



**WEST BENGAL STATE UNIVERSITY**

B.Sc. General Part-II Examination, 2020

**COMPUTER SCIENCE**

**PAPER: CMSG-III**

Time Allotted: 2 Hours

Full Marks: 50

*The figures in the margin indicate full marks.  
Candidates should answer in their own words and adhere to the word limit as practicable.  
All symbols are of usual significance.*

**2 marks for Neatness**

**Answer any *three* questions from the following**

16×3=48

1. (a) Discuss briefly the advantages and disadvantages of using DBMS approach as compared to using a conventional file system. 6+4+6  
(b) Write the difference between procedural and non-procedural DML.  
(c) Explain the concept of Generalization, Specialization and Aggregation.
  
2. (a) Explain Three-Tier Architecture of a database and use of mapping between Schema Levels. 5+5+6  
(b) Explain different types of integrity constraints with example.  
(c) Explain first, second, third and BCNF Normal forms with suitable example.
  
3. Consider the following relational database: (3+3+4)+6  
**employee** (employee-name, street, city), **company** (company-name, city), **works** (employee-name, company-name, salary), **manages** (employee-name, manager-name)  
Give an expression in SQL for each of the following queries:  
(a) Find the names, street address and cities of residence for all employees who work for 'First Bank Corporation' and earn more than Rs. 10,000.  
(b) Find the names of all employees in the database who live in the same cities as the companies for which they work.  
(c) Find the names of all employees in the database who live in the same cities and on the same streets as do their managers.  
(d) Prove that SQL is Relationally Complete.
  
4. (a) What are the important activities that are carried out during feasibility study phase? 3+(4+3)  
+4+2  
(b) Explain the drawbacks of Waterfall Model. Why Spiral Model is called a Meta model?

- (c) What are the characteristics of a Good SRS document? Why is SRS document known as Black Box Specification of a System?
5. (a) How are the concepts of Cohesion and Coupling useful in arriving at good software design? 6+4+3+3  
(b) Distinguish between Physical DFD and Logical DFD with an example each.  
(c) What are the differences among Fault, Failure and Error?  
(d) Distinguish between software Verification and software Validation.
6. Write short notes of the following: 4×4 = 16  
(a) Spiral Model  
(b) Alpha Testing  
(c) DBA  
(d) Decision Tree and Decision Table.

**N.B. :** *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

—×—