Q. What is system testing? Write down the necessary of system testing.

Ans: System testing makes a logical assumption that if all parts of the system are correct, the goal of the system will be successfully achieved.

A small system error can explode into a much larger problem. Effective testing early in process translates directly into long term cost saving from a reduced number of errors.

Another reason for system testing is the utility as a user-oriented vehicle befor4e implementation. The beat program is worthless if it does not meet user needs.

Q. What do we test for the system testing?

Ans: The first test of the system is to see whether it produce the correct outputs. Following this step, a variety of other tests is considered. They are;

1. Online response.
2. Volume.
3. Stress testing.
4. Recovery and security.
5. Usability documents and procedure

All of them are describing billow;

1. **Online response:** Online system must have a response time that will not cause a hardship to the user. One way to test this is to input transactions on as many CRT screen as would normally be used peak hours and time the response to each function to establish a true performance level.
2. **Volume:** In this test, we create as many records as would normally be produced to verify that the hardware and software will function correctly. The user is usually asked to provide test data for volume testing. time is a factor
3. **Stress testing:** The purpose of stress testing is to prove that the candidate system does not malfunction under peak loads. Unlike volume testing where time is not a factor, we subject the system to a high volume of data over a shot time period. This simulation an online environment where a high volume of activities occurs in spurts.
4. **Recovery and security:** A forced system failure is induced to test a backup recovery procedure for file integrity. Inaccurate data are entered to see how the system responds in terms of error detection and protection. Related to file integrity to demonstrate that data and programs are secure from unauthorized access.
5. **Usability documents and procedure:** The usability test verifies the user-friendly nature of the system. This relate to normal operating and error-handling procedures

Q. Describe the nature of test data.

Ans: The proper choice of test data is as important at the test itself. If the test data as input are not valid or representative of the data to be provided by the user then reliability of the output is suspect. There are two natures of test data; they are;

1. Artificial.
2. Live Data.

Artificial data: artificial data should provide all combination of values and formats and make it possible to test all logic and transaction path subroutines. Artificial data provides extreme values for testing the limits of the candidate system.

Live data: for large, complex systems, a computer program is used to generate the necessary test data. Data generating programs save substantial time for both the programmer and the test itself. A familiarity with system files and parameters, however, is necessary for waiting an effective data-generating program.

Q. Describe the test plan activities. Or describe the activity network for system testing.

Ans: A test plan entails the following activities.

1. Prepare test plan.
2. Specify conditions for user acceptances testing.
3. Prepare test data for program testing.
4. Prepare test data for transaction path testing.
5. Plan user training.
6. Compile/ assemble programs.
7. Prepare job performance aids.
8. Prepare operational documents

Prepare test plan: a workable test plan must be prepared in accordance with established design specifications it includes the following items:

1. Outputs expected from the system.
2. Criteria for evaluating outputs.
3. A volume of test data.
4. Procedure for using test data.
5. Personnel and training requirements

Specify conditions for user acceptances testing: Planning for user acceptance testing calls for the analyst and user to agree on the condition for the test. Many of these conditions may be derived from the test plan. Others are an agreement on the test schedule, the test duration, and the persons designed for the test.

Prepare test data for program testing: As each program is coded, test data are prepared and documented to ensure that all aspects of the program are properly tested. After testing the data are failed for future reference.

Prepare test data for transaction path testing: This activity develops the data required for testing every condition and transaction to be introduced into the system. The path of each transaction from origin to destination is carefully tested for reliable result. The test verifies that the test data are virtually comparable to live data used after conversion.

Plan user training: User training is designed to prepare the user for testing and converting the system. User involvement and training take place parallel with programming. The training plan is followed by preparation of the training manual and other text materials. Facility requirements and the necessary hardware are specified and documented.

Compile/ assemble programs: All programs have to be compiled/ assembled for testing. Before this, however a complete program description should be available. Program and the system flow-chart should also be available for future reference.

Prepare job performance aids: In this activity the materials to be used by personnel to run the system are specified and scheduled. This includes a display of materials such as program codes, a list of input codes attached to the CRT terminal, and a posted instruction schedule to load the disk drive.

Prepare operational documents: The operational documentation is a section on the experience, training and educational qualifications of personnel for the proper operation of the new system.

Q. Describe the performance criteria are use for system testing.

Ans: There are four performance criteria are used for system testing. They are:

1. Turnaround time.
2. Backup.
3. File protections.
4. Human factors

Turnaround time: The turnaround time is the elapsed time between the receipt of the input and the availability of the output. The objective is to decide on and evaluate all the factors that might have a bearing on the turnaround time for handling all applications.

Backup: backup relates to procedures to be used when the system us backup plans might call for the use of another computer. The software foe the candidate system must be tested for compatibility with backup computer.

File protections: file protection pertains to storing files in a separate area for protection against fire flood or natural disaster. Plans should also be established for reconstructing files damaged through a hardware malfunction.

Human factors: the human factor applies to the personnel of the candidate system during system testing, lighting, air conditioning, noise, and other environmental factors are evaluates with peoples desk, chairs, CRTs etc. this is referred to as ergonomics. It is becoming an extremely important issue in system development.

Q. Describe different steps of system testing.

Ans: System testing consists of the following steps:

1. Program testing.
2. String testing.
3. System testing.
4. System documentation.
5. User acceptance testing

Program testing: to run a program satisfactorily, it must compile and test data correctly and tie in properly in other program. Program testing checks for two types of errors, they are syntax and logical. A syntax error is a program statement that violates one or more rules of the language in which it is written. These errors are shown through error massage by the computer.

A logical errors deal with incorrect data fields, out of range items, and invalid combinations. Since diagnosis does not detect logical error, the programmer must examine the output carefully.

String testing: programs are invariably related to one another and interact in a total system. Each program is tested to see where it conforms to related programs in the system. Each portion of the system is tested against the entire module with both test and lice data before the entire system is ready to be tested.

System testing: system testing is designed to uncover weaknesses that were not found in earlier test. This includes forced system failure and validation of the total system as it will be implemented by its user in the operational environment.

System documentation: all design and test documentation should be finalized and entered in the library for future reference. The library is the central location for maintenance of the new system.

User acceptance testing: an acceptance test has the objective of selling the user on the validity and reliability of the system. It verifies that the system's procedures operate to system specifications and that the integrity of vital data is maintained. 2020 8c   2020 8b

Q. What do you mean by quality assurance? Describe the quality factors of a system.

Ans: Quality assurance defines the objectives of the project and reviews the overall activities of those errors are corrected early in the development process. Steps are taken in each phase to ensure that there are no errors in the final software.

Several quality factors determine the quality of a system. They are:

1. **Correctness:** the extent to which a program meets system specification and user objectives.
2. **Reliability:** the degree to which the system performs its intended functions over time.
3. **Efficiency:** the amount of computer resources required by a program to perform a function.
4. **Usability:** the effort required to learn and operate a system.
5. **Maintainability:** the ease with which program errors are located and corrected.
6. **Testability:** the effort required to test a program from one hardware configuration to another.
7. **Portability:** the ease of transporting a program from one hardware configuration to another.

8. **Accuracy:** the required precision in input editing, computations and output.
9. **Error tolerance:** error detection and correction versus error avoidance.
10. **Expandability:** each of adding or expanding the existing data base.
11. **Access control and audit:** control of access to the system and the extent to which that access can be audited.
12. **Communicativeness:** how descriptive of useful the inputs and outputs if the system are.

Q. Describe the levels of quality assurance. 2020 8c
Ans: There are three levels of quality assurance. They are

1. Testing.
2. Validation.
3. Certification.

Testing: System testing is designed to uncover weaknesses that were not found in earlier test. This includes forced system failure and validation of the total system as it will be implemented by its user in the operational environment.
Validation: System validation checks the quality of the software in both simulated and live environments. First it tests the alpha test in which error and failures based on simulates user requirements are verified and studied. The modified software is then subjected to the second phase called beta test in an actual user's site or a live environment.
Certification: The third level of quality assurance is to certification to certify that the program or software package is correct and conforms to standards. A package that is certified goes through a term of specialist who test, review, and determine how well it meets the vendor's claims.