

PMA Exam 2026 Answers

Question 1

- a) Because it can result in “spaghetti” code where any part of a software system might depend on any other part of the system. [2 marks]
- b) It means that the system is easy to maintain and improve. [2 marks]
- c) Because it makes the modules more reusable and replaceable, allowing for component-based design. [2 marks]
- d) A [1 mark]
- e) Any two of the following: less for developers to learn; easier to debug; easier to reuse modules. [2 marks]
- f) Any number [1 mark]

Question 2

- a) Line 25 [2 marks]
- b) s [2 marks]
- c) If p is a variable that refers to an object of class X, then p may refer to any object from any subclass of x. [3 marks]
- d) No [1 mark]
- e) Yes [1 mark]
- f) No [1 mark]

Question 3

```
23:49:34:~/Daves Docs/Work/Teaching/Med2/2026/ooadp2009-master/Exam2026/jars %  
java -jar JavaIntroQuestion.jar cat bat tab lap rap  
bat  
cat  
lap  
rap  
tab
```

[10 marks]

Question 4

- a) In sketch mode, one focuses on the important features and leaves out detail in which one isn't interested; in blueprint mode, the emphasis is on completeness and the model can be used by a programmer to implement almost directly in working code. [2 marks]
- b) Class, composite structure, object, component, deployment, package [1 mark]
- c) Activity, use case, state machine, sequence, communication, interaction overview, timing [1 mark]
- d) An actor is a user of the system in a particular role. It can also be an external system that interacts with our system. [2 marks]
- e) System boundary. [2 marks]
- f) Sequence diagram [2 marks]

Question 5

- a)
 - i. An array of Courses containing at least 12 Course objects. [2 marks]
 - ii. 12 or more [1 mark]
 - iii. Yes [1 mark]
 - iv. Because the black triangle points from Student to Course. [1 mark]
- b)
 - i. 2 [1 mark]
 - ii. borrow, return and reserve in MemberOfStaff overload methods in LibraryMember. [1 mark]
 - iii. numItemsOnLoan() in MemberOfStaff overrides numItemsOnLoan() in LibraryMember. [1 mark]
 - iv. 1 or more [1 mark]
 - v. Yes. [1 mark]

Question 6

1 23 4 5 [10 marks]

Question 7

6 is greater than 5
3 is less than 6 [10 marks]

Question 8

Output must have the digits 0 to 4 in increasing order and 5 to 1 in decreasing order, however they may be interleaved in any way. For example,

0 5 4 1 3 2 2 3 1 4
0 5 1 4 2 3 3 2 4 1

[10 marks]

Question 9

- a) False.
- b) True
- c) True
- d) True
- e) False
- f) False
- g) False
- h) True
- i) True
- j) True

[1 mark for each part]

Question 10

- a) Accelerometer and gyroscope [2 marks]
- b) Many possibilities, including thermometers, barometers, photometers, hygrometers.
[2 marks]

c)

```
List<Sensor> deviceSensors = mSensorManager.getSensorList(Sensor.TYPE_ALL);
```

[2 marks]

- d) onAccuracyChanged() and onSensorChanged() [2 marks]
- e) onPause, because this is the last method that is called before the Activity becomes killable.
[2 marks]