m. E             | xplai    | n ho    | w to    | expres              | s the complexity in                    |   |
|     |    | asymptotic notati          |                   |          | • • •      |         |                     |                  |          |         | _       |                     |  | 8M                                      |
|     | b) | discuss its time c         |                   | •        | m with     | the n   | ielp o              | t an             | exar     | nple.   | . Dev   | elop th             | e pseudocode and                       | 6M                                      |
|     |    | discuss its time c         | ompiexity         | /.       |            | 0       | R                   |                  |          |         |         |                     |  | OIVI                                    |
| 2.  | a) | Explain recursive          | functions         | s algor  | ithm an    | _       |                     | an e             | xamı     | ole.    |         |                     |  | 6M                                      |
|     | b) | Explain the meth           | nod of de         | etermin  | ing the    | com     | plexity             | y of             | proc     | edur    | e by    | the ste             | p count approach.                      |   |
|     |    | Illustrate with an         | example.          |          | Г          |         |                     |                  |          |         |         |                     |  | 8M                                      |
| 0   |    | Eveleie evidende           | - l -: - :: tl- : | حلة حلة: | م مام م    |         | IIT-II              |                  | الد ماد: |         | ا دراد  |                     | le a a ut a lara vitta va              | 4 4 1 4                                 |
| 3.  |    | Explain quicksort          | aigoninin         | with th  | e neip c   |         | :хапір<br><b>іR</b> | ie. G            | ive tr   | ie an   | lalysis | s or quic           | k son algoninin.                       | 14M                                     |
| 4.  |    | Develop Pseudo             | code for          | Dijkstr  | a's algo   | _       |                     | finds            | the      | dista   | ances   | from a              | given vertex to all                    |   |
|     |    | the other vertices         | of a grap         | oh repr  | esente     | d by it | ts wei              | ght r            | natrix   | k. Dis  | scuss   | its con             | plexity.                               | 14M                                     |
| _   |    |                            |                   |          |            |         | IT-III              |                  |          |         |         |                     |  |   |
| 5.  |    |                            |                   | -        |            |         | •                   |                  |          |         |         | -                   | ns in a matrix chain and computing the |   |
|     |    |                            |                   |          | _          | -       | -                   |                  |          | _       |         |                     | Find an optimal                        |   |
|     |    | parenthesizing a r         | natrix cha        | in prod  | duct who   |         | -                   | ce of            | dime     | nsio    | ns are  | e (5, 10,           | 3, 12, 5).                             | 14M                                     |
| 6   |    | Evoloin all pair ch        | ortoot no         | sth unir | a duna     | _       | R                   | mmi              | 20 Mi    | ith th  | a hal   | n of on             | ovemble Write the                      |   |
| 6.  |    | algorithm for all p        |                   |          |            | тис р   | rogra               | 11111111         | ig w     | ıtı tri | e nei   | p or an             | example. Write the                     | 14M                                     |
|     |    | ege                        |                   |          |            | UN      | IT–IV               |                  |          |         |         |                     |  |   |
| 7.  | a) | Define Explicit an         | nd Implicit       | t const  | raint. G   | ive ex  | cample              | es fo            | r exp    | olicit  | and     | implicit            | constraints.                           | 7M                                      |
|     | b) | Give the solution          | space o           | rganiza  | ation fo   |         | •                   | en p             | roble    | em      |         |                     |  | 7M                                      |
| 0   | ٥) | Salva the follow           | ina inete         | naa of   | f trovali  |         | R                   | oroc             | on n     | roblo   | .m      | sina I C            | BB and draw the                        |   |
| 8.  | a) | corresponding so           | _                 |          |            | -       | ales p              | Jei St           | л р      | ODIE    | iii u   | sing LC             | DD and draw the                        |   |
|     |    | 1 2                        | 3                 | 4        | 5          |         |                     |                  |          |         |         |                     |  |   |
|     |    | 1 7                        | 3                 | 12       | 8          |         |                     |                  |          |         |         |                     |  |   |
|     |    | 2 3<br>3 5 8               | 6                 | 14<br>6  | 9<br>18    |         |                     |                  |          |         |         |                     |  |   |
|     |    | 4 9 3                      | 5                 | O        | 11         |         |                     |                  |          |         |         |                     |  |   |
|     |    | 5 18 14                    | . 9               | 8        |            |         |                     |                  |          |         |         |                     |  | 14M                                     |
|     |    |                            |                   |          |            |         | IIT–V               |                  |          |         |         |                     |  |   |
| 9.  | a) | Using an example Complete. | e prove th        | nat sat  | ıstıabılıt | y of b  | oolea               | n tor            | mula     | ı ın 3  | - Cor   | njuctive            | normal form is NP-                     | 8M                                      |
|     | b) | -                          | ndetermii         | nistic   | Algorith   | ım n    | nean?               | Di               | ffere    | ntiate  | e be    | tween               | deterministic and                      | • |
|     |    | nondeterministic           | algorithm         | in des   | sign and   |         | -                   | of alg           | orith    | m?      |         |                     |  | 6M                                      |
| 10. | a) | What is the relati         | onehin h          | otwoon   | ים אים     | _       | R<br>Class          | ເຄເດ             | \//h/    | at da   | WOU     | undoro              | tand by Polynomial                     |   |
| 10. | a) | time reducibility?         | onanih n          | CIMEEL   | IF, INP    | , INFC  | o cias              | ა <del>c</del> ა | vvila    | ai uu   | you     | unu <del>c</del> is | ianu by Fulynoniial                    | 8M                                      |
|     | b) | Explain COOK's             | Theorem           |          |            |         |                     |                  |          |         |         |                     |  | 6M                                      |
|     |    |                            |                   |          |            | *       | **                  |                  |          |         |         |                     |  |   |

| Ill B.Tech. Il Semester Supplementary Examinations May 2018  Database Management Systems (Common to CSE & II )  Max. Marks: 70  Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)  What are the advantages of DBMS? Explain.  a) Identify the main components in a DBMS and explain what they do. b) What are the advantages of DBMS? Explain.  a) Explain the advantages of using a query language instead of custom programs to process data. b) What is data independence and how does a DBMS support it?  UNIT-II  a) Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted. b) Explain the following terms:  i) Relationship instance ii) Composite attribute Vor  Name the main steps in database design. What is the goal of each step? In which step is the E-R model mainly used? b) Explain the distinctions among the terms primary key, candidate key, and superkey  UNIT-III  ii) All what are views? Discuss the problems encountered in modifying database through views. b) Consider the following relations: Studentisorum: integer, sname: string, major: string, leevel: string, age: integer) Class(name: string, meets at: string, room: string, lid: integer) Enrolled (snum: integer, cname: string, color: string) Faculty(rid: integer, iname: string, deptid: integer) Enrolled has one record per student-class pair such that the student is enrolled in the class. Write the following quentes in SQL.  i. For each faculty member that has taught classes only in room R128, print the faculty member's name and the total number of classes she or he has taught. ii. Find the names of students enrolled in the maximum number of classes.  OR iii. Explain the differences between Triggers and constraints. b) Consider the following enemies: string, color: string) Parts(pid: integer, ost mee: string, color: string) Parts(pid: integer, ost mee: string, color: string) Parts(pid: integer, ost integer, ost real) The Catalo |          | Hal        | I Ticket Number :                       |            |          |          |           |            |         |           | ſ                  | D 14                 |   |
|--|----------|------------|---|------------|----------|----------|-----------|------------|---------|-----------|--------------------|----------------------|---|
| Max. Marks: 70   |          | Coc        |   |            |          |          | _         | _          | Ā       |           |                    | R-14                 |   |
| Max. Marks: 70  Answer alf five units by choosing one question from each unit (5 x 14 = 70 Marks)  Nature 1 five units by choosing one question from each unit (5 x 14 = 70 Marks)  Nature 1 five units by choosing one question from each unit (5 x 14 = 70 Marks)  Nature 1 five units by choosing one question from each unit (5 x 14 = 70 Marks)  Nature 1 five units by choosing one question from each unit (5 x 14 = 70 Marks)  Nature 1 five units of the advantages of DBMS? Explain what they do.  Nature 1 five advantages of using a query language instead of custom programs to process data.  Diviting 1 five |          |            | II B.Tech. II                           |            |          |          |           | -          |         |           | ns Mo              | ay 2018              |   |
| Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)    UNIT-   |          |            |   | Data       |          |          | _         |            | -       | ems       |                    |                      |   |
| UNIT-  |          | Ν          | lax. Marks: 70                          |            | ( )      | OHIIII   | 31110     | SL & II    | ' )     |           |                    | Time: 3 Hours        |   |
| UNIT—I  a) Identify the main components in a DBMS and explain what they do. b) What are the advantages of DBMS? Explain.  OR  a) Explain the advantages of using a query language instead of custom programs to process data. b) What is data independence and how does a DBMS support it?  UNIT—II  a) Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted. b) Explain the following terms: i) Relationship instance ii) Composite attribute iii) Multivalued attribute iv) Derived attribute  OR  a) Name the main steps in database design. What is the goal of each step? In which step is the E-R model mainly used? b) Explain the distinctions among the terms primary key, candidate key, and superkey  UNIT—III i. a) What are views? Discuss the problems encountered in modifying database through views. b) Consider the following relations: Student(snum: integer, sname: string, major: string, level: string, age: integer) Class(name: string, meets at: string, room: string, flid: integer) Errolled(snum: integer, cname: string) Facultyfid: integer, frame: string, deptid: integer) Errolled has one record per student-class pair such that the student is enrolled in the class. Write the following queries in SQL. i. For each faculty member that has taught classes only in room R128, print the faculty member's name and the total number of classes she or he has taught. ii. Find the names of students enrolled in the maximum number of classes.  OR a) Explain the differences between Triggers and constraints. b) Consider the following scheme: Suppliers(sid: integer, sname: string, address: string) Parts(pid: integer, pname: string, color: string) Catalog(sid: integer, poli: integer, cost: real) The Catalog relation lists the prices charged for parts by Suppliers. Write the following queries in SQL: i. For each part, find the sname of the supplier who charges the most for that part. ii. Find the sids of suppliers who supply are part |          |            |   | nits by ch | oosin    | _        | •         |            | each    | unit (    | 5 x 14             |                      |   |
| a) Identify the main components in a DBMS and explain what they do. b) What are the advantages of DBMS? Explain.  OR c) Explain the advantages of using a query language instead of custom programs to process data. b) What is data independence and how does a DBMS support it?  UNIT-II c) a) Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted. b) Explain the following terms: i) Relationship instance ii) Composite attribute OR ii) Multivalued attribute iv) Derived attribute OR iii) Multivalued attribute iv) Derived attribute E-R model mainly used? b) Explain the distinctions among the terms primary key, candidate key, and superkey  What are views? Discuss the problems encountered in modifying database through views. b) Consider the following relations: Student(snum: integer, sname: string, major: string, level: string, age: integer) Class(name: string, meets at: string, room: string, lid: integer) Enrolled(snum: integer, cname: string, deptid: integer) Faculty(fid: integer, fname: string, deptid: integer) Faculty(fid: integer, fname: string, deptid: integer) Faculty(fid: integer, cname: string, appair such that the student is enrolled in the class. Write the following queries in SQL. i. For each faculty member that has taught classes only in room R128, print the faculty member's name and the total number of classes she or he has taught. ii. Find the names of students enrolled in the maximum number of classes.  OR c) a) Explain the differences between Triggers and constraints. b) Consider the following schema: Suppliers(sid: integer, pname: string, address: string) Parts(pid: integer, pname: string, address: string) Parts(pid: integer, pname: string, address: string) Parts(pid: integer, pname: string, color: string) Catalog(sid: integer, pname: string, color: string) Catalog(sid: integer, post: name: string, address: string) Parts(pid: integer, pname: string, color: string) Consider the following |          |            |   |            |          |          |           |            |         |           |                    |                      |   |
| b) What are the advantages of DBMS? Explain.  OR  a) Explain the advantages of using a query language instead of custom programs to process data.  b) What is data independence and how does a DBMS support it?    UNIT-II   | ١.       | a)         | Identify the main co                    | mponents   | s in a I |          |           |            | t the   | / do.     |                    |                      | - |
| OR a) Explain the advantages of using a query language instead of custom programs to process data. b) What is data independence and how does a DBMS support it?    UNIT-II   |          | •          | •                                       | •          |          |          | -         |            |         |           |                    |                      | - |
| data.  b) What is data independence and how does a DBMS support it?  UNIT-II  a) a) Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted.  b) Explain the following terms:  i) Relationship instance ii) Composite attribute iii) Multivalued attribute iv) Derived attribute  OR  a) Name the main steps in database design. What is the goal of each step? In which step is the E-R model mainly used?  b) Explain the distinctions among the terms primary key, candidate key, and superkey  UNIT-III  a) a) What are views? Discuss the problems encountered in modifying database through views.  b) Consider the following relations:  Student(snum: integer, sname: string, major: string, level: string, age: integer)  Class(name: string, meets at string; room: string, lid: integer)  Enrolled(snum: integer, cname: string, depitd: integer)  Enrolled(snum: integer, cname: string, depitd: integer)  Enrolled has one record per student-class pair such that the student is enrolled in the class. Write the following queries in SQL.  i. For each faculty member that has taught classes only in room R128, print the faculty member's name and the total number of classes she or he has taught.  ii. Find the names of students enrolled in the maximum number of classes.  OR  ii. A) Explain the differences between Triggers and constraints.  b) Consider the following schema:  Suppliers(sid: integer, name: string, color: string)  Catalog(sid: integer, pid: integer, cost: real)  The Catalog relation lists the prices charged for parts by Suppliers. Write the following queries in SQL:  i. For each part, find the sname of the supplier who charges the most for that part.  iii. Find the sids of suppliers who supply and part and a green part.  UNIT-IV:  OCOMPARY AND   |          | ,          |   | J          |          | ·        |           |            |         |           |                    |                      |   |
| b) What is data independence and how does a DBMS support it?    UNIT-II  |          | a)         |   | ages of ι  | using a  | a query  | langu     | age inst   | ead c   | of cust   | om pr              | ograms to process    |   |
| UNIT-II  a) Construct an E-R diagram for a hostila with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted.  b) Explain the following terms:  i) Relationship instance iii) Composite attribute  Derived attribute  OR  Asme the main steps in database design. What is the goal of each step? In which step is the E-R model mainly used?  b) Explain the distinctions among the terms primary key, candidate key, and superkey  UNIT-III  ii) What are views? Discuss the problems encountered in modifying database through views.  b) Consider the following relations: Student(snum: integer, sname: string, major: string, level: string, age: integer) Class/name: string, meets at: string, room: string, fld: integer) Enrolled(snum: integer, cname: string) Faculty(fld: integer, lname: string, deptid: integer) Enrolled has one record per student-class pair such that the student is enrolled in the class. Write the following queries in SQL.  i. For each faculty member that has taught classes only in room R128, print the faculty member's name and the total number of classes she or he has taught.  ii. Find the names of students enrolled in the maximum number of classes.  OR  ii. A) Explain the differences between Triggers and constraints.  b) Consider the following schema: Suppliers(sid: integer, pname: string, address: string) Parts(pid: integer, pname: string, address: string) Parts(pid: integer, pname: string, address: string) Parts(pid: integer, pname: string, color: string) Catalog(sid: integer, pnid: integer, cost: real) The Catalog relation lists the prices charged for parts by Suppliers. Write the following queries in SQL:  i. For each part, find the sname of the supplier who charges the most for that part.  ii. Find the sids of suppliers who supply a red part and a green part.  UNIT-IV  via Compare 3NF and BCNF with a suitable example.  b) What is dependency preserving for decomposition? Explain why it is important.  OR  b) Laplain the distinctions betw |          | <b>b</b> \ |   | andanaa a  | مطامم    | dooo     | • DDM     | م مسم      | ۳. :۲J  |           |                    |                      |   |
| Associate with each patient a log of the various tests and examinations conducted.  b) Explain the following terms:  |          | D)         | what is data indepe                     | endence a  | ina no   |          |           |            | ort it? |           |                    |                      | • |
| Associate with each patient a log of the various tests and examinations conducted.  b) Explain the following terms:  i) Relationship instance ii) Composite attribute  iii) Multivalued attribute iv) Derived attribute  OR  i. a) Name the main steps in database design. What is the goal of each step? In which step is the E-R model mainly used?  b) Explain the distinctions among the terms primary key, candidate key, and superkey UNIT-III  i. a) What are views? Discuss the problems encountered in modifying database through views.  b) Consider the following relations:  Student(snum: integer, sname: string, major: string, level: string, age: integer)  Class(name: string, meets at: string, room: string, level: string, age: integer)  Enrolled(snum: integer, cname: string)  Faculty(fid: integer, lname: string, deptid: integer)  Enrolled has one record per student-class pair such that the student is enrolled in the class.  Write the following queries in SQL.  i. For each faculty member that has taught classes only in room R128, print the faculty member's name and the total number of classes she or he has taught.  ii. Find the names of students enrolled in the maximum number of classes.  OR  i. a) Explain the differences between Triggers and constraints.  b) Consider the following schema:  Suppliers(sid: integer, sname: string, address: string)  Parts(pid: integer, pame: string, color: string)  Catalog(sid: integer, sname: string, color: string)  Parts(pid: integer, pame: string, color: string)  Catalog(sid: integer, pame: string, color: string)  Catalog(sid: integer, pame: string, color: string)  Catalog(sid: integer, pame: string, color: string)  The Catalog relation lists the prices charged for parts by Suppliers. Write the following queries in SQL:  i. For each part, find the sname of the supplier who charges the most for that part.  iii. Find the sids of suppliers who supply only red parts.  iii. Find the sids of suppliers who supply and part and a green part.  UNIT-IV  iii. Find the sids of suppliers who supply only r | 3.       | a)         | Construct an E-R of                     | diagram fo | or a h   |          |           |            | atients | s and     | a set o            | of medical doctors.  |   |
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| b) Consider the following schema: Suppliers(sid: integer, sname: string, address: string) Parts(pid: integer, pname: string, color: string) Catalog(sid: integer, pid: integer, cost: real) The Catalog relation lists the prices charged for parts by Suppliers. Write the following queries in SQL:  i. For each part, find the sname of the supplier who charges the most for that part. ii. Find the sids of suppliers who supply only red parts. iii. Find the sids of suppliers who supply a red part and a green part.  UNIT-IV  a) Compare 3NF and BCNF with a suitable example. b) What is dependency preserving for decomposition? Explain why it is important.  OR  a) Explain why 4NF is more desirable than BCNF. b) What is Normalization? Explain briefly 1NF, 2NF & 3NF with suitable examples.  UNIT-V  a) Explain the distinctions between the terms Serial schedule and Serializable schedule. b) Why does a DBMS interleave current transactions?  OR  a) How is data organized in a tree-based index? When would you use a tree? b) Why are tree-structured indexes good for searches?  |          | a)         | Explain the differen                    | ces hetwe  | en Tr    | inners a |           |            |         |           |                    |                      |   |
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| b) Why does a DBMS interleave current transactions?  OR  Does a How is data organized in a tree-based index? When would you use a tree?  Does b) Why are tree-structured indexes good for searches?  | <b>a</b> | اد         | Evaluin the distincti                   | one hotur  | an th    |          |           |            | a and   | Sprint    | izahla             | schadula             |   |
| OR  a) How is data organized in a tree-based index? When would you use a tree?  b) Why are tree-structured indexes good for searches?  | •        | •          | •                                       |            |          |          |           |            | z anu   | oenal     | ı∠aµl <del>U</del> | ou icuule.           |   |
| b) Why are tree-structured indexes good for searches?  |          | -,         | , : :::: :: <u>- ::::0</u>              |            |          |          |           |            |         |           |                    |                      |   |
|  |          | a)         | •                                       |            |          |          |           |            | d you   | use a     | tree?              |                      |   |
| ***  |          | b)         | Why are tree-struct                     | ured inde  | xes go   | od for s |           | es?        |         |           |                    |                      | , |

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Code: 4GC43

R-14

II B.Tech. II Semester Supplementary Examinations May 2018

**Environmental Science** (Common to CE, ME and CSE) Max. Marks: 70 Time: 3 Hours Answer all five units by choosing one question from each unit ( $5 \times 14 = 70$  Marks) UNIT-I 1. a) Define the term environment and explain scope and importance of environmental studies. 7M b) Write a short note on Biosphere and atmosphere. 7M 2. a) Describe the term environmental education. 7M b) Explain the role of people and organizations related to provide environmental awareness. 7M UNIT-II a) Write about the uses and mineral reserves of India. 7M b) Explain the environmental impacts of over exploitation of mineral resources. 7M OR a) Write about the various applications and environmental impacts of any two fossil fuels. 7M b) Briefly explain the effects of pesticides. 7M UNIT-III Define the term ecosystem and explain the structural aspects of forest ecosystem. 5. 7M b) Write a note on carbon cycle and nitrogen cycle. 7M a) Explain various values of biodiversity. 7M 6. b) Discuss ex-situ conservation strategies in detail. 7M **UNIT-IV** a) Write about effects, classification of pollutants and control measures of air pollution. 7. 7M Explain sources, effects and control measures of thermal pollution. 7M OR 8. Explain various municipal solid waste management practices in detail. 7M Explain briefly impacts of marine pollution with any case study. 7M UNIT-V 7M 9. a) Write in detail about acid rain. b) Explain water pollution prevention and control act. 7M OR 10. a) Define the term population explosion and explain reasons and impacts of 7M population growth. b) Write a short note on human rights. 7M Hall Ticket Number : R-14

II B.Tech. II Semester Supplementary Examinations May 2018

# Formal Languages and Automata Theory

(Computer Science & Engineering)

Max. Marks: 70 Time: 3 Hours

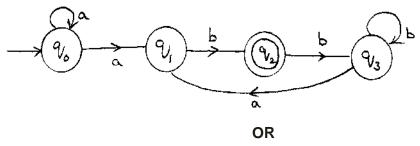
Answer all five units by choosing one question from each unit ( $5 \times 14 = 70 \text{ Marks}$ )

## UNIT-I

1. a) Explain the properties of strings and languages.

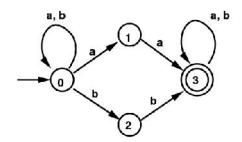
6M

- b) For the NFA given by following state transition diagram
  - a) Check whether the string abbabba is accepted or not
    - b) Give at least two transition paths.



8M

2. a) Let M be the NFA shown in Figure



Construct Equivalent DFA for the above NFA

8M

b) Explain Moore and Mealy machines formally with examples

6M

### UNIT-II

3. a) Construct NFA for regular expression (0+1)\*00(0+1)\*

8M

- b) Discuss Identity rules. Simplify the Regular Expression
  - + 1\*(011)\*(1\*(011)\*)\*

6M

#### **OR**

4. a) Show that  $L = \{a^nb^n/n > = 1\}$  is not regular

7M

b) Explain about the closure properties of regular sets

7M

#### UNIT-III

5. a) Construct finite automata recognizing the following regular grammar.

 $A_o$   $aA_1$ 

 $A_1$   $bA_1/bA_0/a$ 

10M

b) Mention any two applications of Context Free Grammar.

4M

OR

Code: 4G143

6. a) What is meant by ambiguous grammar? Test whether the grammar is ambiguous or not.  $S \rightarrow A/B, A \rightarrow aAb/ab, B \rightarrow abB/\in$ 6M b) Convert the following grammar to CNF  $S \rightarrow AB1/0$  $A \rightarrow 00A/B$  $B \rightarrow 1A1$ 8M **UNIT-IV** 7. a) Define PDA mathematically. With a neat diagram explain the working of a PDA 6M b) Obtain a PDA to accept the language  $\{L = a^n b^n / n \ge 1\}$ . 8M **OR** a) Construct the Context Free Grammar (CFG) for the following PDA. 8.  $M=(\{q_0, q_1\}, \{0,1\}, \{X,z_0\}, ,q_0,Z_0, )$  and where is given by  $(q_0,0,z_0)=\{(q_0,XZ_0)\}$  $(q_0,0,X)=\{(q_0,XX)\}$  $(q_0,1,X)=\{(q_1, )\}$  $(q_1,1,X)=\{(q_1, )\}$  $(q_1, ,X)=\{(q_1, )\}$  $(q_1, , Z_0) = \{(q_1, )\}$ 8M b) Is NPDA (Nondeterministic PDA) and DPDA (deterministic PDA) equivalent? Illustrate with an example. 6M UNIT-V 9. a) Define a Turing Machine. With a neat diagram explain the working of a Turing Machine. 4M b) Construct TM for the language  $L=\{a^nb^nc^n/n>=1\}$ 10M OR 10. a) Write short notes on Context Sensitive Language and Linear Bounded Automata. 6M b) Explain the Universal Turing machine in detail 8M \*\*\*

Page 2 of 2

| Hall Ticket Number : |  |  |  |  |  |      | _ |
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II B.Tech. II Semester Supplementary Examinations May 2018

|     |        | ii b. rech. ii semesiei supplemeniary Examinations May 2016  |     |
|-----|--------|--|-----|
|     |        | Object Oriented Programming  |     |
|     |        | (Common to CSE & IT)   |     |
|     |        | rks: 70 Time: 3 Hours  |     |
| 7   | VI ISW | er all five units by choosing one question from each unit (5 x 14 = 70 Marks)  *********************************** |     |
|     |        | UNIT-I   |     |
| 1.  | a)     | Explain clearly how the following terms are related to Java. i. Architecture-Neutral                               |     |
|     | ,      | ii. Robust iii. High-performance iv. Dynamic   | 7M  |
|     | b)     | Explain the following Object Oriented concepts with suitable examples. i) Data                                     |     |
|     | ,      | Encapsulation ii) Method over loading  | 7M  |
|     |        | OR   |     |
| 2.  | a)     | Explain constructors with an example. Illustrate one scenario where constructors                                   |     |
|     |        | are used?  | 7M  |
|     | b)     | Define a class? What is the general form of a class? How objects are declared                                      |     |
|     | -      | explain with an example?   | 7M  |
|     |        | UNIT-II  |     |
| 3.  | a)     | With an example explain the effect of using final keyword in inheritance.  | 7M  |
|     | b)     | Write a program to read two numbers in one class and do the arithmetic operations                                  |     |
|     |        | on these two numbers in another class, which is stored in another package.   | 7M  |
|     |        | OR   |     |
| 4.  | a)     | Explain with suitable example, how super class variable can refer subclass objects?                                | 7M  |
|     | b)     | "Interface variables are static and final by default in Java" - Support this statement                             |     |
|     | ,      | with proper explanation  | 7M  |
|     |        | UNIT-III   |     |
| 5.  | a)     | Differentiate multitasking with multi threading?   | 7M  |
|     | b)     | Discuss about nested try statements and how such a program may be executed?  | 7M  |
|     |        | OR   |     |
| 6.  | a)     | What is multithreading? What are the priorities given for multithreading? Explain                                  |     |
|     |        | advantages of multithreading   | 7M  |
|     | b)     | Explain various categories of the compile time errors.   | 7M  |
|     |        | UNIT-IV  |     |
| 7.  | a)     | Write an applet to calculate student grade   | 7M  |
|     | b)     | Write a short note on boarder layout with an example?  | 7M  |
|     | •      | OR   |     |
| 8.  | a)     | Explain about the parameter passing to applets.  | 7M  |
|     | b)     | Differentiate Applet with an application?  | 7M  |
|     |        | UNIT-V   |     |
| 9.  |        | Define sockets. Use socket programming to design a client/server application that                                  |     |
|     |        | takes the password as input and checks whether it is correct. The program should                                   |     |
|     |        | print the appropriate message.   | 14M |
|     |        | OR   |     |
| 10. | a)     | Explain the steps involved in creating JCheckBox and JRadioButton?   | 7M  |
|     | b)     | What are the methods supported MouseListener interface. Explain each of them                                       |     |
|     |        | with examples?   | 7M  |
|     |        |  |     |