Chapter 1 Question Distribution

Certified Tester Foundation Level Question Distribution					
Chapter 1		Learning Objectives (LO) – Öğrenme Amaçları/Hedefleri	Unit - Ünite	Number of Questions per LO	Açıklama
1	Keywords			Exactly ONE question based on the definition of a keyword from Chapter 1	Chapter 1'de yer alan anahtar kelimelerden 1 tane tanım sorusu gelecek
1	FL-1.1.1	Identify typical objectives of testing	1.1 What is Testing?	Exactly ONE question based on either of these LOs is required.	Bu konuların herhangi birinden 1 tane soru gelecek
	FL-1.5.1	Identify the psychological factors that influence the success of testing	1.5 The Psychology of Testing		
6	FL-1.1.2	Differentiate testing from debugging	1.1 What is Testing?	Exactly SIX questions based on this set of 11 LOs are required. Each question must cover a DIFFERENT LO.	Bu 11 konudan (veya LO) 6 tane soru gelecek. Yani diğer 5 konudan o sınavda soru gelmeyecek. Her soru farklı bir konuyu (LO) kapsamak zorunda.
	FL-1.2.1	Give examples of why testing is necessary	1.2 Why is Testing Necessary?		
	FL-1.2.2	Describe the relationship between testing and quality assurance	1.2 Why is Testing Necessary?		
	FL-1.2.3	Distinguish between error, defect, and failure	1.2 Why is Testing Necessary?		
	FL-1.2.4	Distinguish between the root cause of a defect and its effects	1.2 Why is Testing Necessary?		
	FL-1.3.1	Explain the seven testing principles	1.3 Seven Testing Principles		
	FL-1.4.1	Explain the impact of context on the test process	1.4 Test Process		
	FL-1.4.2	Describe the test activities and respective tasks within the test process	1.4 Test Process		
	FL-1.4.3	Differentiate the work products that support the test process	1.4 Test Process		
	FL-1.4.4	Explain the value of maintaining traceability between the test basis and test work products	1.4 Test Process		
		Explain the difference between the mindset required for test activities and the mindset			
	FL-1.5.2	required for development activities	1.5 The Psychology of Testing		
8 Soru					

NOT: Bilgiler official/resmi dokümandan alınmıştır. / Dokümanda yer alan "Learning Objectives-Öğrenme Amaçları-Hedefleri" kavramı, tablonun bazı hücrelerinde "konu" şeklinde kullanılmıştır. / Kırmızı renkli konulardan bir adet soru gelmesi beklenmektedir. /

DİKKAT!

Sorular cevaplanırken bazı hususlara dikkat etmek gerekmektedir.

Öncelikle soru cümlelerinde geçen ifadeler dikkatle okunmalı ve altı çizilmelidir.

Örneğin, "*main, the most, the highest, the best, prior, mostly, generally vd*" ifadeler hem soruya yaklasımımızı hem de çözüm seçeneklerini etkilemektedir.

Sınavda diğer şıklara göre daha "doğru, etkin, önemli, üstün" olan şık işaretlenmelidir.

Bu tür sorularda soruda yer alan 4 adet şıkkın 3 adedi kişiyi yanıltabilecek bazı kelime/kavramlar içermektedir. Ancak bu cevapların bir yerinde tutarsızlıklar olacaktır. Adaydan istenen şıklar arasında bir sıralama (öncelik/önemlilik/sağladığı katkı/kronolojik açısından) yapmasıdır.

Ayrıca genelleme yapan, aşırı dışlayan veya kesinlik ifade eden kelimelere dikkat edilmelidir. Bu nedenle şıklarda yer alan "**always**, *all*, *never*, *every*, *prove*" gibi ifadelere şüpheyle yaklaşmakta fayda vardır.

Genel olarak "*help, can, reduce, minimize, probability*" gibi ifadeler Syllabus ile daha uyumlu bir mantık tasımaktadır.

1.1- What is Testing?



- 1.1.1 Typical Objectives of Testing (Syllabus 13. Sayfa)
- 1.1.2 Testing and Debugging (Syllabus 14. Sayfa)

QUESTION-1

Which of the following is a valid objective of testing?

- **A.** Correcting defects
- **B.** Locating defects in the code
- C. Preventing defects
- **D.** Ensuring no defects are present

Answer: C Explanation:

Soru, aşağıdakilerden hangisi Testing'in **geçerli bir amacıdır** şeklinde sorulmuştur.

Tester asıl olarak software içindeki defectc'leri tespit eder ve raporlar. Correcting/fixing/locating faaliyetleri tester'ın değil, developer'ın görevidir. Bu faaliyetler testing amacı değildir. Ayrıca test edilen nesnenin bug-free/defect-free/error-free olduğunu göstermek tetsingin amacı değildir.

- A- Yanlış; tester defect'leri düzeltmez. Testing'in amacı değildir.
- B- Yanlış; tester defect'leri koddan çıkarmaz veya yerini değiştirmez. Testing'in amacı değildir.
- C- Doğru; Defect'leri önlemek testing faaliyetinin amacıdır.
- D- Yanlış; Defect olmadığından emin olmak testing'in amacı değildir. Hatta bu önerme testing'in 7 prensibinden "Testing shows the presence of defects, not their absence" ile ters bir önermedir. Testing'in amacı defect'lerin olduğunu göstermektir, onların bulunmadığını göstermek değildir.

QUESTION-2

Which of the following are valid test objectives?

- (i) Finding defects.
- (ii) Gaining confidence about the level of quality and providing information.
- (iii)Preventing defects.
- (iv)Debugging the code.
- A. i, ii and iii
- **B.** i, ii and iv
- C. ii and iii
- D. i and iv

Answer: A Explanation:

Soru, aşağıdakilerden hangisi testingin **geçerli test amacıdır** şeklinde sorulmuş.

Defect'leri bulmak, test edilen nesnenin kalite seviyesi hakkında güven kazanmak ve bilgi sağlamak ile defectleri önlemek geçerli birer testing faaliyeti amacıdır.

Ancak debugging faaliyeti, her ne kadar nadiren tester yapabilse de, developer tarafından gerçekleştirilir ve testingin geçerli amacı değildir.

Which of these are objectives for software testing?

- **A.** Determine the productivity of programmers
- **B.** Eliminate the need for future program maintenance
- **C.** Eliminate every error prior to release
- **D.** Uncover software errors

Answer: D Explanation:

Soruda testingin amacı sorulmuş.

A şıkkında programcıların/geliştiricilerin verimliliğine karar verme denilmiş-HATALI

B şıkkında gelecekteki program bakımlarını elimine etmek (ihtiyacı ortadan kaldırmak) denilmiş-HATALI

C şıkkında sürümden önce "tüm hataları" ortadan kaldırmak denilmiş. Tüm hataları ortadan kaldırmak mümkün değildir-HATALI

D şıkkında yazılım hatalarını ortaya çıkarmak denilmiş-DOĞRU

QUESTION-4

Which of the following statements contains a **valuable objective for a test team**?

- **A.** Prove that the remaining defects will not cause any additional failures.
- **B.** Run all of the tests that are defined for the test object as quickly as possible.
- C. Prove that all faults have been identified thorough testing.
- **D.** Cause as many failures as possible so that faults can be identified and corrected

Answer: D Explanation:

Soruda bir test team için değerli bir hedef hangisidir diye sorulmuş.

"To find failures and defects", test faaliyetinin amaçlarından biri olarak Syllabus'ta sayılmıştır. (Syllabus sayfa 13).

NOT: Aşağıdaki iki soruda da aynı konu farklı soru kalıplarıyla sorulmuştur.

QUESTION-5

Which of the following statements is the **MOST valid goal** for a test team?

- **A.** Determine whether enough component testing was executed.
- **B.** Cause as many failures as possible so that faults can be identified and corrected.
- **C.** Prove that all faults are identified.
- **D.** Prove that any remaining faults will not cause any failures.

Answer: B

A.Bu sıkta ifade edilen görev test team için değil test lead için geçerli bir görevdir.

QUESTION-6

What should be the **MAIN objective** during development testing?

- A. To cause as many failures as possible so that defects in the software are identified and can be fixed
- B. To confirm that the system works as expected and that requirements have been met
- C. To assess the quality of the software with no intention of fixing defects
- D. To give information to stakeholders of the risk of releasing the system at a given time

Correct Answer: A

Section: 1.1.1 Typical Objectives of Testing

Explanation

- A. "To find failures and defects", testing'in temel/ana hedefleri arasındadır.
- B. Testing faaliyetinin temel amaçları arasında, sistemin beklendiği gibi çalıştığını göstermek voktur.
- C. Şıktaki ilk bölüm doğru olsa da "with no intention of fixing defects" bölümü hatalı. Tester "fixing defect" yapmaz, ama

QUESTION-7

Which statement correctly describes debugging? [K2]

- **A.** Testers identify defects, developers locate and correct defects, testers confirm the correction has cleared the original defect
- **B.** Developers identify defects, testers locate defects, developers correct and confirm the correction has cleared the original defect
- **C.** Testers identify and locate defects, developers correct defects and confirm the correction has cleared the original defect
- **D.** Developers identify, locate and correct defects, testers confirm the correction has cleared the original defect

Answer: A

Explanation:

Soruda debugging kavramı sorulmuş. Ama cevaplar bir kronolojik sıra ve görev dağılımı şeklinde verilmiş.

Yani identifying defects/locate and correct defects/ confirmation that defect has cleared.

Debugginde tester görev alabiliyor ama sadece identifying defects kısmında yer alabilir. Devamındaki süreçleri developer yapar. Ya da en başından itibaren debugging sürecini developer gerçekleştirir.

D şıkkının ilk bölümü developer tarafından gerçekleştirilen debugging, ikinci bölümü tester tarafından gerçekleştirilen confirmation testing'I tanımlamıştır.Bu nedenle doğru cevap A şıkkıdır.

Which of the following statements is GENERALLY true of testing?

- a) Testing can show the presence of defects.
- b) Testing reduces the probability of uncovered defects.
- c) Testing can show that a previously present defect has been removed.
- d) Testing can prove that software is defect free.

A. a. b and c

B. a, b and d

C. a, c and d

D. b, c and d

Correct Answer: A **Explanation**

Soruda, şıklarda verilen ifadelerin hangilerinin testing ile ilgili genellikle doğru olduğunu sormaktadır.

- a. Testing hataların varlığını gösterebilir. Doğru
- b. Testing test edilen nesnede gizli hataların bulunması ihtimalini azaltır. Doğru
- c. Testing, daha önce bulunan defectin kaldırıldığını (yeni bir testle) gösterebilir. Doğru
- d. Testing yazılımın defect-free olduğunu (hatasız olduğunu) göstermez. -Hatalı

QUESTION-9

Which statement BEST describes the role of testing?

- A. Testing ensures that the right version of code is delivered
- B. Testing can be used to assess quality.
- C. Testing shows that the software is error free.
- D. Testing improves quality in itself.

Answer: B

A.Tester kod üzerinde test yapsa da doğru sürüm kodun kullanılıp kullanılmadığından emin olmayı amaç edinmez. - Hatalı

B.Testing kalite değerlendirmede kullanılabilir. - Doğru

C.Testing yazılımın hatasız (error-free) olduğunu göstermez. – Hatalı

D.Testing kendi/tek başına kaliteyi geliştirmez. Sadece yazılımın kalitesi hakkında ilgililere bilgi verir. - Hatalı

QUESTION-10

Which of the following is correct? Debugging is:

- **A.** Testing/checking whether the software performs correctly.
- **B.** Checking that a previously reported defect has been corrected.
- **C.** Identifying the cause of a defect, repairing the code and checking the fix is correct.
- **D.** Checking that no unintended consequences have occurred as a result of a fix.

Answer: C Explanation:

- A. Is a brief definition of testing.
- B. Is retesting.
- D. Is regression testing.
- C. "Debugging is the development activity that finds, analyzes, and fixes defects." Syllabus s.13.

QUESTION-11

Which of the following statements BEST describes the difference between testing and debugging?

- **A.** Testing pinpoints (identifies the source of) the defects. Debugging analyzes the faults and proposes prevention activities.
- **B.** Testing shows failures caused by defects. Debugging finds, analyzes, and removes the causes of failures in the software.
- **C.** Testing removes faults. Debugging identifies the causes of failures.
- **D.** Dynamic testing prevents causes of failures. Debugging removes the failures.

Answer: B Explanation:

Soruda testing ile debugging arasındaki fark sorulmuş.

"Debugging is the development activity that finds, analyzes, and fixes defects." Syllabus s.13.

- A. Testing faaliyetinden hata gösterilir. Ama kaynağı bilinmeyebilir veya test raporunda yazılmayabilir. Developer test raporuna bakacak ve sonra hatanın kaynağını anlamaya çalışacaktır. Ayrıca debugging tanımı eksik-Hatalı
- C. Testing hataları kaldırmaz (Testing not removes faults)-Hatalı
- D. Testing'in hedefleri arasında (objectives) "*To prevent defects*" yer almaktadır. Ama D şıkkında "causes of failures"in önlendiği ifade edilmektedir.- Hatalı

QUESTION-12

What is the MAIN benefit of designing tests early in the life cycle?

- A. It is cheaper than designing tests during the test phases
- B. It helps prevent defects from being introduced into the code
- C. Tests designed early are more effective than tests designed later
- D. It saves time during the testing phases when testers are busy

Answer: B

Bu soru Syllabus'ta yer alan birden fazla konuyla ilgilidir ve daha sonra da karşımıza çıkacaktır. İlk üniteyi anlamak adına bu bölümde de yer verilmiştir.

A.Testi başta yaparsak ve bug bulursak bu bag'ı fix etmek daha ucuz. Testi başta design etme ile sonda design etme arasında testing maliyeti açısından fark yok/çok az.

Soruda yaşam döngüsünün (development life cycle – geliştirme yaşam döngüsü kasdediliyor) ilk aşamalarında test dizaynının ana/temel faydası nedir sorulmuş.

"No matter which software development lifecycle model is chosen, test activities should start in the early stages of the lifecycle, adhering to the testing principle of early testing" (Syllabus 28. sayfa).

Testing faaliyetine yaşam döngüsünün erken dönemlerinde başlamak para ve zaman tasarrufu sağlar (Seven Testing Principles).

Kural bu olmakla beraber, yukarıda bazı şıklarda emek ve para tasarrufu konuları doğru olmayan ve yanıltıcı şekilde verilmiştir.

Örneğin D şıkkında, "testerlar meşgul iken zamandan tasarruf sağlar" ifadesi vardır. Ama zamandan ve paradan tasarruf sadece testerlar meşgulken değil tüm lifecycle boyunca sağlanır. B şıkkında ise testing'in hedefleri arasında (objectives) yer alan "*To prevent defects*" ifadesine atıf vardır. - Doğru

1.2- Why is Testing Necessary?

- 1.2.1 Testing's Contributions to Success
- 1.2.2 Quality Assurance and Testing
- 1.2.3 Errors, Defects, and Failures
- 1.2.4 Defects, Root Causes and Effects

QUESTION-13

The effect of testing is to:

- **A.** Increase software quality;
- **B.** Give an indication of the software quality;
- **C.** Enable those responsible for software failures to be identified;
- **D.** Show there are no problems remaining?

Answer: B Explanation:

QUESTION-14

Significant number of faults found by users are due to ..?

- **A.** Poor quality software
- **B.** Poor software and poor testing
- C. Bad luck
- **D.** Insufficient time for testing

Answer: B

Explanation:

QUESTION-15

A bug or defect is:

- **A.** A mistake made by a person;
- **B.** A run-time problem experienced by a user;
- **C.** The result of an error or mistake;
- **D.** The result of a failure, which may lead to an error?

Answer: C Explanation:

A.This is an explanation of error

В.

QUESTION-16

When is visible to end-users is a deviation from the specific or expected behavior, this is called..?

- A. An error
- **B.** A fault
- **C.** A failure
- **D.** A defect
- E. A mistake

Answer: C Explanation:

QUESTION-17

Failure is _____

- **A.** Incorrect program behavior due to a fault in the program
- **B.** Bug found before product Release
- C. Bug found after product Release
- **D.** Bug found during Design phase

Answer: A Explanation:

QUESTION-18

A deviation from the specified or expected behavior that is visible to end-users is called:

- A. an error
- B. a fault
- **C.** a failure
- **D.** a defect

Answer: C Explanation:

QUESTION-19

How does software testing contribute to the quality of delivered software? [K2]

- **A.** By detecting and removing all the defects in the delivered code and ensuring that all tests adhere to the quality standards set for the project
- **B.** By measuring reliability of the software and ensuring that it is always above 99.99%
- **C.** By identifying root causes of defects from past projects and using the lessons learned to improve processes and thus help to reduce the defect count
- **D.** By detecting all deviations from coding good practice and ensuring that these are corrected

Answer: C Explanation:

QUESTION-20

An iPhone application identifies and counts all purchases of a particular product from a shopping website. The application incorrectly counts purchase attempts by including both failed attempts, and also those where the purchase was terminated by the user before completion. Testing has identified that the problem was located in the 'purchase identification' module, where the first stage in the purchasing process was counted, rather than a successful confirmed purchase.

Which of the following statements correctly identifies what has happened? [K2]

- **A.** The application failed because of a defect in the purchase identification module caused by a programmer mistake or an error in the specification.
- **B.** An error by the programmer led to a mistake in the purchase identification module and this caused a defect in the application
- **C.** A defect in the purchase identification module caused by a mistake in the module specification led to a defect in the overall application
- **D.** A bug in the purchase identification module caused a fault in the application

Answer: A Explanation:

Which of the following could be a reason for a failure?

- 1) Testing fault
- 2) Software fault
- 3) Design fault
- 4) Environment Fault
- 5) Documentation Fault
- **A.** 2 is a valid reason; 1, 3, 4 & 5 are not
- **B.** 1, 2, 3, 4 are valid reasons; 5 is not
- C. 1, 2, 3 are valid reasons; 4 & 5 are not
- **D.** All of them are valid reasons for failure

Answer: A Explanation:

1.3- Seven Principles of Testing

- 1. Testing shows the presence of defects, not their absence
- 2. Exhaustive testing is impossible
- 3. Early testing saves time and money
- 4. Defects cluster together
- 5. Beware of the pesticide paradox
- 6. Testing is context dependent
- 7. Absence-of-errors is a fallacy

QUESTION-22

Which of the following statements BEST describes one of the seven key principles of software testing?

- **A.** Automated tests are better than manual tests for avoiding the Exhaustive Testing.
- **B.** Exhaustive testing is, with sufficient effort and tool support, feasible for all software.
- **C.** It is normally impossible to test all input / output combinations for a software system.
- **D.** The purpose of testing is to demonstrate the absence of defects.

Answer: C Explanation:

A.Automated testler kod yazılarak (script) yapılan testlerdir. Bazı test türlerinde automated testler daha kullanışlıdır. Ancak bazı test türlerinde ise kod yasmak çok zahmetlidir ve bu

nedenle tercih edilmez. Exhaustive testing ise tüm olasılık ve ön koşulların düşünülerek test nesnesinin test edilmesidir. 7 test prensibinden biri de exhaustive testing'in imkansız (bazı küçük yazılımlar hariç emek ve para açısından verimli (feasible) olmayacağıdır) olduğudur.-Hatalı

- B. Exhaustive testing tüm olasılık ve ön koşulların düşünülerek test nesnesinin test edilmesidir. 7 test prensibinden biri de exhaustive testing'in imkansız (bazı küçük yazılımlar hariç emek ve para açısından verimli (feasible) olmayacağıdır) olduğudur.-Hatalı
- C. Bu şık bize testing prensibini net olarak veriyor. **Normalde** her olasılığı ve ön koşulları deneyerek test (exhaustive) imkansız olarak değerlendirilmektedir. Ayrık durumlar hariçtir.

QUESTION-23

Which statement is **most** true?

- **A.** Different testing is needed depending upon the application.
- **B.** All software is tested in the same way.
- **C.** A technique that finds defects will always find defects.
- **D.** A technique that has found no defects is not useful.

Answer: A Explanation:

Bu soru test prensiplerinden 'Testing is context dependent' ile ilgilidir.

- A. Doğru
- B. Her yazılım aynı şekilde test edilmez-Hatalı
- C. Bu önerme "pesticide paradox" prensibine aykırıdır. Hatalı
- D. Hata bulmayan Teknik o tekniğin işe yaramadığı anlamına gelmez. Aynı Teknik farklı testlerde hata bulabilir. Hatalı

QUESTION-24

The cost of fixing a fault:

- **A.** Is not important
- **B.** Increases as we move the product towards live use
- **C.** Decreases as we move the product towards live use
- **D.** Is more expensive if found in requirements than functional design
- E. Can never be determined

Answer: B Explanation:

Hatayı düzeltme maliyetiyle ilgili prensip, "Early testing saves time and money" tir. Erken testing para ve zaman tasarrufu sağlar. Geç test ve bu test sonucunda bulunan hatanın düzeltilmesi gec olursa masraf da artar.

Live use, genellikle son kullanıcının yazılımı kullandığı dönemdir.

QUESTION-25

Which statement about combinations of inputs and preconditions is true for a large system?

- A. It is easy to test them all in a short time
- B. It is not practically possible to test them all
- C. It is not possible to test any of them
- D. It is essential to test them all in order to do good testing

Answer: B Explanation:

Exhaustive testing tüm olasılık ve ön koşulların düşünülerek test nesnesinin test edilmesidir. 7 test prensibinden biri de exhaustive testing'in imkansız (bazı küçük yazılımlar hariç emek ve para açısından verimli (feasible) olmayacağıdır) olduğudur.

Çok büyük sistemlerde tüm girdi olasılıklarını test etmek pratik olarak mümkün değildir.

QUESTION-26

Important consequences of the impossibility of complete testing are ..?

- **A.** We can never be certain that the program is bug free
- **B.** We have no definite stopping point for testing, which makes it easier for some managers to argue for very little testing
- **C.** We have no easy answer for what testing tasks should always be required, because every task takes time that could be spent on other high importance tasks
- **D.** All of the above

Answer: D Explanation:

QUESTION-27

What can testing demonstrate?

- **A.** Testing can demonstrate that there are no defects
- **B.** Testing can demonstrate that there are defects
- **C.** Testing can demonstrate that the software is correct
- **D.** Testing can demonstrate that there are no hidden defects in the software

Answer: B Explanation:

Testing ile hataların olduğu gösterilebilir. Ancak, yazılımın doğru olduğu, hatasız olduğu veya gizli hatalarının olmadığı gibi hususlar testingin amacı değidlir ve testing ile ortaya çıkmaz.

When in the lifecycle should testing activities start?

- A. As early as possible
- B. After the test environment is ready
- C. After the requirements have been reviewed
- D. Once the code is available to test

Answer: A Explanation:

Testing faaliyeti yaşam döngüsünde (development lif cycle) ne kadar erken başlarsa o kadar iyidir.

QUESTION-29

Which of the following account for most of the failures in a system?

- A. They will be found in the smallest components
- B. They will be evenly distributed among all components
- C. They will be found in the largest modules
- D. They will be found in a small proportion of modules

Answer: D Explanation:

"Defects cluster together" prensibine göre sistemdeki hatalar systemin küçük bir bölümünde toplanır.

QUESTION-30

Which of the following statements is GENERALLY true of testing?

- a) Testing can show the presence of defects.
- b) Testing reduces the probability of uncovered defects.
- c) Testing can show that a previously present defect has been removed.
- d) Testing can prove that software is defect free.
- A. a, b and c
- B. a, b and d
- C. a, c and d
- D. b, c and d

Answer: A Explanation:

Which of the following statements is true?

- A. Testing cannot prove that software is incorrect.
- B. Testing can prove that software is either correct or incorrect.
- C. Testing cannot prove that software is correct.
- D. Testing can prove that software is correct.

Answer: C Explanation:

QUESTION-32

It is recommended to perform exhaustive tests for covering all combinations of inputs and preconditions.

- **A.** Yes, it's strongly recommended.
- **B.** No, risk analysis and priorities should be used to focus testing efforts
- **C.** Yes, and it's also necessary to include all the exit combinations
- **D.** Only the expert testers can make exhaustive tests.

Answer: B Explanation:

QUESTION-33

Which of the following statements BEST describes one of the seven key principles of software testing?

- **A.** Automated tests are better than manual tests for avoiding the Exhaustive Testing.
- **B.** Exhaustive testing is, with sufficient effort and tool support, feasible for all software.
- **C.** It is normally impossible to test all input / output combinations for a software system.
- **D.** The purpose of testing is to demonstrate the absence of defects.

Answer: C Explanation:

QUESTION-34

Which of the following statements describes a key principle of software testing?

A. Automated tests allow better statements of confidence about the quality of software products.

- **B.** For a software system, it is normally impossible to test all the input and output combinations.
- **C.** Exhaustive software testing is, with enough effort and tool support, feasible for all software.
- **D.** The purpose of software testing is demonstrating the absence of defects in software products.

Answer: B Explanation:

OUESTION-35

Which one of the following is a characteristic of good testing in any lifecycle model?

- A. Each test level has the same test objective.
- B. There should be more testing activities than development activities.
- C. Test design can only begin when development is complete.
- D. Testers should begin to review documents as soon as drafts are available.

Correct Answer: D **Explanation**

QUESTION-36

If a system has been tested and only a few defects have been found, what can we conclude about the state of the system?

- a. The system may be defect free, but the testing done cannot guarantee that this is true.
- b. The system is defect free and further testing would therefore be a waste of resources.
- c. It depends what the system is designed to do.
- d. Further testing should be considered but this should be focussed on areas of highest risk because it would not be possible to test everything.
- e. Testing should be curtailed because it is yielding no value.

A. a, c and d

B. b, c and d

C. a, d and e

D. b, c and e

Answer: A Explanation

QUESTION-37

Consider the following statements about early test design:

- i. Early test design can prevent fault multiplication
- ii. Faults found during early test design are more expensive to fix
- iii. Early test design can find faults
- iv. Early test design can cause changes to the requirements
- v. Early test design takes more effort
- A. i, iii & iv are true. ii & v are false
- B. iii is true, i, ii, iv & v are false
- C. iii & iv are true. i, ii & v are false
- D. i, iii, iv & v are true, ii us false
- E. i & iii are true, ii, iv & v are false

Answer: A Explanation:

QUESTION-38

When in the lifecycle should testing activities start?

- A. As early as possible
- B. After the test environment is ready
- C. After the requirements have been reviewed
- D. Once the code is available to test

Correct Answer: A Explanation

QUESTION-39

What is the MAIN benefit of designing tests early in the life cycle?

- A. It is cheaper than designing tests during the test phases
- B. It helps prevent defects from being introduced into the code
- C. Tests designed early are more effective than tests designed later
- D. It saves time during the testing phases when testers are busy

Correct Answer: B **Explanation**

QUESTION-40

System test execution on a project is planned for eight weeks. After a week of testing, a tester suggests that the test objective stated in the test plan of 'finding as many defects as possible during system test' might be more closely met by redirecting the test effort according to which test principle?

- A. Impossibility of exhaustive testing.
- B. Importance of early testing.
- C. The absence of errors fallacy.
- D. Defect clustering

Correct Answer: D **Explanation**

QUESTION-41

A test team consistently finds between 90% and 95% of the defects present in the system under test. While the test manager understands that this is a good defect-detection percentage for her test team and industry, senior management and executives remain disappointed in the test group, saying that the test team misses too many bugs.

Given that the users are generally happy with the system and that the failures which have occurred have generally been low impact, which of the following testing principles is most likely to help the test manager explain to these managers and executives why some defects are likely to be missed?

- A. Exhaustive testing is impossible
- B. Defect clustering
- C. Pesticide paradox
- D. Absence-of-errors fallacy

Correct Answer: A Explanation

1.4- Test Process

NOT: Bazen test process'te yer alan bazı faaliyetler birlikte yürütülebilmektedir. Örneğin experience-based test tekniğinin kullanıldığı testlerde test implementation ve test execution birlikte yapılmaktadır. Aynı şekilde test analysis ile test design birlikte gerçekleştirilebilmektedir. Bu nedenle aşağıda yer alan bazı sorularda bu ikili faaliyetlerin birlikte değerlendirilmesi gerekmektedir. Bu tip sorularda her iki faaliyette de yapılan task/görevleri dikkate almak gerekmektedir.

QUESTION-1

During which test activity could faults be found **most cost effectively**?

- A. Execution
- B. Design
- C. Planning
- D. Check Exit criteria completion

Answer: C Explanation:

Test process'in ne kadar erken safhasında test faaliyetlerine (test activities) başlarsak o kadar cost effective olur. Yani hatalar ne kadar erken bulunursa o kadar maliyet etkin/daha az maliyetli fix edilebilir/düzeltilebilir. Bu durumu test prensiplerinden olan, "Early testing saves money and times" prensibi ile de açıklayabiliriz. "Early testing is sometimes referred to as **shift left**. Syllabus s.16". Testing faaliyetlerine planning ile başladığımız için en solda planning aşaması vardır. Bu nedenle planning aşamasında bulunan hatalar/faults en cost effective/maliyet etkin hatalardır.

OUESTION-2

Which option is part of the both "implementation" and "execution" area of the test process in an experience-based testing?

- **A.** Developing the tests.
- **B.** Comparing actual and expected results.
- **C.** Writing a test summary.
- **D.** Analyzing lessons learnt for future releases.

Answer: B Explanation:

- A. 'Analysis and design' faaliyetlerinde gerçekleştirilir.
- B. "Comparing actual results with expected results", test execution faaliyetinde gerçekleştirilen bir task/görevdir.
- "In exploratory testing and other types of experience-based testing, test design and implementation may occur, and may be documented, as part of test execution. Syllabus s.21" Experience-based (tecrübeye dayalı testlerde) ise test implementation ile test execution birlikte ele alınır.
- C. 'Test Completion' faaliyetinde gerçekleştirilir.
- D. 'Test Completion' faaliyetinde gerçekleştirilir.

QUESTION-3

Analysing the Test Basis is a part of which phase

- A. Test Analysis
- **B.** Test Implementation
- **C.** Test Closure Activities
- **D.** Evaluating exit criteria and reporting

Answer: A Explanation:

Test Basis analizi, test edilecek nesneleri belirlemek ve test conditions'ı tanımlamak için Test Analysis faaliyetinde yapılır. "During test analysis, the test basis is analyzed to identify testable features and define associated test conditions. Syllabus s.19".

Test Implementation has which of the following major tasks?

- i. Developing and prioritizing test procedures, preparing test data, writing automated test scripts.
- ii. Creating the test suite from the test cases for efficient test execution.
- iii. Verifying that the test environment has been set up correctly.
- iv. Determining the exit criteria.
- **A.** i, ii, iii are true and iv is false
- **B.** i, iv are true and ii is false
- **C.** i, ii are true and iii, iv are false
- **D.** ii, iii, iv are true and i is false

Answer: A Explanation:

- i. Test prosedürleri test implementationda yazılır.
- ii. Test implementation'da yapılır.
- **iii**. "*Preparing test data and ensuring it is properly loaded in the test environment. <i>Syllabus s.21.*" Test implementation'da yapılır.
- iv. "Determining the exit criteria". Bu task test planning faaliyetinde yapılır.

"The test plan includes information about the test basis, to which the other test work products will be related via traceability information (see below and section 1.4.4), as well as exit criteria (or definition of done) which will be used during test monitoring and control. Syllabus s.22 ve s.48".

QUESTION-5

Which is not the fundamental in the test process?

- **A.** Monitoring and control
- **B.** Test Completion
- C. Analysis and design
- D. None

Answer: D Explanation:

Bazı testlerde (örn: experience-based) analysis ve desing birlikte ele alınabilir. Aynı şekilde implementation ve execution da birlikte icra edilebilir.

QUESTION-6

Handover of Testware is a part of which Phase:

- A. Test Analysis
- **B.** Test Planning
- **C.** Test Completion
- D. Test Monitoring and Control

Answer: C Explanation:

OUESTION-7

In which activity of the Test Process is the **test environment set up**?

- A. Test implementation.
- B. Test planning
- C. Test design
- D. Test Completion

Correct Answer: A Explanation

"Test Implementation: ...Building the test environment (including, potentially, test harnesses, service virtualization,

simulators, and other infrastructure items) and verifying that everything needed has been set up correctly. Syllabus s.21"

QUESTION-8

Which is not a major task of test execution?

- **A.** Develop and prioritizing test cases, creating test data, writing test procedures and optionally, preparing test harness and writing automated test scripts.
- **B.** Logging the outcome of test execution and recording the identities and versions of the software under test, test tools and test ware.
- **C.** Checking test logs against the exit criteria specified in test planning.
- **D.** Verifying that the test environment has been set up correctly.

Answer: B Explanation:

- "Test Execution
- -Recording the IDs and versions of the test item(s) or test object, test tool(s), and testware
- -Logging the outcome of test execution (e.g., pass, fail, blocked). Syllabus s.21"

QUESTION-9

What is the purpose of test completion criteria in a test plan:

A. To know when a specific test has finished its execution

- **B.** To ensure that the test case specification is complete
- **C.** To set the criteria used in generating test inputs
- **D.** To know when test planning is complete
- **E.** To plan when to stop testing

Answer: E Explanation:

Aslında bu sorunun cevabı daha sonraki ünitelerde ele alınacak (5.2.3.- Entry Criteria and Exit Criteria (Definition of Ready and Definition of Done). Syllabus s.68). Ancak test planning aşamasında belirlenmesi nedeniyle entry ve exit criteria'nın ne olduğunun bilinmesinde fayda bulunduğu için soru bu bölümde de yer almaktadır.

Entry criteria; hangi şartlarda test sürecine başlanacağını ifade etmektedir. Örneğin gerekli very tabanı veya test nesnelerinin hazır olmaması durumunda test faaliyetlerine başlanamaz. Exit criteria; hangi şartlarda test faaliyetlerinin durdurulacağını ifade etmektedir. Örneğin, planlanan testler uygulandıysa (executed), tanımlanan test kapsamına ulaşıldıysa, çözümlenmeyen defect'ler önceden belirlenen ve Kabul edilebilir limit içindeyse, kalan tahmini defect sayısı çok düşükse ve yazılımın fonksiyonel-fonksiyonel olmayan özellikleri tatmin ediciyse test faaliyetlerine son verilebilir. Bu durumlarda exit criteria sağlanmış demektir.

QUESTION-10

Which of the following is a MAJOR activity of test planning?

- A. Initiation of corrective actions
- B. Measuring and analysing results
- C. Determining the exit criteria
- D. Monitoring and documenting progress

Correct Answer: C **Explanation**

A.Corrective actions (hataları düzeltme) testingde yapılmaz. Development sürecidir. Tester hata düzelmez, hata (defect-bug) bulur.

B.Sonuçları ölçme ve analiz etme test execution'da yapılır.

C.Test planing'de yapılan ana faaliyettir.

D.Monitoring ve Control'de yapılır.

QUESTION-

During which activity of the Test Process do you compare actual with expected results?

- A. Test planning
- B. Test completion
- C. Test analysis
- D. Test execution

Correct Answer: D **Explanation**

Beklenen (expected) sonuçlar ile elde edilen (actual) sonuçların karşılaştırılması Test Execution faaliyetinde gerçekleştirilir.

QUESTION-

Which activity in the Test Process creates test suites for efficient test execution?

- A. Test Implementation
- B. Test Monitoring and control
- C. Test Analysis
- D. Test closure and completion

Correct Answer: A Explanation

Test Implementation

"Creating test suites from the test procedures and (if any) automated test scripts. Syllabus s.21"

QUESTION-

The list below (a to e) describes one major task for each of the seven main activities of the test process. Which option (A to D) places the tasks in the correct order, by time?

- a) Create bi-directional traceability between test basis, test conditions and test cases.
- b) Check test logs against exit criteria.
- c) Define the objectives of testing.
- d) Building the test environment
- e) Comparing actual results with expected results.

A. a, c, b, e, d

B. c, a, d, e, b

C. c, a, e, b, d

D. d, a, c, b, e

Correct Answer: B **Explanation**

a.Test Design

b.Test Execution

c.Test Planning

d.Test Implementation

e.Test Execuiton

QUESTION-

Which of the following activities would NORMALLY be undertaken during **test planning**?

- a) Scheduling test analysis and design.
- b) Defining and prioritizing test conditions
- c) Monitoring test progress.

- d) Identifying the objectives of testing.
- e) Evaluating test tools.
- f) Defining the approach for meeting test objectives
- A. b, c and d
- B. a, d and f
- C. a, d and e
- D. b, c and f

Correct Answer: B

Explanation

- a.Test Planning
- b.Test Analysis
- c.Monitoring and Control
- d.Test Planning
- e.Test Planning

QUESTION-

During which activity of the Test Process test process do you determine the exit criteria?

- A. Test analysis
- B. Test design
- C. Test completion
- D. Test planning

Correct Answer: D

Explanation

Exit criteria, test planning aşamasında kararlaştırlır. Yani test sürecinin en başında teste hangi şartlarda başlayacağımız ve hangi şartlarda testi durduracağımız belirlenir.

QUESTION-

During which activity of the Test Process test process do you analyse and evaluate the test basis?

- A. Test execution
- B. Test implementation
- C. Test analysis
- D. Test monitoring and control

Correct Answer: C

Explanation

- "Analyzing the test basis appropriate to the test level being considered,
- ...Evaluating the test basis and test items to identify defects of various types. Syllabus s.19"

Which one of the following provides the BEST description of test design?

- A. Identification of the features which should be tested
- B. Specification of the test cases required to test a feature
- C. Building test environment
- D. Creation of a test suite

Correct Answer: B **Explanation**

Test Design denilince aklımıza "How to test?" gelmeli.

Designing and prioritizing test cases and sets of test cases (Syllabus s.20)

A şıkkı Test Analysis'de yapılır.

C şıkkı Test Implementation'da yapılır

D şıkkı Test Implementation'da yapılır

QUESTION-

Which of the following statements is true?

- A. A test condition specifies input values and expected results; a test case combines one or more test conditions
- B. A test condition may be derived from requirements or specifications; a test procedure specifies the sequence of action for the execution of a test
- C. A test case specifies the sequence of execution of test conditions; a test procedure specifies test preconditions and post-conditions
- D. A test case specifies input values and expected results; a test procedure may be derived from requirements or specifications

Correct Answer: B

Explanation

Soruda test condition, test procedure ve test case arasındaki farkı sorulmuş. Bir de test scenarios var. Bunlar birbirleriyle hem ilişkili hem de çok karıştırılan kavramlar.

Test Scenarios: What are the areas to be tested? Sorusunun cevabidir. Yani hangi alanlar test edilecektir sorusunun cevabi test scenarios'tur. ÖRNEK: User login, User can view/edit personal details.

Test Cases: How to test scenarios? Sorusunun cevabidir. Yani, test edilecek alanları nasıl test edeceğimizi test case'ler ile belirleriz. Test case'de ilgili senaryonun nasıl gerçekleştirileceği adım adım belirtilir. Test case'lerde test data, expected result ve preconditions gibi veriler de yer almalıdır.

ÖRNEK: 1) Launch browser, 2) Open URL, 3) Provide valid username and password, 4) Click on Login button.

Örnekte test data, "valid username ve password"dur. Yani test case hazırlanırken geçerli bir kullanıcı adı ve şifre, test case içerisine test data alanına yazılmalıdır ki test yapılabilsin.

Test Conditions: Test scenarios ile hemen hemen aynı anlamda kullanılır. "What to test" sorusunun cevabıdır. "An item or event that could be verified by one or more test cases" Test condition, requrements, specifications veya user story'lerden çıkarılabilir.

Test Procedures: Is a collection of test cases arranged sequentially in order to execute a test. **Test Scripts:** Commonly used to refer to a test procedure specification, especially an automated one.

NOT: Glossary'de Test Procedure Specifications ile eş anlamlı kullanılmış. Test Procedure Specifications tanımında ise test test script ile aynı anlama geldiği belirtilmiş.

Sonuç olarak test case bir test senaryosu içindeki bir adımı test etmek için yazılır. Test case'de bu adımı test etmek için gerekli veriler (test data), ön gereklilikler (preconditions) ve o test adımlarını yapınca karşılaşmamız öngörülen beklenen sonuç (expected result) bulunmaktadır. Test prosedürleri ise bir testi uygulamak (veya run-koşturmak) için belirli bir sıraya göre dizilmiş test case'lerini ifade etmektedir.

QUESTION-

Which of the following is not a part of the Test Implementation Phase?

- **A.** Creating test suites from the test cases
- **B.** Executing test cases either manually or by using test execution tools
- **C.** Comparing actual results
- **D.** Reporting defects

Answer: A Explanation:

B, C ve D şıkları Test Execution faaliyetinde yapılır.

QUESTION-

Which activities form part of test planning?

- i) Developing test cases.
- ii) Defining the overall approach to testing.
- iii) Formulating the test schedule.
- iv) Building the test environment.
- v) Writing test conditions.
- **A.** i, ii & iv are true, iii & v are false.
- **B.** ii & iii are true, i, iv & v are false.
- **C.** iv & v are true, i, ii & iii are false.
- **D.** i, ii & iii are true iv & v are false.

Answer: B Explanation:

- i) Developing test cases. Test Design'da yapılır
- ii) Defining the overall approach to testing. Test Planning
- iii) Formulating the test schedule. Test Planning
- iv) Building the test environment. -Test Implementation
- v) Writing test conditions. Test Analysis

QUESTION-

Which of the following defines the expected result of a test?

- A. Test case
- **B.** Test procedure
- **C.** Test execution schedule
- **D.** Test condition

Answer: A Explanation:

Test Cases: How to test scenarios? Sorusunun cevabidir. Yani, test edilecek alanları nasıl test edeceğimizi test case'ler ile belirleriz. Test case'de ilgili senaryonun nasıl gerçekleştirileceği adım adım belirtilir. Test case'lerde test data, expected result ve preconditions gibi veriler de yer almalıdır.

ÖRNEK: 1) Launch browser, 2) Open URL, 3) Provide valid username and password, 4) Click on Login button.

Örnekte test data, valid username ve password'dur. Yani test case hazırlanırken geçerli bir kullanıcı adı ve şifre test case içerisine test data alanına yazılmalıdır.

QUESTION-

Which of the following statements is most true about test conditions?

- **A.** An item or event of a component or system that can be verified by one or more test cases.
- **B.** The grouping of a composite set of test cases which, when tested as a whole, reveal a positive or negative result.
- **C.** A testable component derived from business requirements.
- **D.** Applies to software testing only.

Answer: A Explanation:

Test Conditions: Test scenarios ile hemen hemen aynı anlamda kullanılır. "What to test" sorusunun cevabıdır. "An item or event that could be verified by one or more test cases-Glossary"

Test condition, requrements, specifications veya user story'lerden çıkarılabilir.

QUESTION-

What is a test condition?

- **A.** A statement of test objectives and test ideas on how to test.
- **B.** An item or event that could be verified by one or more test cases.
- **C.** The process of identifying differences between the actual results and the expected results for a test.
- **D.** All documents from which the requirements of a component or system can be inferred.

Answer: B Explanation:

Test Conditions: Test scenarios ile hemen hemen aynı anlamda kullanılır. "What to test" sorusunun cevabıdır. "An item or event that could be verified by one or more test cases-Glossary"

Test condition, requrements, specifications veya user story'lerden çıkarılabilir.

Designing the test environment set-up and identifying any required infrastructure and tools are a part of which phase:

- A. Test Implementation
- B. Test Design
- C. Test Planning
- D. Test Analysis

Answer: B Explanation:

"Designing the test environment and identifying any required infrastructure and tools. Syllabus s.20" Bu task Test Designing faaliyetinde yapılır.

QUESTION-

Reporting Defects based on the failures observed is a part of which phase:

- A. Test Design
- **B.** Test Execution
- C. Test Completion
- D. Test Monitoring and Control

Answer: B Explanation:

Defect'lerin raporlanması test execution faaliyetleri sırasında yapılır.

"Reporting defects based on the failures observed. Syllabus s.21"

QUESTION-

Place the stages of the Test Process in the usual order (by time).

- a) Test Completion
- b) Test Analysis.
- c) Test Monitoring and Control.
- d) Test Implementation.
- e) Test Execution.

A. c, b, d, e, a

B. c, b, e, d, a

C. c, b, d, a, e

D. b, c, d, e, a

Correct Answer: A **Explanation**

Syllabus'a test faaliyetleri şu şekilde sıralanmaktadır; Test Planning, Test Monitoring and Control, Test Analysis, Test Design, Test Implementation, Test Execution, Test Completion

Which statement BEST describes when test planning should be performed? [K1]

- **A.** Test planning is performed only once, at the beginning of the life cycle, and generates a Master Test Plan
- **B.** Test planning is performed at the beginning of the life cycle and again at the beginning of test execution
- C. Test planning is performed at the beginning of the life cycle and again at every test level
- **D.** Test planning is performed continuously in all life cycle processes and activities

Answer: D Explanation:

Test planı, test planning faaliyeti esnasında test work product olarak üretilir ve tüm test sürecinde uygulanır.

QUESTION-

Which of the following is a MAJOR activity of test control?

- A. Scheduling test analysis and design
- B. Implementing the test policy or strategy
- C. Making decisions based on information from test monitoring
- D. Determining the scope and risks

Answer: C Explanation:

- "- Checking test results and logs against specified coverage criteria,
- -Assessing the level of component or system quality based on test results and logs,
- -Determining if more tests are needed (e.g., if tests originally intended to achieve a certain level of product risk coverage failed to do so, requiring additional tests to be written and executed)." Syllabus s.19.

QUESTION-

During which activity of the Fundamental Test Process test process do you determine the exit criteria?

- A. Test analysis and design
- B. Evaluating exit criteria and reporting
- C. Test closure activities
- D. Test planning

Answer: D Explanation:

Exit criteria (teste ne zaman son vereceğimiz) test planning aşamasında kararlaştırılır. Yani işin en başında, hangi durumlarda teste başlayacağımız ve hangi durumlarda teste son vereceğimiz belirlenir. Teste son verme işlemi olumlu veya olumsuz olabilir. Yeterli test kapsamına ulaşıldıysa (olumlu) test sonlandırılabilir. Ya da tahmin edilen defect'lerin %95'i tespit edilmiştir bu durum ilgili sektör için çok iyi bir rakamsa testlere son verilebilir.

Why should expected results be defined before execution?

- A. To assist in test automation
- B. To improve test efficiency
- C. To reduce the possibility of incorrect results
- D. To improve design of the software

Answer: C Explanation:

Test case'lerde expected result (test adımlarının takip edilmesi sonucu elde edilmesi gerekli beklenen sonuç) yer alır. Bunun nedeni, yanlış anlamaları önlemek ve sonuçların hatalı çıkması ihtimalini azaltmaktır.

QUESTION-

Which activity in the Fundamental Test Process creates test suites for efficient test execution?

- A. Test Implementation
- **B.** Test Planning
- C. Test Analysis
- D. Test Execution

Answer: A Explanation:

"Creating test suites from the test procedures and (if any) automated test scripts" Bu task, test implementation faaliyetinde gerçekleştirilir.

QUESTION-

Which of the following is a MAJOR activity of test planning?

- A. Initiation of corrective actions
- B. Measuring and analysing results
- C. Determining the exit criteria
- D. Monitoring and documenting progress

Answer: C Explanation:

- A. Testing'de correction işlemi yapılmaz.
- B. Test Execution safhasında yapılır.
- C. Doğru Test planning safhasında yapılır.
- D. Monitoring ve Control aşamasında yapılır.

During which activity of the Fundamental Test Process do you compare actual with expected results?

- A. Test design
- B. Test implementation
- C. Test analysis
- D. Test execution

Answer: D Explanation:

Test sonuçları (actual) ile expected results (beklenen sonuçlar), test execution safhasında karşılaştırılır. Bunlar arasında fark olması durumunda Test Raporuna alınır.

QUESTION-

During which activity of the Fundamental Test Process test process do you review the test basis?

- A. Test execution
- B. Test implementation
- C. Test analysis
- D. Test planning

Answer: C Explanation:

Test basis, test analysis safhasında gözden geçirilir.

"During test analysis, the test basis is analyzed to identify testable features and define associated test conditions. Syllabus s.19"

OUESTION-

Which one of the following provides the BEST description of test design?

- A. Identification of the features which should be tested
- B. Specification of the test cases required to test a feature
- C. Specification of the order in which test cases should be executed
- D. Creation of a test suite

Answer: B

Explanation:

What is the USUAL sequence for performing the following activities during the Fundamental Test Process?

- a. Analyse the test basis documents.
- b. Define the expected results.
- c. Create the test execution schedule.
- d. Establish the traceability of the test conditions

A. d. a. c. b

B. a, d, b, c

C. a, b, c, d

D. a, b, d, c

Answer: B

- a. Test analysis
- b. Test case ile ilgilidir. Test Design
- c. Test implementation
- d. Test analysis

1.5- The Psychology of Testing

QUESTION NO: 112

One Key reason why developers have difficulty testing their own work is:

- A. Lack of technical documentation
- **B.** Lack of test tools on the market for developers
- **C.** Lack of training
- D. Lack of Objectivity

Answer: C Explanation:

QUESTION NO: 259

Testers are often seen as the bearer of unwanted news regarding defects. What are effective

ways to improve the communication and relationship between testers and others?

- a)Communicate factual information in a constructive way.
- b)Try to understand how the other person feels and why they react the way they do.
- c)Always outsource testing activities.
- d)Never record information that could be used to apportion blame to an individual or team.
- A. a and b
- **B.** a, b and c
- C. a, b and d
- **D.** a and c
- **Answer: A**
- **Explanation:**