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Subject - Software Engineering

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Section - A (Any five)

Que-1

- (i) Explain unit testing.
- (ii) Explain difference between verification and validation?
- (iii) What is software documentation?
- (iv) Explain advantages of modularity.
- (v) What is PFD?
- (vi) Difference between white box and black box testing.

Section - B (Any one)

Que-2

Discuss software testing in detail.

Que-3

Explain software maintenance in detail.

Answers:

Section - A

Ans-1

- (i) Unit testing - Unit testing is the process of testing an individual module for its functionality.
→ During Unit testing, test cases are made just to test the working of individual module or part of code and not the whole product.

→ During Unit testing, these tasks/^{tests} are performed :-

- a) Module test
- b) Error handling test
- c) Data structure test, etc.

(iii)	Verification	Validation
<ul style="list-style-type: none"> • Checked if system is built right in this. • It is done by Quality Assurance team. • Includes reviews. • Verification checks if the output carried out is right or not. • Verification is done before validation. 	<ul style="list-style-type: none"> • Checked if the right system is built in this. • It is done by the testing team. • Includes testing. • Validation ensures that user accepts the product or not. • Validation is done after verification. 	

(iii) Software Documentation :-

It is the blog or a brief explanation of a specific software/product. This includes the software details like where it is used and the steps to follow in order to use it.

- Who writes it?
 - Developer of the software himself or the people who know the software thoroughly.

(iii) Software Documentation is helpful for people who want to learn about that specific software.

Even the programmer of that software can refer to this documentation whenever he forgets something or some information.

(iv) Advantages of Modularity are -

- Arranges the code better.
- Makes it easy for new programmers to work on product easily.
- Saves time of finding out a block of code specific to your need.
- Helps in unit testing. Unit testing can be used on it later on.

(vi) White Box Testing

Black Box Testing

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| <ul style="list-style-type: none"> • In white box testing, the system design and other information about the product/ testing unit is given to the tester. • In this lower level of testing is used. | <ul style="list-style-type: none"> • In black box testing, the tester have no information about the testing unit from before. • In this higher level of testing is used. |
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| <ul style="list-style-type: none"> • Programming knowledge is required to be this. • Software developers do this. • Software architecture knowledge is required. | <ul style="list-style-type: none"> Programming knowledge is not required. Individual testers do this. • Software architecture knowledge is required. |
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Section-B

Ans-2

Software Testing

- Software Testing is a very important phase of software development life cycle. It makes your program correct and better before user can experience it. So that user have a good experience using that software.
- Software testing is defined as executing a program with intent to find an error in the program.
- By testing a software, we can remove errors and different bugs from the software and can make it more reliable than ever before.
- It is a very good practice that every software programmer does and should do.

Ans-2

⇒ Objectives of Software Testing are :-

- To find error and resolve them.
- To make a better product.
- Providing the quality level of product.
- Ensuring that software is ready to use.
- To determine if the product satisfy the requirements of user.
- Determining things to work on in that software

⇒ Principle of Software Testing is as follows:-

- Testing should be done on user requirements to see if they are met or not.
- Testing should done and completed in specified time period.
- Testing should be done by a good tester / programmer to ensure quality in the work.
- Test cases should be documented with its results.
- Testing should be planned early.