

## Question 1

Correct

Mark 1.00 out of  
1.00

Given the following class, which of the following lines of code can replace INSERT CODE HERE to make the code compile? (Choose all that apply)

```
public class Price {  
    public void admission() {  
        INSERT CODE HERE  
        System.out.println(amount);  
    }  
}
```

Select one or more:

- ☐ a. int amount = 9L;
- ☒ b. int amount = 0b101;
- ☒ c. int amount = 0xE;
- ☒ d. double amount = 0xE;

0b is the prefix for a binary value and is correct. 0x is the prefix for a hexadecimal value. This value can be assigned to many primitive types, including int and double, making options C and D correct. Option A is incorrect because 9L is a long value. long amount = 9L would be allowed. Option E is incorrect because the underscore is immediately before the decimal. Option F is incorrect because the underscore is the very last character.

- ☐ e. double amount = 1\_2\_.0\_0;
- ☐ f. int amount = 1\_2\_;
- ☐ g. None of the above.

Your answer is correct.

The correct answer is: int amount = 0b101;, int amount = 0xE;, double amount = 0xE;

**Question 2**

Correct

Mark 1.00 out of  
1.00

Suppose we have a class named Rabbit. Which of the following statements are true?

(Choose all that apply)

```
1: public class Rabbit {  
2: public static void main(String[] args) {  
3: Rabbit one = new Rabbit();  
4: Rabbit two = new Rabbit();  
5: Rabbit three = one;  
6: one = null;  
7: Rabbit four = one;  
8: three = null;  
9: two = null;  
10: two = new Rabbit();  
11: System.gc();  
12: } }
```

Select one or more:

- ☐ a. The Rabbit object from line 3 is first eligible for garbage collection immediately following line 6.
- ☒ b. The Rabbit object from line 3 is first eligible for garbage collection immediately following line 8. ✓
- ☐ c. The Rabbit object from line 3 is first eligible for garbage collection immediately following line 12.
- ☒ d. The Rabbit object from line 4 is first eligible for garbage collection immediately following line 9. ✓

The Rabbit object from line 3 has two references to it: one and three. The references are nulled out on lines 6 and 8, respectively. Option B is correct because this makes the object eligible for garbage collection after line 8. Line 7 sets the reference four to the now null one, which means it has no effect on garbage collection. The Rabbit object from line 4 only has a single reference to it: two. Option D is correct because this single reference becomes null on line 9. The Rabbit object declared on line 10 becomes eligible for garbage collection at the end of the method on line 12. Calling System.gc() has no effect on eligibility for garbage collection

- ☐ e. The Rabbit object from line 4 is first eligible for garbage collection immediately following line 11.
- ☐ f. The Rabbit object from line 4 is first eligible for garbage collection immediately following line 12.

Your answer is correct.

The correct answer is: The Rabbit object from line 3 is first eligible for garbage collection immediately following line 8., The Rabbit object from line 4 is first eligible for garbage collection immediately following line 9.

**Question 3**

Correct

Mark 1.00 out of  
1.00

What does the following code output?

```
1: public class Salmon {  
2: int count;  
3: public void Salmon() {  
4: count = 4;  
5: }  
6: public static void main(String[] args) {  
7: Salmon s = new Salmon();  
8: System.out.println(s.count);  
9: } }
```

Select one:

- ☐ a. Compilation fails on line 4.
- ☐ b. Compilation fails on line 3.
- ☐ c. 4
- ☒ d. 0



While the code on line 3 does compile, it is not a constructor because it has a return type. It is a method that happens to have the same name as the class. When the code runs, the default constructor is called and count has the default value (0) for an int.

- ☐ e. Compilation fails on line 8.
- ☐ f. Compilation fails on line 7.

Your answer is correct.

The correct answer is: 0

**Question 4**

Correct

Mark 1.00 out of  
1.00

Which of the following are true statements? (Choose all that apply)

Select one or more:

- ☐ a. Java allows operator overloading.
- ☒ b. Java code compiled on Windows can run on Linux.
- ☐ c. Java has pointers to specific locations in memory.
- ☐ d. Java is a procedural language.
- ☒ e. Java is an object-oriented language.



C++ has operator overloading and pointers. Java made a point of not having either. Java does have references to objects, but these are pointing to an object that can move around in memory. Option B is correct because Java is platform independent. Option E is correct because Java is object oriented. While it does support some parts of functional programming, these occur within a class.

- ☐ f. Java is a functional programming language.

Your answer is correct.

The correct answer is: Java code compiled on Windows can run on Linux., Java is an object-oriented language.

**Question 5**

Correct

Mark 1.00 out of 1.00

What is true about the following code? (Choose all that apply)

```
public class Bear {  
    protected void finalize() {  
        System.out.println("Roar!");  
    }  
    public static void main(String[] args) {  
        Bear bear = new Bear();  
        bear = null;  
        System.gc();  
    }  
}
```

Select one or more:

- ☐ a. finalize() is guaranteed to be called.
- ☒ b. finalize() might or might not be called
- ☐ c. finalize() is guaranteed not to be called.
- ☐ d. Garbage collection is guaranteed to run.
- ☒ e. Garbage collection might or might not run.

Calling System.gc() suggests that Java might wish to run the garbage collector. Java is free to ignore the request, making option E correct. finalize() runs if an object attempts to be garbage collected, making option B correct.

- ☐ f. Garbage collection is guaranteed not to run.
- ☐ g. The code does not compile.

Your answer is correct.

The correct answer is: finalize() might or might not be called, Garbage collection might or might not run.

**Question 6**

Correct

Mark 1.00 out of 1.00

Which of the following OSI layers are host-to-host layers?

Select one or more:

- ☒ a. Transport layer



Detail Solution: The layers transport, session, presentation and application are host-to-host layers, while the remaining three are not.

- ☐ b. Network layer
- ☐ c. Datalink layer
- ☒ d. Session layer



Your answer is correct.

The correct answer is: Session layer, Transport layer

**Question 7**

Correct

Mark 1.00 out of 1.00

How many bits are there in the IP address and port number?

Select one:

- ☐ a. 32, 8
- ☒ b. 32, 16



IP address in IPv4 is 32 bits long, whereas port numbers in TCT or UDP are 16 bits long.

- ☐ c. 48, 8
- ☐ d. 48, 16

Your answer is correct.

The correct answer is: 32, 16

**Question 8**

Correct

Mark 1.00 out of 1.00

If the disk head is located initially at 32, find the number of disk moves required with FCFS if the disk queue of I/O blocks requests are 98, 37, 14, 124, 65, 67.

Select one:

- ☐ a. 325
- ☒ b. 321



By applying FCFS we can easily compute =  $(98-32) + (37-32) + (32-14) + (124-14) + (124-65) + (67-65) = 321$  is correct.

- ☐ c. 310
- ☐ d. 239

Your answer is correct.

The correct answer is: 321

**Question 9**

Correct

Mark 1.00 out of 1.00

Consider the following set of processes, with the arrival times and the CPU-burst times given in milliseconds (GATE-CS-2004)

Process	Arrival Time	Burst Time
P1	0	5
P2	1	3
P3	2	3
P4	4	1

What is the average turnaround time for these processes with the preemptive shortest remaining processing time first (SRPT) algorithm ?

Select one:

- ☒ a. 5.50



The following is Gantt Chart of execution

P1 P2 P4 P3 P1

1 4 5 8 12

Turn Around Time = Completion Time - Arrival Time

Avg Turn Around Time =  $(12 + 3 + 6 + 1)/4 = 5.50$

- ☐ b. 6.00
- ☐ c. 5.75
- ☐ d. 6.25

Your answer is correct.

The correct answer is: 5.50

### Question 10

Correct

Mark 1.00 out of 1.00

An operating system uses the Shortest Remaining Time first (SRTF) process scheduling algorithm. Consider the arrival times and execution times for the following processes:

Process Execution time Arrival time

P1	20	0
P2	25	15
P3	10	30
P4	15	45

What is the total waiting time for process P2?

Select one:

☒ a. 15



At time 0, P1 is the only process, P1 runs for 15 time units.

At time 15, P2 arrives, but P1 has the shortest remaining time. So P1 continues for 5 more time units.

At time 20, P2 is the only process. So it runs for 10 time units

At time 30, P3 is the shortest remaining time process. So it runs for 10 time units

At time 40, P2 runs as it is the only process. P2 runs for 5 time units.

At time 45, P3 arrives, but P2 has the shortest remaining time. So P2 continues for 10 more time units.

P2 completes its execution at time 55

Total waiting time for P2 = Completion time - (Arrival time + Execution time)

= 55 - (15 + 25)

= 15

☐ b. 5

☐ c. 40

☐ d. 55

Your answer is correct.

The correct answer is: 15

### Question 11

Correct

Mark 1.00 out of 1.00

The seven elements A, B, C, D, E, F and G are pushed onto a stack in reverse order, i.e., starting from G. The stack is popped five times and each element is inserted into a queue. Two elements are deleted from the queue and pushed back onto the stack. Now, one element is popped from the stack. The popped item is \_\_\_\_\_.

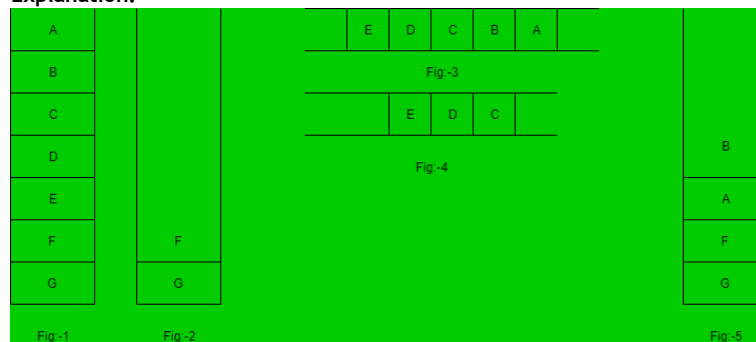
Select one:

☐ a. G

☒ b. B



**Explanation:**



In fig:-1 elements are inserted into a stack then in fig:-2 top 5 elements are popped and these 5 elements are inserted into a queue which is shown in fig:-3, now first two elements are deleted from queue and pushed into stack one by one which is shown in fig:-5.

At top of the stack element B is presented.

So, option (B) is correct.

☐ c. F

☐ d. A

The correct answer is: B

**Question 12**

Correct

Mark 1.00 out of 1.00

A program P reads in 500 integers in the range [0..100] representing the scores of 500 students. It then prints the frequency of each score above 50. What would be the best way for P to store the frequencies?

Select one:

- ☐ a. An array of 100 numbers
- ☐ b. An array of 500 numbers
- ☐ c. An array of 250 numbers
- ☒ d. An array of 50 numbers



**Explanation:** An array of size 50 looks the best option to store number of students for each score. We need to store frequencies of scores above 50. We can ignore scores below 50 and to index the scores above 50, we can subtract 50 from the score value/

The correct answer is: An array of 50 numbers

**Question 13**

Correct

Mark 1.00 out of 1.00

Consider an array consisting of -ve and +ve numbers. What would be the worst time comparisons an algorithm can take in order to segregate the numbers having same sign altogether i.e all +ve on one side and then all -ve on the other ?

Select one:

- ☐ a. N+1
- ☒ b. N-1



**Explanation:**

Here we can use the partition algorithm of quick sort for segregation and answer will be N-1. Choose the first element as pivot whatever may be its sign we don't care and keep an extra index at pivot position

- ☐ c.  $(N*(N-1))/2$
- ☐ d. N

The correct answer is: N-1

**Question 14**

Correct

Mark 1.00 out of 1.00

To evaluate an expression without any embedded function calls:

Select one:

- ☐ a. Two stacks are needed
- ☒ b. One stack is enough



Any expression can be converted into Postfix or Prefix form. Prefix and postfix evaluation can be done using a single stack. For example : Expression '10 2 8 \* + 3 -' is given.  
PUSH 10 in the stack.  
PUSH 2 in the stack.  
PUSH 8 in the stack.  
When operator '\*' occurs, POP 2 and 8 from the stack.  
PUSH 2 \* 8 = 16 in the stack.  
When operator '+' occurs, POP 16 and 10 from the stack.  
PUSH 10 \* 16 = 26 in the stack.  
PUSH 3 in the stack.  
When operator '-' occurs, POP 26 and 3 from the stack.  
PUSH 26 - 3 = 23 in the stack.  
So, 23 is the answer obtained using single stack.

- ☐ c. As many stacks as the height of the expression tree are needed

The correct answer is: One stack is enough

Question **15**

Correct

Mark 1.00 out of  
1.00

Which of the following is not an inherent application of stack?

Select one:

- ☒ a. Job scheduling



**Explanation:** We can use stack for string reversal, evaluation of postfix expression and most important is implementation of recursion but job scheduling is not done by stack.  
So, option (C) is correct.

- ☐ b. Reverse a string
- ☐ c. Evaluation of a postfix expression
- ☐ d. Implementation of recursion

The correct answer is: Job scheduling