2019
Part–II
Computer Science
(General)
Paper–IIA
Full Marks–50
Time–2 Hours

The question are of equal value for any group/half. The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practiable.

Group – A
(Operating System)

Answer *any two* questions : 10×2=20

1) (a) What are the disadvantages of batch processing system? 2

(b) Define process. What are the difference between process and program? 2+3

(c) Describe the process state diagram. 3

2) (a) What is paging? Define first fit, best fit and worst fit with example. 2+6

(b) What are the difference between fixed partition allocation and variable parititon allocation? 2

3) (a) *What is context switching?* Why is it considered to be an overhead? 2+3

(b) Write the differences between multi programming and multitasking OS. 5

Group – B
(Database Management System)

Answer *any two* questions : 12½x2=25

4) (a) Describe specalization and aggregation with example. 3+3=6

(b) Define E-R model. What is multivalued attributes with example. (2+2½)=4½

(c) What are the fundamental operation in relational algebra? 2

5) (a) Consider the schemas : Write the following queries in SQL or relational algebra.

Sailors (Sid, sname, rating, age)

(i) Find the name and age of the sailors who have a rating above 8. 2½

(ii) Find the name of sailors whose age is maximum. 2½

(iii) Find the name of sailors whose first character of names must start with 'm'. 2½

(b) Define weak entity and strong entity. 3

(c) What do you mean by functional dependency? 2

6) (a) What are the differences between logical data independence and physical data in dependence. 5

(b) What are the major functions of the database administrator? 3

(c) Define the following terms :

Primary Key, Composite Key and Unique Key. 4½

7) (a) Discuss the 'insertion anomalies', 'updation anomalies' and 'deletion anomalies' with respect to normal forms with suitable example and suggest a method to overcome them. 2½×3

(b) When do we call a relation is in 3NF? Consider the relation assignment

{worker_id, building_id, start date, name, skilltype} and FDs are 1+4

{worker_id → name,

(worker_id, building_id → start date}.

Is the relation in 2NF? If not, then make it in 2NF.
