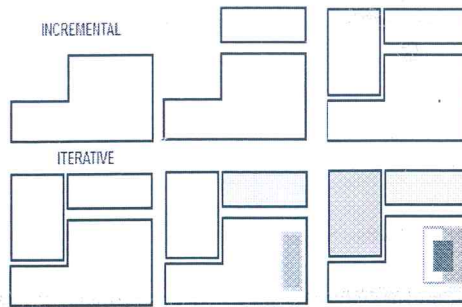# PES UNIVERSITY

UE18CS353

In Semester Assessment (ISA1) B. Tech. 6th SEMESTER – Jan - May-2021
UE18CS353 - Object Oriented Analysis and Design with Software Engineering

Time: 2 Hrs.	Answer All Questions	Max Marks: 60

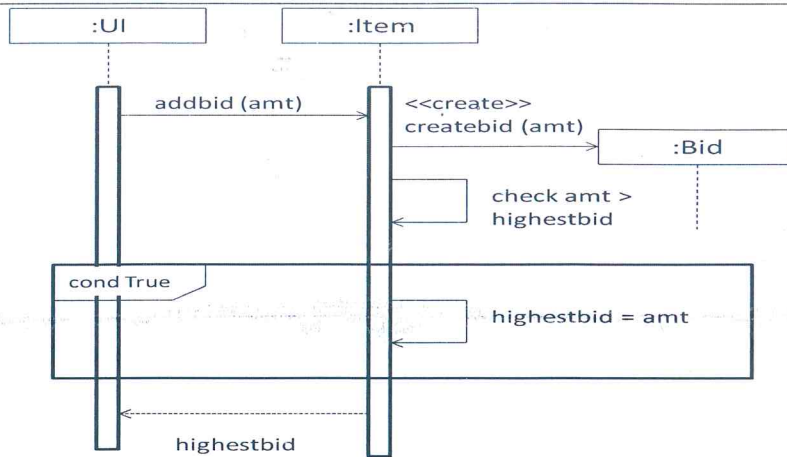**Answer precisely and briefly.**

1	a	What are typical usage scenarios where Waterfall SDLC model can be applied?
		Answer:
		   i. Used (in pure form) for short projects where requirements are well understood
		   ii. Variants are used at a high level in large projects
		   iii. Product definition is stable and technology understood
		   iv. Variants used in large globally developed projects with other LC
		(1 mark each)
			4

	c	Answer the following questions.
		  1. Documentation is not one of the deliverables in an Agile approach of Software Development. True or False. **(False)**
		  2. Scope of a project includes both what is included and what is not included. True or False. **(True)**
		  3. Requirements specification involves listing out all the features required for use in the subsequent phases of the development lifecycle. True or False. **(True)**
		  4. Project Management is only required for the development and testing phases of the SDLC. True or False. **(False)**
		  5. In the _____ Life Cycle model, the requirements undergo a lot of iterations and are finalized before the start of the next phase. Fill in the blank. **(Prototype)**
		  6. Which of the following terms is not specific to the SCRUM model (may apply to other models)?
		     a. Risk Assessment
		     b. Product Backlog
		     c. Sprint
		     d. User Stories
		  (Risk Assessment)
		(1 Mark each)
			6

2	a	Match the following:	4

	Requirement Phase		Associated Activity
1.	Requirement Elicitation	A.	Prepare Use case diagram
2.	Requirement Analysis	B.	Customer Review of Requirement
3.	Requirement Specification	C.	Customer Interview
4.	Requirement Validation	D.	Write Requirement Document

Answer: 1-C, 2-A, 3-D, 4-B

	b	Contrast the Incremental and Iterative Development Models with the help of a diagram.
		  • Incremental approach does not require going back and changing things that are already delivered whereas Iterative continues to revisit and refining everything every time
		  • Incremental focuses on things not implemented, whereas Iterative is more details of the same
		  • Incremental does not leverage on the experience/knowledge till then, whereas iterative leverages learning's.
			6

INCREMENTAL

ITERATIVE

(3 marks + 3 marks)

3	a	An author writes a story using an Editing System which supports the use case WriteStory. There are two additional use cases 1. CheckSpelling 2. CheckGrammar. The requirement is that spelling should always be checked and grammar may be checked only if it is some prose and not a drama. How should these use cases be related? Why?	2

Ans:

1. **WriteStory usecase includes CheckSpelling usecase. Every time WriteStory usecase is triggered, CheckSpelling usecase will also be triggered.**
2. **CheckGrammar usecase is triggered optionally. WriteStroy usecase should extend to CheckGrammar use case.**

(1 + 1 mark)

	b	In the game Shadow Fight, a player can customize their character by choosing Accessories from a list of Weapons, Armors and Helmets. The Weapons have points rating based on the damage it can cause. The Armors and Helmets have points rating based on the damage it can withstand. The character has a level, health points and a maximum of three fighting abilities (depends on the level). The character has to clear a Chapter by beating opponents in a Tournament. The tournament has a difficulty level, opponent name and an outcome. Prepare the Class diagram with appropriate classes, attributes, association and multiplicity.	8

Answer:

(5 classes with attributes – 1 mark each, 4 associations with multiplicity – 3 marks)

4	a	Describe the scenario modeled in the following sequence diagram. Use the right terms to describe and indicate the sequence of steps.	4

Ans:

1. addbid method is called on the Item object
2. it creates the Bid object
3. it checks if the bid is greater than the current highest bid,
4. if yes, then highest bid is set to the current bid amount.
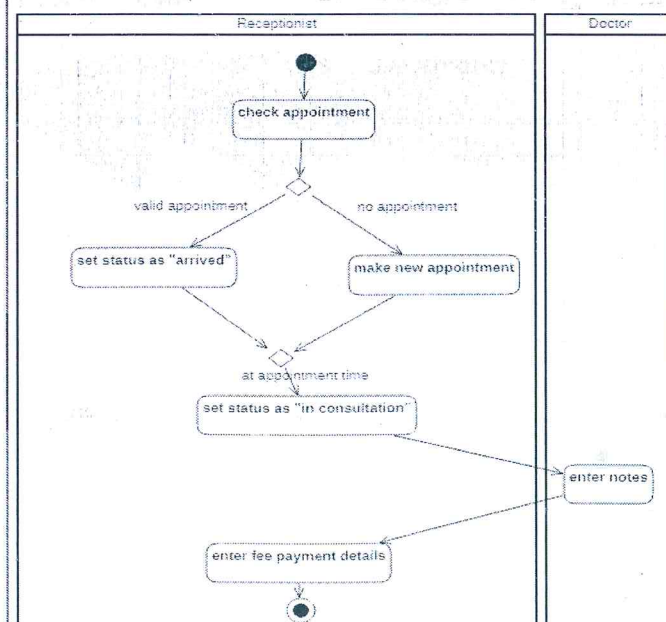
(1 mark each)

b | In a Patient management system, a "visit doctor" use case scenario is as follows: | 6
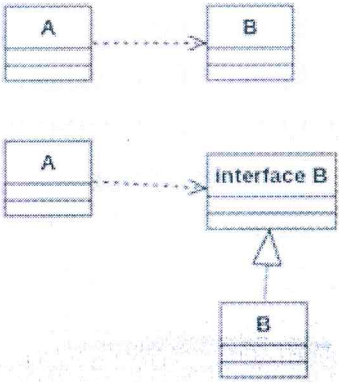
When the patient visits the doctor's office, the receptionist asks for the patient id and checks if the patient has an appointment. If yes, the appointment status is changed to "arrived". If not, the receptionist treats the patient as a walkin patient and issues an appointment time for the same date. When the appointment time arrives, the status of the appointment is set to "in consultation". After the appointment the doctor enters the notes like symptoms, diagnosis, treatment etc. into the system. The receptionist then enters the fee payment details (through cash or card) into the system.

Prepare an activity diagram with swim lanes (for appropriate actors), activity flow of control with guard conditions.

Answer:

(Swimlanes – 1 mark, Decision – 1 mark, Merge – 1 mark, Activities – 3 marks)

5	a	Class C contains an instance of class B and class B contains an instance of class A. Who should have the responsibility of creating an object of class A? Class C or class B or both? Why? Ans: Class B if class C should create class A, coupling will increase (2 + 2 marks)	4
	b	 State the difference in design between the two UML diagrams given above. Which principle is used in the above design? What is the advantage of this principle? Ans: In the first, A depends on B. Any change in B would affect A. Dependency inversion principle. The dependency between A and B is removed. (2 + 2 + 2 marks)	6

6	a	Name the types of Unit testing tools and write a line about them.
		Answer:
		  1. Unit testing framework – provides features like method call, passing parameter, result comparison and error reporting. No need to write entire test harness.
		  2. Code coverage analyzers – helps find code not covered by test cases.
		  3. Wizards – generate tests from input parameters
		  4. Record-playback tools – records every user action like keystroke or mouse click for later playback
		(1 mark each)
			4

	b	Which role prepares the Configuration Management Plan? What does the Configuration Management plan typically contain?
		Answer:
		Configuration Manager prepares the CM Plan. The CM Plan:
		  ▪ Defines the *CIs* which need to be managed and a naming scheme.
		  ▪ Defines *who takes responsibility* for the CM procedures and the creation of baselines.
		  ▪ Defines **policies for change control** and **version management**.
		  ▪ Describes the *tools* which should be used to assist the CM process and any limitations on their use.
		  ▪ Defines the *configuration management database* used to record configuration information.
		(1 + 5 marks)
			6