Q. P. Code: 36155

(2½ hours) **Total Marks: 75**

N. B.: (1) **All** questions are **compulsory**.
(2) Make**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**

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

2. Attempt *any three* of the following: **15**

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

3. Attempt *any three* of the following: **15**

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

4. Attempt *any three* of the following: **15**

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

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5. Attempt *any three* of the following: **15**

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

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