Answer ALL the following question: (in two pages)

Question 1 (20 points)

a) Five main models are used for executing software development paradigm. Mention them. And discuss by drawing one of them.

b) Mention the main requirement *engineering process* which used in the Requirement stage of Software Engineering Product.

c) i) What are the essential elements needed in the software project management?
ii) What are the responsibilities of project manager?

d) Several models are used for executing *software development methods*. Mention them from your study.

e) Some risk can affect the software project during work.
i) What are these risks ?
ii) How can they managed by the project management system

Question 2 (20 points)

a) Software testing comprises of *Validation* and *Verification*. Show the difference between them.

b) During the *Component Reusability Process* (in software maintenance stage), two kinds of method that can be adopted.
i) Briefly mention these methods.
ii) Draw a diagram showing the phases of Component Reusability Process.

c) There are some challenges faced by the development team while implementing the software. Mention these implementation challenges.

d) A well-maintained *Software Documentation* should involve several kinds of documents. Mention them briefly.

e) Write *at least two* applications for the following software design tools:

1- Pseudo Code	4- Data Dictionary
2- Structured charts	5- Data Flow Diagram
3- Decision Table	6- HIPO diagram

Question 3 (25 points)

a) Draw and explain the GUI design and development diagram.

b) Each software has its *design approach* which is suitable for certain characteristics of software during its design. Mention these approaches and their suitable usages.

c) One of the software design strategies is the Object Oriented Design process. Mention the important concepts of Object Oriented Design.

d) Software Testing has three main phases must be considered during this process: Testing approaches, testing levels, and testing documentations. Mention all the types of each phase. (use drawing schema to explain your answer)

e) Mention the suitable analysis tool of each of the following applications:

    i)   Specific mathematical problem with "Fortran" programing language.
    ii) Online Sales processing.
    iii) Electronic Documentations or Dictionaries
    iv) Online Internet Troubleshooting.

Question 4 (25 points)

a) By drawing, what are the main steps of *Re-engineering any Software Product?*

b) Maintenance stands for all the modifications and updations done after the delivery of software product.
    i) Mention the reasons of these modifications in the software product.
    ii) By drawing, explain the phases of the *maintenance process activities*
    iii) Draw a diagram represents the distribution of maintenance *cost*
        corresponding to software cost.

c) **i)** What does it mean "**Standard ISO 9000**"? Give examples for the organizations concerns with the quality standard and Quality Assurance.
    ii) Mention the *quality measures* of ISO that concerns the software products.

d) A new "**Website**" is under construction. It needs a *Fully software engineered system* to manage the parts of it.
    i) Chose a desirable subject for that software product (Project).
    ii) From your study to the Software Engineering course, what are the required steps needed to *fully design* this software product? *(Write actual needs for each stage of the main steps of software life cycle)*
    iii) Explain in details *all the parts* of that software product in your documentation.

With my best wishes

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