LNMIIT
The LNM Institute of Information Technology

CSE 0326: Software Engineering: End-Term Examination

Date: 4 / Dec / 2018 **Time: (10+170) mins** **Marks: (10 + 170)**

Notes:
1. Ten (10) minutes of time is given for studying the Case Study.
2. For all questions (sub-parts therein) the marks are proportional to the expected time to complete the answer of that question. You are advised to manage time accordingly.
3. There are a few deliberate attempts in the questions that require you to make and state assumptions as appropriate to Software Engineering.
4. Questions (or parts therein) refer to the Case Study given below.
5. In Analysis and Design of Engineering artifacts, neatness is very important. Thus, ten (10) marks will be given for neatness. Total time marks are 180.

Case Study: M/S Batasari India Pvt Ltd (BIPL) is a 100 year old brand name in the market space of foot-ware in India. But in the last 5 years, it is facing a stiff competition from International brands like Adidas and Metro-Shoes and its market share has shrunk by 9%. In an attempt to regain its market share, BIPL has engaged M/S Y16 Information Technology Co (Y16ITC) to design & develop the below described two modules using the Rational Unified Process (RUP) model.

Module#1: Online Catalog: This module should contain two sub-modules: (A) The product-code, product description, photos, specifications, price, delivery-time and review ratings of all the products of BIPL, organized as (i) formal, (ii) casual and (iii) sports footwear. These catalogs are created and maintained by the Brand-building Staff of BIPL, reviewed and approved by the India level Brand-building Manager. (B) People all over the world can (i) sign-up using usual details, and log-in, (ii) view the approved catalog and (iii) insert into, delete from a shopping-cart (a unique logical shopping cart exists for each signed-up citizen). Across multiple log-ins, the same shopping-cart will be visible to the citizen.

Module#2: Online Order-Placement and Delivery: This module should contain four sub-modules: (C) Facility for any signed-up Indian to (i) finalize his / her shopping-cart contents and (ii) place an order using any card; all orders greater than Rs 4999=00 will get 5% discount and if the complete order is for sports brands then an additional 2% discount is given (D) If the payment is successful then display the details of delivery date; orders once placed, cannot be cancelled; (E)Status update facility of delivery / refund as the case may be; [F]. Citizen can log-in and offer review ratings for delivered goods.

Questions:

Q1. [Marks 30]

[a]. Discuss the purpose of study of (i) Engineering and (ii) Software Engineering disciplines. [8]

[b]. Explain 'why and what' of BPM and BRMS using an example for each from the case study. [10]

[c]. Identify one (i) ambiguity, (ii) incompleteness and (iii) inconsistency in the case study. [6]

[d]. Explain using an example, the purpose of specifying 'Design Constraints' in SRS. [6]

Q2. [Marks 20]

[a]. Draw the Data-Flow Diagram L-0. Draw L-1 only for Module#1. [4 + 10]

[b]. Discuss three inconsistencies that can get into DFDs. [6].

Q3. [Marks 30]

[a]. Identify one important object of Module#2 and draw Use-Case-Diagram showing actors, participants and all the actions on that object. [8]

[b]. Discuss the purpose of "extension" and "inclusion" in UCD. [6]

[c]. Draw the Use-Case-Activity-Diagram for Module#2.(C) of case study. [10]

[d]. Explain the concept of 'Unit-of-Behavior' with example from above UCAD. [6]

Q4. [Marks 20]

[a]. Distinguish between Architecture and Design of a S/W Application. [6]

[b]. In technical language, specify 'Through-put' of a S/W Application. [6].

[c]. Assuming that an 'Availability of 99.9999' is required for given case study, suggest an architecture that can offer such an availability. [8].

Q5. [Marks 30]

[a]. What are the principles used in choosing a Class in O-O-D? [6]

[b]. Draw the Class Diagram for the same UCD shown in Q3.[a]. Assume 5 appropriate private variables and show ALL public methods [10].

[c]. What is the (i) harm of public variables and (ii) benefit of private methods in the context of design of a Class. [8]

[d]. Draw the Component Diagram for Module#2 of case study. [6]

Q6. [Marks 20]

[a]. What principle is used by Function-Point-Analysis to estimate effort? [10]

[b]. State the steps up to unadjusted FPA. [10]

Q7. [Marks 20]

[a]. What is the purpose of (i) unit-level, (ii) integrated, (iii) system-level testing? [15].

[b]. Generate 5 Test-Cases from the UCAD shown in Q3.(c). [5]