

Indian Institute of Technology, Delhi

Department of Mathematics

End Semester Examination

Course : MAL 745 Software Engineering

Date: 9.5.2016

Time: 2 hrs

Marks 40

1. Differentiate between (any one difference)
- walkthrough and review by circulation
  - reliability and availability
  - perfective and preventive maintenance

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- 2.
- Give any two weaknesses of Halstead software science metrics.
  - For the program code given below, compute the Effort using Halstead software science metrics.

```
int sum, i;  
sum = 0;  
for (i=1; i<= 20; i++)  
    sum = sum + i;  
printf(sum);
```

$3 \times 21 \times 20$   
 $3 \times 20 \times 60$

1 + 5

- 3.
- Explain, with an example each, the two relationships of a Use Case diagram - Extend and Include.
  - Draw the use case diagram for the transport system that issues driving license. Give its description. Draw the sequence diagram for the above use case.

2 + 2 + 5

- 4.
- What are the four impact levels of a risk driver on the risk component? Define risk exposure.
  - Design a class diagram for a document subsystem which is responsible for viewing, maintaining and printing a document. A document consists of pages, paragraphs and heading. Different styles can be assigned to any part of the document.

2 + 5

5. a. Define weighted metrics per class (WMC) and coupling between object classes (CBO).  
 b. Consider the automatic ticket vending machine at a metro station. The machine is activated when the user wants to purchase a ticket. The user enters the start station, destination station and the number of tickets. The machine asks the user to insert money. It waits till the money inserted is equal to or more than the required amount. At this point, the ticket(s) is(are) printed, the balance, if any, is computed and returned to the user. The ticket(s) are also given to the user.

Draw a detailed state transition diagram/state machine for the automatic ticket vending machine.

2 + 5

6. a) Why are complexity adjustment values used in function-oriented metrics? What are the demerits of function points.  
 b) Calculate the function point for the Safe Home User Interaction System given below. Assume the weights to be average viz. 4,5,4,10,7.

1 + 2 + 5

