

Mock 01 — Questions

Original CoCubes-style practice. Do not open [\[\[08_Timed_Mocks/Mock_01_Answers|answers\]\]](#) until your timer ends.

Rules

- Aptitude: 30 questions, 30 minutes.
- Technical: 30 questions, 30 minutes.
- Pseudocode: 20 questions, 20 minutes.
- Coding: 2 problems, 30 minutes.
- Use rough paper. Do not pause the timer.

Section A — Aptitude (30 minutes)

Quantitative aptitude

1. What is 20% of 250?
2. A. 25
3. B. 40
4. C. 50
5. D. 75
6. A value rises by 10% and then by 20%. What is the net percentage increase?
7. A. 30%
8. B. 32%
9. C. 28%
10. D. 22%
11. An item costs 800 and sells for 920. What is the profit percentage?
12. A. 12%
13. B. 15%
14. C. 18%
15. D. 20%

16. $A:B = 2:3$ and $A+B = 75$. What is A?
17. A. 25
18. B. 30
19. C. 35
20. D. 45
21. The average of five numbers is 12. If one number, 8, is removed, what is the average of the remaining numbers?
22. A. 11
23. B. 12
24. C. 13
25. D. 15
26. Ten workers complete a job in 12 days. How many days would fifteen equally efficient workers take?
27. A. 6
28. B. 8
29. C. 10
30. D. 18
31. A 150 m train moves at 54 km/h. How many seconds does it take to pass a pole?
32. A. 8
33. B. 10
34. C. 12
35. D. 15
36. Find the simple interest on 5,000 at 10% per annum for two years.
37. A. 500
38. B. 750
39. C. 1,000
40. D. 1,500
41. A bag has three red and five blue balls. What is the probability of selecting a red ball?
42. A. $\frac{3}{5}$
43. B. $\frac{3}{8}$
44. C. $\frac{5}{8}$
45. D. $\frac{1}{3}$
46. What is the unit digit of 2 raised to power 27?
47. A. 2

- 48. B. 4
- 49. C. 6
- 50. D. 8

English

- 1. Choose the correct sentence.
- 2. A. Either of the plans are acceptable.
- 3. B. Either of the plans is acceptable.
- 4. C. Either of the plan are acceptable.
- 5. D. Either plans is acceptable.
- 6. She is interested ____ data science.
- 7. A. on
- 8. B. at
- 9. C. in
- 10. D. for
- 11. Choose the grammatically correct sentence.
- 12. A. The committee have submitted its report.
- 13. B. The committee has submitted its report.
- 14. C. The committee has submitted their report.
- 15. D. The committee have submitted their report.
- 16. By the time we arrived, the film ____.
- 17. A. starts
- 18. B. has started
- 19. C. had started
- 20. D. was start
- 21. Meticulous most nearly means:
- 22. A. careless
- 23. B. very careful
- 24. C. extremely noisy
- 25. D. uncertain
- 26. Choose the antonym of scarce.
- 27. A. rare
- 28. B. limited
- 29. C. abundant

30. D. insufficient
31. Choose the correct usage.
32. A. She is senior than me.
33. B. She is senior to me.
34. C. She is more senior than me.
35. D. She is senior from me.
36. He is ____ European citizen.
37. A. a
38. B. an
39. C. the
40. D. no article
41. Change to passive voice: "They will complete the work tomorrow."
42. A. The work will complete tomorrow.
43. B. The work will be completed tomorrow.
44. C. The work is completed tomorrow.
45. D. The work has completed tomorrow.
46. Read the statement: "Green roofs can lower urban temperature and absorb rainwater. Their installation cost is often higher than a conventional roof." Which statement is supported?
47. A. Green roofs have no environmental benefit.
48. B. Green roofs always cost less.
49. C. Green roofs have environmental benefits but may require higher initial spending.
50. D. Conventional roofs absorb more rainwater.

Reasoning

1. Find the next number: 4, 9, 16, 25, ____.
2. A. 30
3. B. 32
4. C. 36
5. D. 49
6. A person walks 5 km north, then 5 km east, then 5 km south. Where is the person from the start?
7. A. north
8. B. south
9. C. east
10. D. west

11. All A are B. No B are C. Which conclusion definitely follows?
12. A. Some A are C.
13. B. No A are C.
14. C. All C are A.
15. D. Some B are C.
16. If each letter is shifted one position forward, DOG becomes EPH. What does CAT become?
17. A. DBU
18. B. CAU
19. C. DZT
20. D. EBU
21. A is B's sister. C is A's mother. How is C related to B?
22. A. aunt
23. B. sister
24. C. mother
25. D. grandmother
26. Five people A, B, C, D and E sit in a row of five seats. A is in the middle. B sits immediately left of A. C sits immediately right of A. D sits at the left end. Who sits at the right end?
27. A. A
28. B. B
29. C. C
30. D. E
31. All roses are flowers. Some flowers fade quickly. Which conclusion definitely follows?
32. A. Some roses fade quickly.
33. B. No roses fade quickly.
34. C. All flowers are roses.
35. D. Neither A nor B definitely follows.
36. What is the smaller angle between the hands of a clock at 3:30?
37. A. 60 degrees
38. B. 75 degrees
39. C. 90 degrees
40. D. 105 degrees
41. P is north of Q. R is east of P. S is south of R. S is in which direction from Q?
42. A. north

- 43. B. south
- 44. C. east
- 45. D. west
- 46. Find the next pair: AZ, BY, CX, ____.
- 47. A. DV
- 48. B. DW
- 49. C. DX
- 50. D. EW

Section B — Technical (30 minutes)

- 1. Which data structure follows FIFO order?
- 2. A. Stack
- 3. B. Queue
- 4. C. Heap
- 5. D. Tree
- 6. Which traversal of a binary search tree returns keys in sorted order?
- 7. A. Preorder
- 8. B. Postorder
- 9. C. Inorder
- 10. D. Level order
- 11. What is the average lookup time of a well-designed hash table?
- 12. A. $O(1)$
- 13. B. $O(\log n)$
- 14. C. $O(n)$
- 15. D. $O(n \log n)$
- 16. Which sorting algorithm is especially suitable for a singly linked list?
- 17. A. Selection sort
- 18. B. Merge sort
- 19. C. Heap sort only
- 20. D. Binary search
- 21. Which algorithm finds a shortest path in an unweighted graph?
- 22. A. DFS
- 23. B. BFS

- 24. C. Dijkstra only
- 25. D. Quicksort
- 26. Which statement is true?
- 27. A. Threads in a process have separate address spaces.
- 28. B. Processes always share heap memory.
- 29. C. Threads in a process commonly share the process address space.
- 30. D. A thread cannot be scheduled.
- 31. Which CPU scheduling method uses a fixed time quantum?
- 32. A. FCFS
- 33. B. Round Robin
- 34. C. SJF
- 35. D. Priority aging
- 36. A requested virtual-memory page is not in RAM. This is:
- 37. A. cache hit
- 38. B. page fault
- 39. C. deadlock
- 40. D. fragmentation
- 41. Which is not one of the four necessary deadlock conditions?
- 42. A. mutual exclusion
- 43. B. hold and wait
- 44. C. preemption allowed
- 45. D. circular wait
- 46. Paging divides memory into:
- 47. A. variable-sized logical segments only
- 48. B. fixed-sized pages and frames
- 49. C. one continuous block
- 50. D. stack and queue blocks
- 51. Which is a primary advantage of a microcontroller in an embedded product?
- 52. A. It always needs external RAM and I/O.
- 53. B. CPU, memory and I/O can be integrated on one chip.
- 54. C. It cannot handle interrupts.
- 55. D. It is intended only for desktop operating systems.
- 56. Which component converts an analogue sensor voltage into a digital number?

- 57. A. DAC
- 58. B. ADC
- 59. C. PWM
- 60. D. GPIO
- 61. Which component can recover an unattended controller from a software hang?
- 62. A. cache
- 63. B. watchdog timer
- 64. C. compiler
- 65. D. heat sink
- 66. Which serial interface is commonly two-wire and addressed?
- 67. A. UART
- 68. B. SPI
- 69. C. I2C
- 70. D. HDMI
- 71. Which statement best describes UART?
- 72. A. It is normally asynchronous serial communication using transmit/receive lines.
- 73. B. It is a routing protocol.
- 74. C. It converts analogue values to digital values.
- 75. D. It is only a storage technology.
- 76. Which transport protocol provides ordered, reliable delivery?
- 77. A. UDP
- 78. B. TCP
- 79. C. ARP
- 80. D. ICMP
- 81. Which protocol has lower overhead but no delivery guarantee?
- 82. A. TCP
- 83. B. UDP
- 84. C. HTTP
- 85. D. FTP
- 86. IP routing belongs primarily to which OSI layer?
- 87. A. Data Link
- 88. B. Network
- 89. C. Transport

90. D. Application
91. What is the conventional default port for DNS?
92. A. 22
93. B. 25
94. C. 53
95. D. 80
96. A /27 IPv4 subnet has how many traditional usable host addresses?
97. A. 14
98. B. 30
99. C. 62
100. D. 126
101. ARP maps:
102. A. domain name to IP address
103. B. IP address to MAC address on local network
104. C. TCP port to process
105. D. private IP to public IP
106. DHCP is used mainly to:
107. A. encrypt web traffic
108. B. assign IP configuration automatically
109. C. resolve domain names
110. D. route packets between networks
111. Which HTTP status most directly indicates that credentials are required/invalid?
112. A. 200
113. B. 301
114. C. 401
115. D. 404
116. Which development model is most sequential and best when requirements are stable?
117. A. Agile
118. B. Waterfall
119. C. DevOps
120. D. Kanban only
121. In Scrum, a short time-boxed development iteration is called:
122. A. branch

- 123. B. sprint
- 124. C. build
- 125. D. defect
- 126. Continuous integration mainly means:
 - 127. A. writing no tests until release
 - 128. B. frequently merging changes with automated build/test feedback
 - 129. C. manually deploying once a year
 - 130. D. replacing all version control
- 131. Testing existing features after a code change is:
 - 132. A. regression testing
 - 133. B. retesting only
 - 134. C. alpha testing only
 - 135. D. static analysis only
- 136. For a valid input range of 1 to 50, which set is a standard boundary-value set?
 - 137. A. 1, 2, 49, 50
 - 138. B. 0, 1, 50, 51
 - 139. C. 10, 20, 30, 40
 - 140. D. -10, 0, 10, 60
- 141. Selenium is best known as a:
 - 142. A. UI web-test automation tool
 - 143. B. relational database
 - 144. C. compiler
 - 145. D. DNS server
- 146. Severity in defect reporting mainly refers to:
 - 147. A. order in which a developer happens to fix a defect
 - 148. B. technical/business impact of the defect
 - 149. C. number of test cases written
 - 150. D. length of a defect title

Section C — Pseudocode (20 minutes)

1. What is displayed?

```
SET s = 0
FOR i = 1 TO 5
  IF i MOD 2 = 0 THEN SET s = s + i
END FOR
DISPLAY s
```

- A. 5
- B. 6
- C. 9
- D. 15
- What is displayed?

```
SET n = 305, r = 0
WHILE n > 0
  SET r = r * 10 + (n MOD 10)
  SET n = n DIV 10
END WHILE
DISPLAY r
```

- A. 305
- B. 503
- C. 53
- D. 8
- What is G(4)?

```
FUNCTION G(n)
  IF n <= 1 THEN RETURN 1
  ELSE RETURN n * G(n - 1)
END FUNCTION
```

- A. 4
- B. 10
- C. 24
- D. 120
- What is displayed?

```
SET a = 3, b = 5
SET a = a + b
SET b = a - b
```

```
SET a = a - b  
DISPLAY a, b
```

- A. 3, 5
- B. 5, 3
- C. 8, 3
- D. 5, 8
- What is displayed?

```
SET x = 1  
WHILE x < 20  
    SET x = x * 3  
END WHILE  
DISPLAY x
```

- A. 9
- B. 18
- C. 20
- D. 27
- What is displayed?

```
SET c = 0  
REPEAT  
    SET c = c + 2  
UNTIL c >= 5  
DISPLAY c
```

- A. 4
- B. 5
- C. 6
- D. 8
- What is displayed?

```
SET x = 7, y = 7  
IF x > y THEN  
    DISPLAY "greater"  
ELSE  
    IF x = y THEN DISPLAY "equal"  
    ELSE DISPLAY "less"
```

```
END IF
END IF
```

- A. greater
- B. equal
- C. less
- D. no output
- What is displayed?

```
SET c = 0
FOR i = 10 TO 16
  IF i MOD 3 = 1 THEN SET c = c + 1
END FOR
DISPLAY c
```

- A. 2
- B. 3
- C. 4
- D. 7
- What is the time complexity?

```
FOR i = 1 TO n
  SET j = 1
  WHILE j <= n
    SET j = j * 2
  END WHILE
END FOR
```

- A. $O(1)$
- B. $O(\log n)$
- C. $O(n)$
- D. $O(n \log n)$
- What is displayed?

```
SET p = 2, q = 3
SET r = p
SET p = q
SET q = r
DISPLAY p, q
```

- A. 2, 3
- B. 3, 2

- C. 3, 3
- D. 2, 2
- What is displayed?

```
SET n = 729, sum = 0
WHILE n > 0
  SET sum = sum + (n MOD 10)
  SET n = n DIV 10
END WHILE
DISPLAY sum
```

- A. 9
- B. 16
- C. 18
- D. 27
- What is H(5)?

```
FUNCTION H(n)
  IF n <= 0 THEN RETURN 0
  ELSE RETURN n + H(n - 2)
END FUNCTION
```

- A. 5
- B. 6
- C. 9
- D. 15
- An array is explicitly indexed from 1 to 4: A[1]=2, A[2]=4, A[3]=6, A[4]=8. What is displayed?

```
SET s = 0
FOR i = 1 TO 4
  SET s = s + A[i]
END FOR
DISPLAY s
```

- A. 16
- B. 18
- C. 20
- D. 22
- What is displayed?

```
SET n = 14
CASE n MOD 3 OF
  0: DISPLAY "A"
  1: DISPLAY "B"
  2: DISPLAY "C"
END CASE
```

- A. A
- B. B
- C. C
- D. no output
- What is displayed?

```
SET a = 9, b = 4
IF a DIV b > 2 THEN
  DISPLAY "H"
ELSE
  DISPLAY "L"
END IF
```

- A. H
- B. L
- C. 2
- D. error
- What sequence is displayed?

```
SET f = 0, g = 1
FOR i = 1 TO 3
  DISPLAY f
  SET f = f + g
  SET g = f + g
END FOR
```

- A. 0, 1, 3
- B. 0, 1, 1
- C. 1, 2, 3
- D. 0, 2, 4
- How many times does the loop body execute?

```
SET n = 20, c = 0
WHILE n > 0
  SET n = n DIV 2
```

```
SET c = c + 1
END WHILE
```

- A. 4
- B. 5
- C. 6
- D. 20
- What is the time complexity?

```
SET i = 1
WHILE i <= n
  SET i = i * 2
END WHILE
```

- A. $O(1)$
- B. $O(\log n)$
- C. $O(n)$
- D. $O(n^2)$
- What is displayed?

```
SET x = 10
IF NOT (x < 5 OR x > 12) THEN
  DISPLAY "yes"
ELSE
  DISPLAY "no"
END IF
```

- A. yes
- B. no
- C. 10
- D. no output
- What happens?

```
SET n = 1
WHILE n != 0
  SET n = n + 2
END WHILE
DISPLAY n
```

- A. Displays 0
- B. Displays 1
- C. Infinite loop for normal integers without overflow

Section D — Coding (30 minutes)

Coding Problem 1 — Two sum positions

Given an integer array of length n and integer target T , print any two distinct zero-based positions whose values sum to T . If no such pair exists, print -1 .

Input:

```
n
a1 a2 ... an
T
```

Output:

```
i j
```

or:

```
-1
```

Example:

```
Input
5
2 7 11 15 3
10

Output
1 4
```

Constraints: $2 \leq n \leq 200000$. Values may be negative.

Coding Problem 2 — Longest equal-half digit substring

Given a string S of decimal digits, find the maximum even length L for which S contains a contiguous substring of length L whose first half and second half have equal digit sums. Print L ; print 0 if no such substring exists.

Example:

```
Input
123123
```

Output

6

Explanation: 123 and 123 have equal digit sums.

Constraints: $1 \leq \text{length}(S) \leq 2000$.

When time ends, open [\[\[08_Timed_Mocks/Mock_01_Answers|Mock 01 answers\]\]](#).