

- N. B.: (1) **All** questions are **compulsory**.
 (2) Makes **suitable assumptions** wherever necessary and **state the assumptions** made.
 (3) Answers to the **same question** must be **written together**.
 (4) Numbers to the **right** indicate **marks**.
 (5) Draw **neat labeled diagrams** wherever **necessary**.
 (6) Use of **Non-programmable** calculators is **allowed**.

1. Attempt any three of the following:

15

- Explain Software Development Life Cycle (SDLC) with the help of diagram.
- What is software? Explain the characteristics of software.
- Define software engineering and its layer with the help of diagram.
- Write a short note on spiral model.
- What are functional and non-functional requirements of software?
- Explain the principles of agile methods and discuss the problems with agile methods.

2. Attempt any three of the following:

15

- Describe the different stages of system engineering process.
- Explain the essential characteristics of socio technical system.
- Define and explain the two types of emergent properties.
- Explain the process or the steps of requirement engineering briefly.
- Explain context diagram and its components of data flow diagram (DFD) with the help of example.
- Explain legacy system categories and its assessment with the help of example.

3. Attempt any three of the following:

15

- Define architectural design and explain the functions of architectural design.
- Explain user interface design process (UID).
- Explain software project management briefly.
- Briefly explain the various stages performed in the process of risk management.
- Explain the functions of quality assurance and its standards.
- Describe why it is important to measure the software metrics.

4. Attempt any three of the following:

15

- Explain the two phases of system testing: integration and release testing.
- Explain briefly verification and validation (V & V) process.
- List and describe the static analysis check points involved in automated static analysis.
- Write a short note on size oriented metrics of software measurement.
- Explain type of metrics function points and object point to estimate the software productivity
- Describe three different models of Constructive Cost Models (COCOMO).

[TURN OVER]

5. Attempt any three of the following:

15

- Explain various stages of process improvement with the help of diagram.
- Explain the different levels of **CMMI** (Capability Maturity Model introduced) Framework.
- Briefly describe the concept of **SOA** (Service Oriented Architecture) and the benefits of SOA.
- What are the benefit and problem of reusing software?
- Define distributed software engineering and explain the issues of distributed system.
- Write a short note on SaaS (Software as a Service).
