No of Pages : 4 **Course Code : 12XW45**

Roll No:
(To be filled in by the candidate)

PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004

SEMESTER EXAMINATIONS, APRIL / MAY - 2016

MSc – SOFTWARE SYSTEMS Semester : 4

12XW45 SOFTWARE ENGINEERING TECHNIQUES

Time : 3 Hours **Maximum Marks : 100**

INSTRUCTIONS:

1. Answer **ALL** questions from GROUP – I.
2. Answer any **FOUR** questions from GROUP – II.
3. Answer any **ONE** question from GROUP – III.
4. Ignore the box titled as **"Answers for Group III"** in the Main Answer Book.

GROUP - I **Marks : 10 x 3 = 30**

1. Which is the best process model for the following system specification?
   It is proposed to develop a system for student information, where students and parents can access information about their marks and attendance.
2. Identify the functional and non-functional requirements for the following system description:
   A library information system has been developed in an educational institution. The system can take care of book issues and book returns. It will calculate fine amount for students and staff, if the books are not returned within 15 days.
3. A local authority is considering the implementation of a computer based system to help administer educational loans at a bank. Identify the stake holders in such a project.
4. Sometimes part of a system may be built quickly to demonstrate feasibility or functionality to a customer. This prototype system is usually incomplete ; the real system is constructed after the customer and developer evaluate the prototype. Should the system requirements document written before or after a prototype is developed? Why?
5. Why error messages displayed on the screen should match user's skill and their experience?
6. One of the user requirements, captured during systems requirements analysis stage, was not implemented by mistake. It was added after six months of implementation. Is it a maintenance activity?
7. It is practically impossible to exhaustively test a program. Comment on this statement.

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8. Compare analog and digital display. When do you prefer analog display over digital display?
9. Specify a situation where it is unwise or impossible to provide a consistent user interface.
10. Consider the given program :

```
input x,y;
Z=x+y;
a=cos(Z);
print a;
```

Obtain mutant for the program.

GROUP - II **Marks : 4 x 12.5 = 50**

11. Consider the following case study:

A multi-speciality hospital wanted to automate their operations with the following requirements:

* Both Inpatient and Outpatient need to be registered with the hospital-a unique id will be provided for future reference.
* An appointment can be booked through online or by visiting hospital.
* Patient can directly make a payment or pay through Insurance Company.
* Pharmacy is integrated with hospital for dispensing medicine (based on prescription)
* Hospital employs full time doctors and part time(visiting) doctors.
* Out patient appointments can be availed only between 10 AM and 4PM. Each appointment slot should be 30 minutes only.
* Due to audit requirements, discharge summary of each patient should be maintained for 3 years.

Analyse this application and draw the following diagrams based on your understanding.

a) Context analysis diagram.
b) Data flow diagram for various levels.

12. a) Explain how estimation is done using COCOMO model.
    b) Explain the various quality attributes with examples.
13. Consider the following case study:

A newly formed private airline decided to open up its reservation online. Consider the following requirements.

* Fare is fixed based on source-destination combination and day type (weekday, weekend, holiday)
* A flight can be booked 6 months in advance and each booking can have maximum of 6 passengers.

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* Agent can book flights for their clients (they will be paid 1% commission for this service)
* Customer details will be maintained along with their seat preference (aisle and window) and meal preference. (Veg, Non-veg), for further reference and booking.
* Booking will be done against full payment (through payment gateway) along with preference (seat and meal) details.
* Cancellation of booking (All passenger/Few) is allowed 3 days prior to travel. This should remove booking entries.

Generate the following diagrams for the above application.

a) Entity Relationship Diagram.

b) Structure chart and HIPO diagram.

14. What is meant by cohesion and coupling? Explain the various types of cohesion and coupling with examples.

15. Write all possible test cases for an ATM application based on the following requirements.

* User need to enter 4 digit pass code (numeric) after swiping the card.
* User can choose from the following options.
  - o Withdrawal
    - Amount (maximum Rs.50,000-subject to availability of balance)
    - Confirmation for printing receipt.
  - o Deposit
    - Enter amount of cash deposit (maximum Rs.25,000)
    - Cash can be deposited with the help of envelop provided.
    - Acknowledgment of the same need to be printed.
  - o Change of password
    - Need to enter old password.
    - Provide new password.
    - Confirmation of new password.

GROUP - III Marks : 1 x 20 = 20

16. Consider the given case study:

Salesmen in a company are paid commission for the products sold by them. The commission is based on the percentage of the sale-value.

Case 1: More than 300 items are sold. The value of items sold is greater than or equal to Rs.5,000/-

a) If the salesman's salary is below Rs.20,000/- then the commission is 10%.

b) If the salesman's salary is in the range Rs.20,000 to Rs.25,000 then the commission is 8%.

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c) If the salary is above Rs.25,000, then the commission is 7%.

Case 2: Number of items sold is less than or equal to 300 and value of items sold is greater than or equal to Rs.5,000/-.

a) If salary is below Rs.20,000 then the commission is 8%.

b) If the salary is in the range Rs.20,000/- to Rs.25,000 then the commission is 7%.

c) If the salary is above Rs.25,000/- then the commission is 6%.

Case 3 : For items value under Rs.5,000/- and sales over 300 items are eligible for a flat commission of 8% to all catgeries of sales men.

Generate a decision table and decision tree for the given case study and construct a suitable Nassi shneidermann diagram for the application.

17. A retail store wanted to automate their operations with the following requirements.

* Products (items) are purchased from various suppliers based on the stock.
* Payment time for each purchase is 30 days from the date of billing.
* Store has multiple billing counters which accepts cash and credit card.
* All credit card payments are collected through a centralized banking option.
* Customer has option to take a member ship card for points accumulation.
* Purchase value above Rs.1,000 is eligible for free home delivery.

Generate a data dictionary for the above given application and design suitable screen formats for data entry.

/END/

CSK.