

**2016***Time : 3 hours**Full Marks : 75*

*Candidates are required to give their answers in their own words as far as practicable.*

*The questions are of equal value.*

*Answer any **five** questions, selecting at least **one** from each group.*

**Group - A**

1. Define the database schema and view. Explain external conceptual and internal schema.
2. What is SQL ? What are the salient features of SQL ? Explain.
3. What is normalisation ? What are its objectives ? Explain 2nd, 3rd and 4th normal form.
4. Differentiate between the following :
  - (a) Attributes, tuples and fields
  - (b) Candidate key, primary key and foreign key

**Group - B**

5. What do you mean by operating system ? What are the different types of operating system ? Illustrate with example.

6. Explain the concept of *Process State and Process Control Box (PCB)*. What is the use of *PCB* ?
7. What is meant by preemptive scheduling ? How does it affect the system performance vis-a-vis non-preemptive scheduling ?
8. Explain the following :
  - (a) Round Robin
  - (b) Mutual exclusion
  - (c) Virtual memory
9. What do you mean by Microsoft disk operating system ? Explain any five external and internal command with its purpose and syntax.

### Group – C

10. Explain the following :
  - (a) LED
  - (b) Photodiode
  - (c) Mosfet

✓ 11. Describe Zener diode. explain the half wave and full wave rectifier with and without filter with suitable example.

12. What are the different types of resistance ? Draw and explain the color code capacitor.

13. Explain MOSFET. State the difference between unijunction transistor and phototransistor.

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