Code: AC63/AT63/AC114/AT114 Subject: SOFTWARE ENGINEERING

AMIETE – CS/IT (Current & New Scheme)

Time: 3 Hours **DECEMBER 2018** **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions, answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: **(2×10)**

a. Which four framework activities are found in the Extreme Programming (XP) ?

(A) Analysis, design, coding, testing
(B) Planning, analysis, design, coding
(C) Planning, design, coding, testing
(D) Planning, analysis, coding, testing

b. Which one of the following is NOT desired in a good Software Requirement Specifications (SRS) document?

(A) Functional Requirements **(B)** Non-Functional Requirements
(C) Goals of Implementation **(D)** Algorithms for Software Implementation

c. Match the following:

1) Waterfall model	a) Specifications can be developed incrementally
2) Evolutionary model	b) Requirements compromises are inevitable
3) Component-based software engineering	c) Explicit recognition of risk
4) Spiral development	d) Inflexible partitioning of the project into stages

(A) 1-a, 2-b, 3-c, 4-d **(B)** 1-d, 2-a, 3-b, 4-c
(C) 1-d, 2-b, 3-a, 4-c **(D)** 1-c, 2-a, 3-b, 4-d

d. The tools that support different stages of software development life cycle are called:

(A) CASE Tools **(B)** CAME tools
(C) CAQE tools **(D)** CARE tools

e. What does *UDDI* stand for?

(A) Universal Design, Discovery and Integration
(B) Universal Description, Discovery and Integration
(C) Universal Decomposition, Discovery and Integration
(D) Universal Description, Design and Integration

f. Consider the following program module:

```
int module1 (int x, int y)
{
  while (x! = y)
  {
   if (x > y)
    x = x - y,
   else y = y - x;
    }
 return x;
}
```

What is Cyclomatic complexity of the above module?

(A) 1	**(B)** 2
(C) 3	**(D)** 4

g. In software maintenance tackling the changes in the hardware or software environment where the software works, is

(A) Corrective maintenance	**(B)** Perfective maintenance
(C) Adaptive maintenance	**(D)** Preventive maintenance

h. A software design pattern often used to restrict access to an object is:

(A) Adapter	**(B)** Decorator
(C) Delegation	**(D**) Proxy

i. Which of the following testing techniques ensures that the software product runs correctly after the changes during maintenance?

(A) Path Testing	**(B)** Integration Testing
(C) Unit Testing	**(D)** Regression Testing

j. Which of the following is not an interface error?

(A) Shared memory interfaces	**(B)** Actor interfaces
(C) Procedural interfaces	**(D)** Message passing interface

Answer any FIVE Questions out of EIGHT Questions
Each Question carries 16 marks.

Q.2 a. What do you mean by legacy systems? Explain why legacy systems can cause difficulties for companies that wish to reorganise their business processes. **(6)**

b. Explain various phases of Rational Unified Process. **(5)**

c. Discuss the risk management process. **(5)**

Q.3 a. Describe four types of non-functional requirements that may be placed on a system. Give examples of each of these types of requirement. **(5)**

b. Explain requirements validation process and the, checks that should be carried out on the requirements in the requirements document. **(6)**

c. Draw the DFD for the following requirement: **(5)**

Buses come to a garage for repairs.

A mechanic and helper perform the repair, record the reason for the repair and record the total cost of all parts used on a Shop Repair Order.

Information on labor, parts and repair outcome is used for billing by the Accounting Department, parts monitoring by the inventory management computer system and a performance review by the supervisor

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Q.4 a. Explain the principles of agile development methods. Also discuss the testing in Extreme programming (XP). **(8)**

b. Explain Model-based techniques with example. **(8)**

Q.5 a. Explain the two generic control styles that are used in software systems **(8)**
i)Centralised control ii)Event-based control

b. Explain in brief **(8)**
i)CORBA
ii) Service-oriented system architecture

Q.6 a. Discuss the process of Object identification. **(4)**

b. Discuss the approaches that support software reuse. **(6)**

c. Using examples, illustrate the different types of adaptors needed to support sequential composition, hierarchical composition and additive composition. **(6)**

Q.7 a. Explain the user interface design process. **(6)**

b. What do you mean by Dependable programming? Discuss safe programming and Exception handling. **(10)**

Q.8 a. Explain Cleanroom software development. **(5)**

b. Explain cyclomatic complexity. Determine the cyclomatic number from the control flow graph shown in Fig1. **(6)**

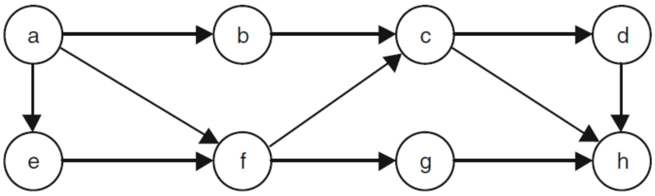

Fig 1

c. The basic COCOMO 81 model and sub-models that are part of the COCOMO II model. **(5)**

Q.9 **a.** Explain potential software quality attributes that should be consider during the quality-planning process. **(6)**

b. Explain Object oriented Metrics **(4)**

c. Discuss the Process areas in the CMMI **(6)**