

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

SECOND YEAR [2014-17]

B.A./B.Sc. THIRD SEMESTER (July – December) 2015

Mid-Semester Examination, September 2015

Date : 15/09/2015

COMPUTER SCIENCE (General)

Time : 12 noon – 1 pm

Paper : III

Full Marks : 25

Group – A

(Answer any one question)

[1×12·5]

1. a) Differentiate between physical and logical data independence with proper example. [2]
b) “Candidate key has no redundant attribute” —justify. [2]
c) Differentiate between inner join and outer join operation. [2]
d) Describe weak entity type with proper example. [2·5]
e) Construct an ER diagram for a car insurance company that has a set of customers, each of whom owns one car. Each car has associated with it zero to any number of recorded accidents. [4]
2. a) Differentiate between generalization and specialization with an example. [2]
b) “Project operation is not commutative”—Justify. [2]
c) Differentiate between procedural and non-procedural DML with an example. [2]
d) Describe referential integrity constraint with an example. [2·5]
e) Consider the following relational schema where primary keys are denoted using an underline.
Employee (ename, street, city)
Works (ename, company_name, salary)
company (company_name, city)
Answer the following queries in relational algebra. [2+2]
i) Find the names and cities of residence of all employees who work for ‘TCS’.
ii) Find all companies located in every city in which ‘TCS’ is located.

Group – B

(Answer any one question)

[1×12·5]

3. a) Explain Process Control Block in brief. [4]
b) Compare multiprocessing and multitasking. [4]
c) Write short note on Virtual machine. [4·5]
4. a) What is the disadvantage of priority scheduling? How is it resolved? [3]
b) Compare single thread and multithread in OS. [2]
c) Explain the critical section problem with an example. [4]
d) Why is it important for scheduler to distinguish I/O bound and CPU bound process? [3·5]

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