SPLESE_Theoretical Foundations of Computer Science_15B11CI212_22July21

Shivam | 22 Jul 2021

Test Name::

SPLESE_Theoretical Foundations of Computer Science_15B11CI212_22July21

Finish State: Normal | Test Taken on: July 22, 2021 06:04:27 PM IST

S

Shivam

19103204@mail.jiit.ac.in

Enrollment No.: 19103204

Batch No.: B6

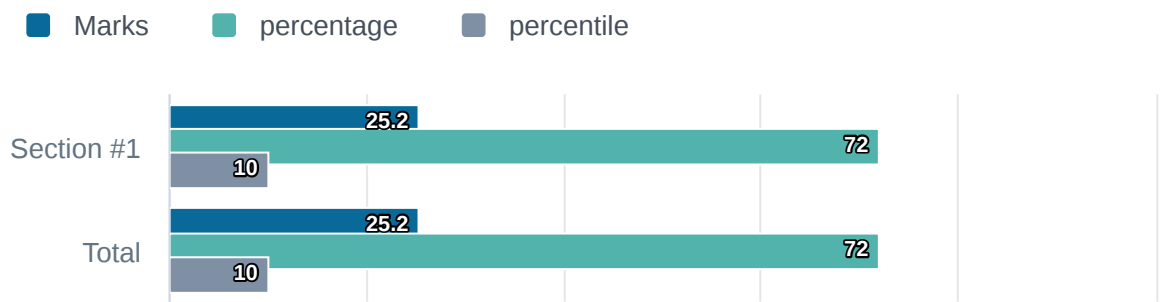
Profile Picture Snapshot

Identity Card Snapshot

Overall Summary

25.2	Marks Scored	out of 35
72%	10 percentile	out of 627 Test Takers
1h23m46s	Time taken	of 1hr 30mins

Marks Scored



Attempt Summary

Distribution of questions attempted in a total of 50 question(s).

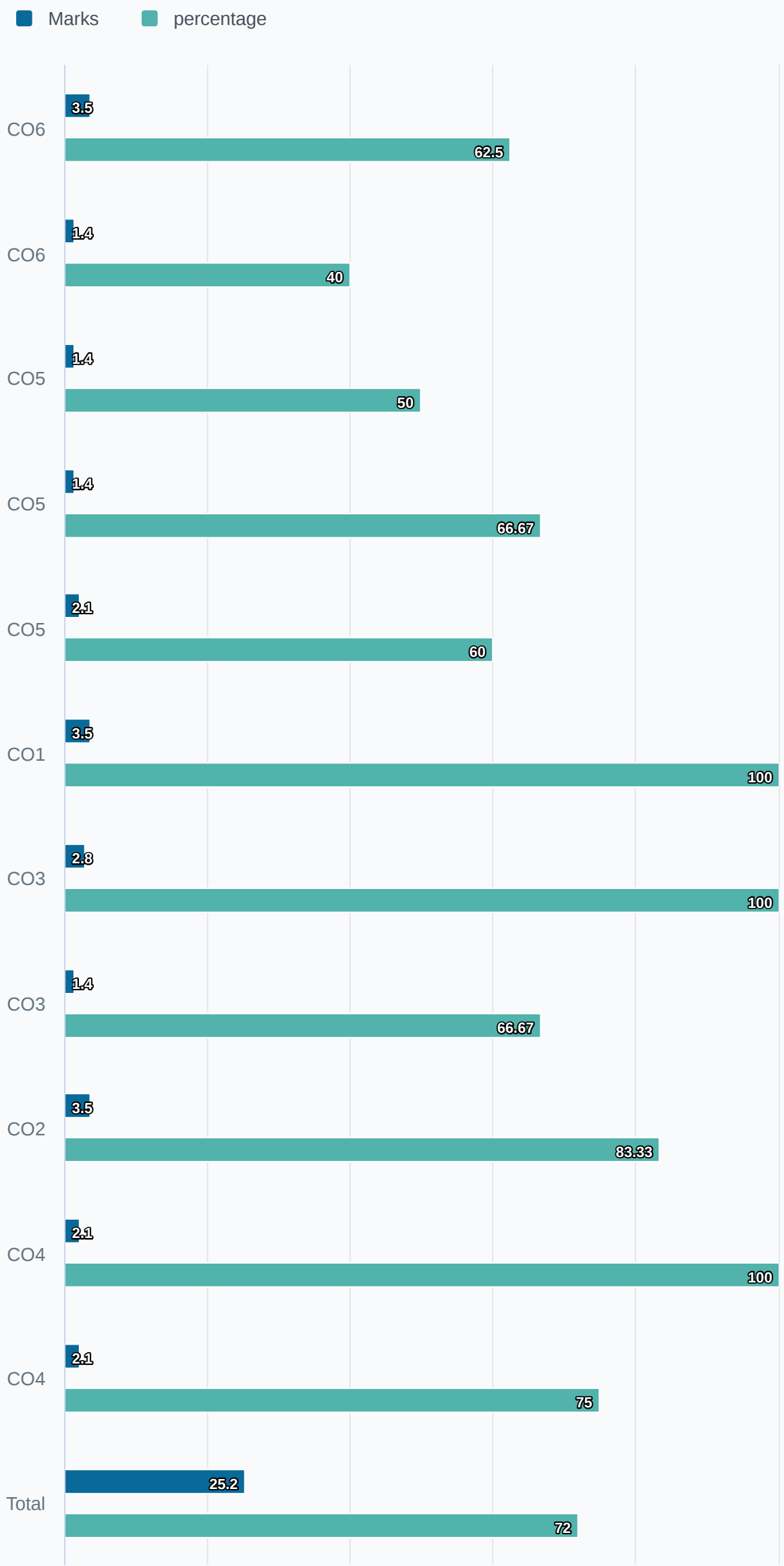
This shows the correctness of questions attempted by the test taker

Correct	36 Ques	25.2/25.2 Marks
Incorrect	14 Ques	0/9.8 Marks
Partially Correct	0 Ques	0/0 Marks
Not Attempted	0 Ques	0/0 Marks

Section-Wise Details

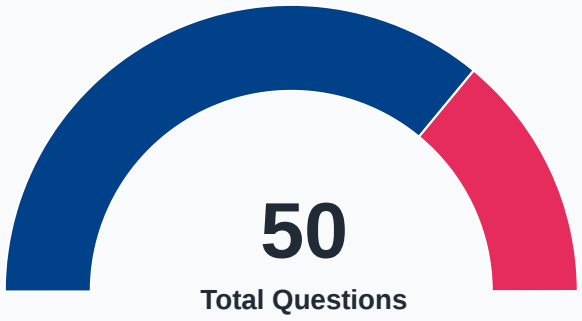
Section	question(s)	Time taken	Marks Scored
Section #1	50 Q.	1h 23m 46s (Untimed)	25.2 / 35

Marks Scored



Attempt Summary

Distribution of questions attempted in a total of 50 question(s).



This shows the correctness of questions attempted by the test taker

Correct	36 Ques	25.2/25.2 Marks
Incorrect	14 Ques	0/9.8 Marks

Question-Wise Details

Section 1
Section #1

50	1h 23m 46s	25.2/35
question(s)	Time taken	Marks Scored

Q. 1

Question 1

Time taken: 5s

Marks Scored: 0.7/0.7

(CO1) Set A has 3 elements & set B has 4 elements. The number of injections that can be defined from A into B are:

Response:

OPTIONS	RESPONSE	ANSWER
a) 12		
b) 24	✓	✓
c) 144		
d) 64		

Q. 2

Question 2

Time taken: 5s

Marks Scored: 0.7/0.7

(CO1) The set of all equivalence classes of a set A of cardinality C

Response:

OPTIONS	RESPONSE	ANSWER
a) Has the same cardinality as A		
b) Forms a partition of A	✓	✓
c) is of cardinality 2C		
d) is of cardinality C2		

Q. 3

Question 3

Time taken: 6s

Marks Scored: 0.7/0.7

(CO1) Two finite sets A and B have m and n elements respectively. If the total number of subsets of A is 112 more than the total number of subsets of B, then the value of m is:

Response:

OPTIONS	RESPONSE	ANSWER
a) 7	✓	✓
b) 9		
c) 10		
d) 12		

Q. 4

Question 4

Time taken: 1m 3s

Marks Scored: 0.7/0.7

(CO1) The domain and range are same for:

Response:

OPTIONS	RESPONSE	ANSWER
a) constant function		
b) identity function	✓	✓
c) greatest integer function		
d) absolute value function		

Q. 5

Question 5

Time taken: 23s

Marks Scored: 0.7/0.7

(CO1) How many subsets are there in the power set of an empty set?

Response:

OPTIONS	RESPONSE	ANSWER
a) 0		
b) 1	✓	✓
c) 2		
d) 3		

Q. 6

Question 6

Time taken: 1m 34s

Marks Scored: 0/0.7

(CO2) If w, x, y, z are Boolean variables, then which one of the following is INCORRECT ?

Response:

OPTIONS	RESPONSE	ANSWER
a) wx+w(x+y)+x(x+y)=x+wy	✓	
b) (wx'(y+z'))' +w'x=w'+x+y'z		
c) (wx'(y+xz')+w'x')y=xy'		✓
d) (w+y)(wxy+wyz)=wxy+wyz		

Q. 7

Question 7

Time taken: 3m 32s

Marks Scored: 0.7/0.7

(CO1) In a group of 72 students, 47 have background is electronics, 59 have background in Mathematics & 42 have background in both the subjects. How many students do not have background in any of the subjects?

Response:

OPTIONS	RESPONSE	ANSWER
a) 8	✓	✓
b) 13		
c) 25		
d) 34		

Q. 8

Question 8

Time taken: 33s

Marks Scored: 0.7/0.7

(CO2) Define the connective * for the Boolean variables X and Y as: X * Y = XY + X'Y'. Let Z =X *Y. Consider the following expressions P,Q and R.

P: X = Y *Z Q: Y = X *Z R: X *Y *Z = 1

Which of the following is TRUE?

Response:

OPTIONS	RESPONSE	ANSWER
a) Only P and Q are valid.		
b) Only Q and R are valid.		
c) Only P and R are valid.		
d) All P, Q and R are valid.	✓	✓

Q. 9

Question 9

Time taken: 30s

Marks Scored: 0.7/0.7

(CO2) Let ⊕ and ⊙ denote the Exclusive OR and Exclusive NOR operations, respectively. Which one of the following is NOT CORRECT?

Response:

OPTIONS	RESPONSE	ANSWER
a) $(P \oplus Q)' = P \odot Q$		
b) $P' \oplus Q = P \odot Q$		
c) $P' \oplus Q' = P \odot Q$		
d) $(P \oplus P') \oplus Q = (P \odot P') \odot Q'$	✓	✓

Q. 10

Question 10

Time taken: 1m 17s

Marks Scored: 0.7/0.7

(CO2) Which one of the following is NOT a valid identity?

Response:

OPTIONS	RESPONSE	ANSWER
a) (x⊕y)⊕z=x⊕(y⊕z)		
b) (x+y)⊕z=x⊕(y+z)	✓	✓
c) x⊕y=x+y,if xy=0		
d) x⊕y=(xy+x′y′)′		

Q. 11

Question 11

Time taken: 1m 55s

Marks Scored: 0.7/0.7

(CO2) Given f(w,x,y,z)=∑m(0,1,2,3,7,8,10)+∑d(5,6,11,15) where d represents the don't-care condition in K maps. Which of the following is a minimum product-of-sums (POS) form of f(w,x,y,z)?

Response:

OPTIONS	RESPONSE	ANSWER
a) f=(w'+z')(x'+z)	✓	✓
b) f=(w'+z)(x+z)		
c) f=(w+z)(x'+z)		
d) f=(w+z')(x'+z)		

Q. 12

Question 12

Time taken: 58s

Marks Scored: 0.7/0.7

(CO3) P → (Q → R) is equivalent to:

Response:

OPTIONS	RESPONSE	ANSWER
a) (P ^ Q) → R	✓	✓
b) (P v Q) → R		
c) (P v Q) → ⌉R		
d) Cannot be determined		

Q. 13

Question 13

Time taken: 34s

Marks Scored: 0.7/0.7

(CO3) What rule of inference is used in this argument? “If I go for a balanced diet, then I will be fit. If I will be fit, then I will remain healthy. Therefore, if I go for a balanced diet, then I will remain healthy.”

Response:

OPTIONS	RESPONSE	ANSWER
a) Modus tollens		
b) Modus ponens		
c) Disjunctive syllogism		
d) Hypothetical syllogism	✓	✓

Q. 14

Question 14

Time taken: 1m 28s

Marks Scored: 0.7/0.7

(CO3) “Parul is out for a trip or it is not snowing” and “It is snowing or Raju is playing chess” imply that _____

Response:

OPTIONS	RESPONSE	ANSWER
a) Parul is out for trip		
b) Raju is playing chess		
c) Parul is out for a trip and Raju is playing chess		
d) Parul is out for a trip or Raju is playing chess	✓	✓

Q. 15

Question 15

Time taken: 42s

Marks Scored: 0.7/0.7

(CO3) Logical expression (A ^ B) → (C' ^ A) → (A ≡ 1) is:

Response:

OPTIONS	RESPONSE	ANSWER
a) Contradiction		
b) Valid		
c) Well-formed formula		
d) None of these	✓	✓

Q. 16

Question 16

Time taken: 3m 58s

Marks Scored: 0.7/0.7

(CO4) What can be the minimum number of integers that is to be selected from a set {0, 1, 2, 3, 4,5,6,7,8, 9} so that the difference of two integers is seven.

Response:

OPTIONS	RESPONSE	ANSWER
a) 7		
b) 4	✓	✓
c) 5		
d) 9		

Q. 17

Question 17

Time taken: 59s

Marks Scored: 0.7/0.7

(CO4) Find the minimum number of employees needed to guarantee that five of them belong to the same branch (CSE, ECE, HSS, Maths).

Response:

OPTIONS	RESPONSE	ANSWER
a) 5		
b) 4		
c) 17	✓	✓
d) 16		

Q. 18

Question 18

Time taken: 1m 20s

Marks Scored: 0.7/0.7

(CO4) There are 30 students in a class who either use pen or pencil (or both) for writing, there are 25 students who use pen and 15 who use pencil. Find the number of students who use only pen for the writing.

Response:

OPTIONS	RESPONSE	ANSWER
a) 25		
b) 15	✓	✓
c) 10		
d) 30		

Q. 19

Question 19

Time taken: 9m 31s

Marks Scored: 0.7/0.7

(CO5) In an undirected graph the number nodes having odd degree must be

Response:

OPTIONS	RESPONSE	ANSWER
a) Zero		
b) Odd		
c) Even	✓	✓
d) Prime		

Q. 20

Question 20

Time taken: 58s

Marks Scored: 0.7/0.7

(CO5) For a graph G, the sum of degree of all the vertices are 14. Calculate the number of edges for the graph G.

Response:

OPTIONS	RESPONSE	ANSWER
a) 28		
b) 13		
c) 7	✓	✓
d) Incomplete information		

Q. 21

Question 21

Time taken: 5m 53s

Marks Scored: 0/0.7

(CO5) Empty Graph (having only vertices and no edges) is also known as:

Response:

OPTIONS	RESPONSE	ANSWER
a) Regular graph	✓	
b) Trivial graph		✓
c) Bipartite graph		
d) None of these		

Q. 22

Question 22

Time taken: 1m 27s

Marks Scored: 0/0.7

(CO5) A graph G with k number of vertices, multiple edges and self-loop will have total number of edges:

Response:

OPTIONS	RESPONSE	ANSWER
a) More than (k+1)/2	✓	
b) More than k(k-1)/2		✓
c) More than k+1		
d) More than K		

Q. 23

Question 23

Time taken: 32s

Marks Scored: 0/0.7

(CO6: Easy) How many languages are over the alphabet R?

Response:

OPTIONS	RESPONSE	ANSWER
a) countably infinite		
b) countably finite		
c) uncountable finite	✓	
d) uncountable infinite		✓

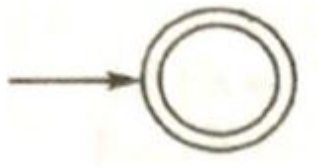
Q. 24

Question 24

Time taken: 1m 8s

Marks Scored: 0.7/0.7

(CO6) The FSM shown in the figure accepts



Response:

OPTIONS	RESPONSE	ANSWER
a) All strings		
b) No strings		
c) Null string	✓	✓
d) None of these		
*		

Q. 25

Question 25

Time taken: 12s

Marks Scored: 0.7/0.7

(CO6) The language accepted by finite automata is

Response:

OPTIONS	RESPONSE	ANSWER
a) Context free		
b) Regular	✓	✓
c) Non-regular		
d) None of these		

Q. 26

Question 26

Time taken: 15s

Marks Scored: 0/0.7

(CO6) Regular expression a+b denotes the set

Response:

OPTIONS	RESPONSE	ANSWER
a) {a}		✓
b) {^a,b}		
c) {a,b}	✓	
d) None of these		

Q. 27

Question 27

Time taken: 57s

Marks Scored: 0.7/0.7

(CO6) The sum of minimum and maximum number of final states for a DFA of n states is equal to:

Response:

OPTIONS	RESPONSE	ANSWER
a) n		
b) n+1	✓	✓
c) n-1		
d) n+2		

Q. 28

Question 28

Time taken: 1m 33s

Marks Scored: 0.7/0.7

(CO6)Which of the following regular expressions denotes a language comprising all possible strings over the alphabet {a,b}?

Response:

OPTIONS	RESPONSE	ANSWER
a) a*b*		
b) (a|b)*	✓	✓
c) (ab)*		
d) (a|b*)		

Q. 29

Question 29

Time taken: 11s

Marks Scored: 0.7/0.7

(CO6) The regular expression which denotes zero or more instances of an x or y, is:

Response:

OPTIONS	RESPONSE	ANSWER
a) (x/y)		
b) (x/y) *	✓	✓
c) X*/y		
d) (xy)*		

Q. 30

Question 30

Time taken: 39s

Marks Scored: 0/0.7

(CO6) The regular expression (a|b)(a|b) denotes the set

Response:

OPTIONS	RESPONSE	ANSWER
a) {a,b,ab,aa}	✓	
b) {a,b,ba,bb}		
c) {a,b}		
d) {aa,ab,ba,bb}		✓

Q. 31

Question 31

Time taken: 36s

Marks Scored: 0.7/0.7

(CO3) Which of the following well-formed formula is valid?

Response:

OPTIONS	RESPONSE	ANSWER
a) ((P → Q)^(Q → R))→ (P → R)	✓	✓
b) (P → Q) →(⎤P → ⎤Q)		
c) (P v (⎤P v ⎤Q)) →P		
d) ((P → R) v (Q → R)) → (P v Q}→R)		

Q. 32

Question 32

Time taken: 58s

Marks Scored: 0/0.7

(CO3) (P v Q) ^ (P → R)^ (Q →S) is equivalent to:

Response:

OPTIONS	RESPONSE	ANSWER
a) S ^ R	✓	
b) S→R		
c) S v R		✓
d) None of these		

Q. 33

Question 33

Time taken: 2m 4s

Marks Scored: 0.7/0.7

(CO3) If F1, F2 and F3 are propositional formulae such that F1 ^ F2 → F3 and F1 ^ F2→F3 are both tautologies, then which of the following is TRUE?

Response:

OPTIONS	RESPONSE	ANSWER
a) Both F1 and F2 are tautologies.		
b) The conjunction F1 ^ F2 is not satisfiable.	✓	✓
c) Neither is tautology		
d) None of these		

Q. 34

Question 34

Time taken: 1m 58s

Marks Scored: 0.7/0.7

(CO4) In a school, students study three foreign languages- French (F), Spanish (S), and German (G). Among 80 students: 20 study F, 25 study S, 15 study G, 8 study F and S, 6 study S and G, 5 study F and G, 2 study all three languages. Find the number of the students who are not studying any of these languages.

Response:

OPTIONS	RESPONSE	ANSWER
a) 37	✓	✓
b) 38		
c) 39		
d) None of these		

Q. 35

Question 35

Time taken: 1m 42s

Marks Scored: 0.7/0.7

3. (CO4) Assuming a cell can be empty, find the number of ways that a set with 3 elements can be partitioned into 3 unordered cells.

Response:

OPTIONS	RESPONSE	ANSWER
a) 5	✓	✓
b) 27		
c) 3		
d) Cannot be determined		

Q. 36

Question 36

Time taken: 2m 48s

Marks Scored: 0.7/0.7

(CO4) Suppose five points are chosen at random in the interior of an equilateral triangle, where each side has length two inches. Then the distance between two of the points must be:

Response:

OPTIONS	RESPONSE	ANSWER
a) less than one inch	✓	✓
b) equal to one inch		
c) greater than one inch		
d) None of these		

Q. 37

Question 37

Time taken: 40s

Marks Scored: 0/0.7

(CO4) Two school teams- Team Peace and Team Unity compete for the basketball tournament. Find the number of possible ways that the basketball tournament will occur, where the winner is the one who first wins the three games in the tournament.

Response:

OPTIONS	RESPONSE	ANSWER
a) 3		
b) 2		
c) 1	✓	
d) None of these		✓

Q. 38

Question 38

Time taken: 17s

Marks Scored: 0.7/0.7

(CO5) Which one is correct for a simple graph?

Response:

OPTIONS	RESPONSE	ANSWER
a) Every path is a trail	✓	✓
b) Every trail is a path		
c) Every trail is a path as well as every path is a trail		
d) Path and trail have no relation		

Q. 39

Question 39

Time taken: 2m 2s

Marks Scored: 0.7/0.7

(CO5) Which one is correct for a graph having Euler path but not Euler circuit

Response:

OPTIONS	RESPONSE	ANSWER
a) Graph is connected and every vertex have even degree		
b) Graph is connected and every vertex have odd degree		
c) Graph is connected and exactly one vertex have odd degree		
d) Graph is connected and exactly two vertices have odd degree	✓	✓

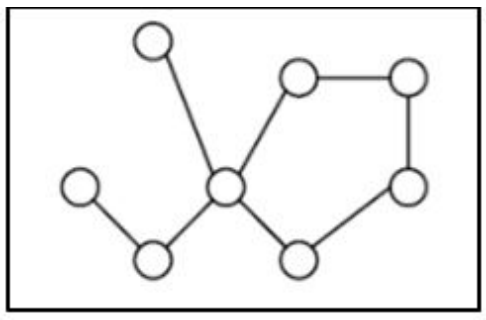
Q. 40

Question 40

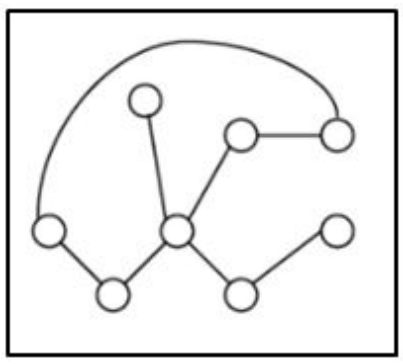
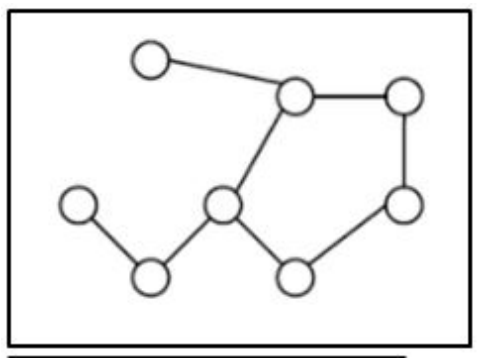
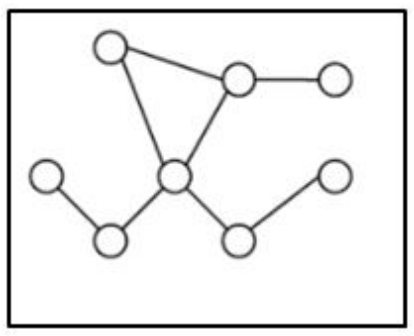
Time taken: 24s

Marks Scored: 0/0.7

(CO5) For the following graph, find out the isomorphic graph



Response:

OPTIONS	RESPONSE	ANSWER
	✓	
		
		
None of the above		✓

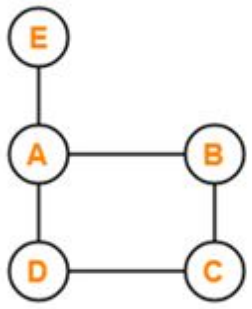
Q. 41

Question 41

Time taken: 26s

Marks Scored: 0.7/0.7

(CO5) In the given graph, identify the cut vertices:



Response:

OPTIONS	RESPONSE	ANSWER
a) Only E		
b) Only B		
c) Only A	✓	✓
d) A and C		

Q. 42

Question 42

Time taken: 2m 40s

Marks Scored: 0.7/0.7

(CO5) A bipartite graph with 10 vertices can have maximum number of edges:

Response:

OPTIONS	RESPONSE	ANSWER
a) 16		
b) 25	✓	✓
c) 21		
d) 35		

Q. 43

Question 43

Time taken: 1m 36s

Marks Scored: 0/0.7

(CO5) How many different Hamiltonian cycles are possible in a complete graph with 5 vertices?

Response:

OPTIONS	RESPONSE	ANSWER
a) 12		✓
b) 24	✓	
c) 120		
d) 5		

Q. 44

Question 44

Time taken: 2m 11s

Marks Scored: 0.7/0.7

(CO5) If a graph G is a forest with 54 vertices and 17 connected components, G has total _____ number of edges.

Response:

OPTIONS	RESPONSE	ANSWER
a) 36		
b) 37	✓	✓
c) 38		
d) Cannot be determined		

Q. 45

Question 45

Time taken: 11m 20s

Marks Scored: 0/0.7

(CO5) Schedule final exams for eight subjects: CS101, CS102, CS103, CS104, CS105, CS106, CS107, and CS108 in minimum number of time slots based on the given information: No students are allowed to study both CS101 and CS108, both CS102 and CS108, both CS104 and CS105, both CS104 and CS106, both CS101 and CS102, both CS101 and CS103, both CS103 and CS104 but there are students in every other pair of subjects. How many minimum number of slots are required?

Response:

OPTIONS	RESPONSE	ANSWER
5		
3	✓	
4		✓
6		

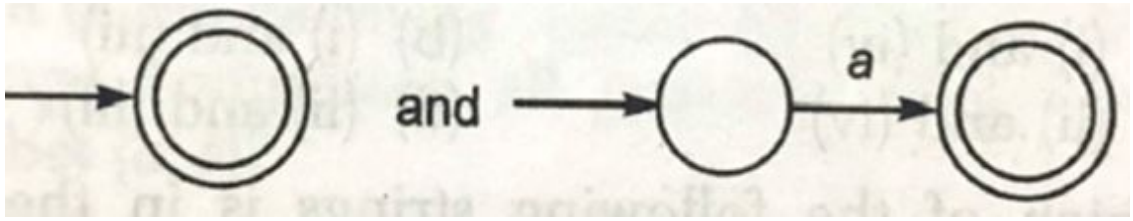
Q. 46

Question 46

Time taken: 29s

Marks Scored: 0/0.7

(CO6) Consider the following two FSMs shown in the figure: Which of the following statement is correct?



Response:

OPTIONS	RESPONSE	ANSWER
a) Both are equivalent		
b) Second FSM accepts ^ only		
c) First FSM accept nothing	✓	
d) None of the above		✓

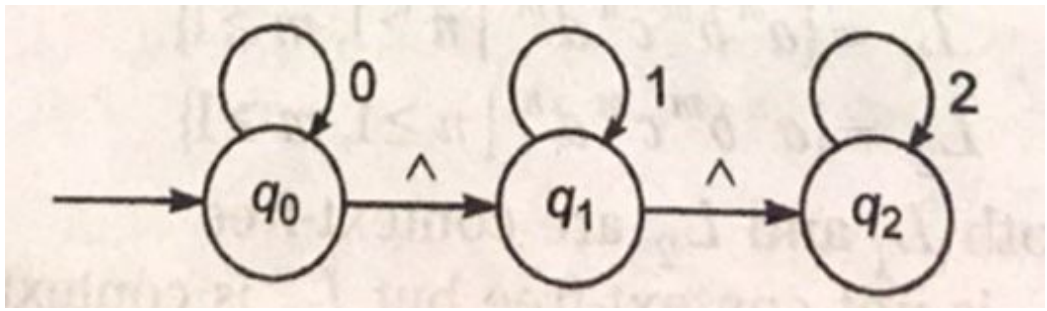
Q. 47

Question 47

Time taken: 1m 43s

Marks Scored: 0/0.7

(CO6) Give the regular expression described by the following NFA.



Response:

OPTIONS	RESPONSE	ANSWER
a) (012) *		
b) (0+1+2) *	✓	
c) 0*1*2*		✓
d) None of these		

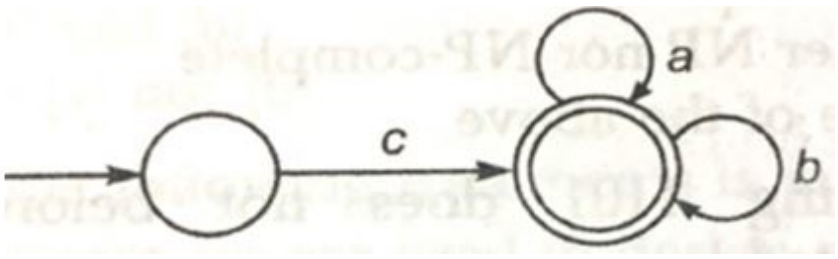
Q. 48

Question 48

Time taken: 42s

Marks Scored: 0.7/0.7

(CO6) Which of the following strings is accepted by given NDFA?



Response:

OPTIONS	RESPONSE	ANSWER
$c.(a \cup b)*$	✓	✓
$c.a*.b*$		
$c.(ab)*$		
None of these		

Q. 49

Question 49

Time taken: 3m 28s

Marks Scored: 0/0.7

(CO6) The string 1101 does not belong to the set represented by

Response:

OPTIONS	RESPONSE	ANSWER
a) 110*(0+1)		
b) 1(0+1) *101		
c) (00+(11) *0) *1	✓	
d) (10) *(01) *(00+11) *		✓

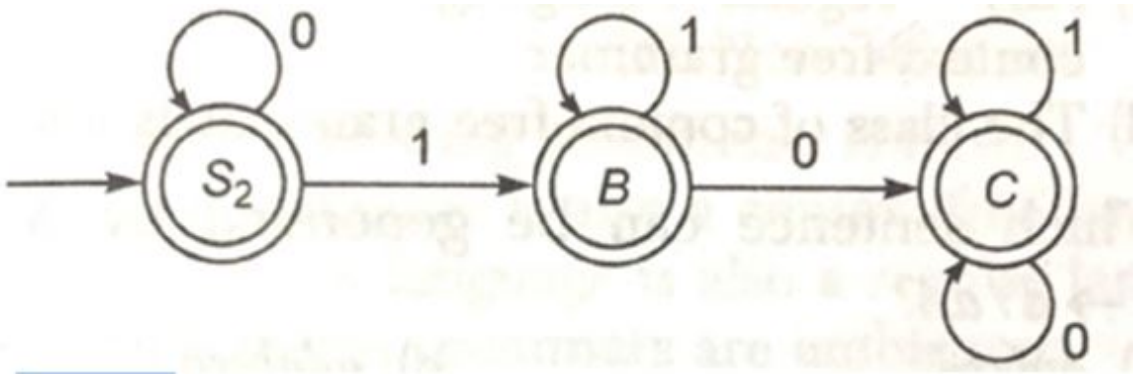
Q. 50

Question 50

Time taken: 1m 24s

Marks Scored: 0.7/0.7

(CO6) The regular expression for the language recognized by the following finite state automata is:



Response:

OPTIONS	RESPONSE	ANSWER
$0^* \mid 0^*1^+$	✓	✓
$0^* \mid 0^*1^+ \mid 0^*1^+(0+1)^*$		
$0^* \mid 110^*$		
None of these		

Test Log

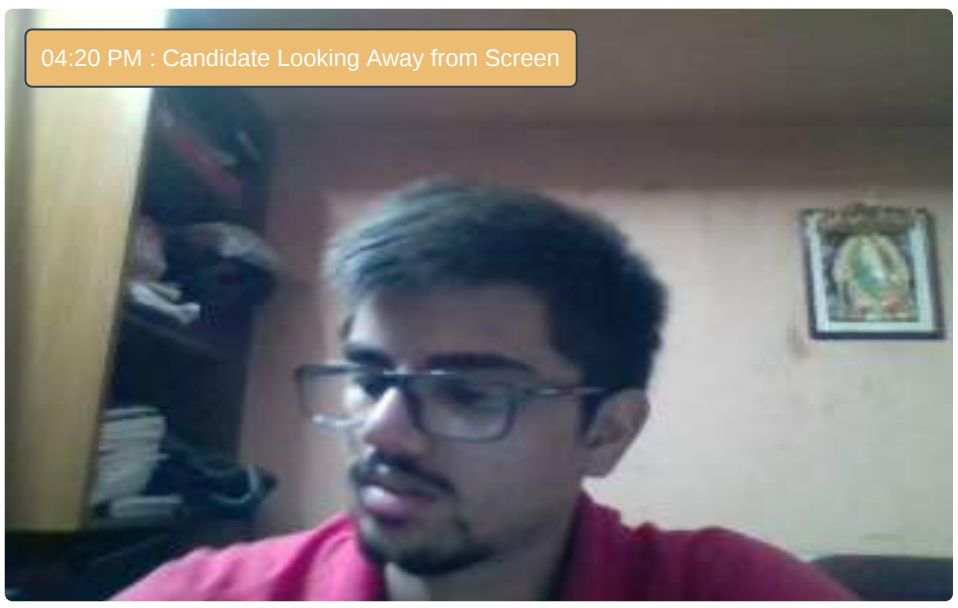
22nd Jul 2021

04:15 PM	Candidate submitted the Registration details for Authorization
04:15 PM	JITENDRA MOHAN authorized the candidate
04:15 PM	Started the test with Section #1
04:15 PM	Candidate gave us right to the following feeds - camera - microphone
04:20 PM	Candidate Looking Away from Screen
04:30 PM	Got disconnected from Server
04:32 PM	Candidate Face Partially Visible
04:33 PM	Candidate Face Partially Visible
04:46 PM	Candidate Looking Away from Screen
04:49 PM	Candidate Face Partially Visible
04:56 PM	Away from test window
04:57 PM	Got disconnected from Server
05:05 PM	Candidate submitted the Registration details for Re-authorization
05:07 PM	Navneet Kumar Sharma authorized the candidate
05:07 PM	Resumed Test
05:07 PM	Candidate IP Changed
05:07 PM	Candidate gave us right to the following feeds - camera - microphone
05:07 PM	Proctor (ANUJ KUMAR) : Please rotate your webcam 360 degree and show the test environment at your place
05:08 PM	Candidate : ok
05:08 PM	Proctor (ANUJ KUMAR) : ok
05:08 PM	Candidate : did you see
05:08 PM	Candidate : i showed
05:09 PM	Candidate : sir??
05:44 PM	Candidate Looking Away from Screen
05:46 PM	Proctor (ANUJ KUMAR) : when ur exam starts ?
05:46 PM	Proctor (ANUJ KUMAR) : i mean what time ?
05:46 PM	Candidate : 4:15
05:47 PM	Candidate : and my internet
05:47 PM	Candidate : went for 10-15 mins
05:47 PM	Candidate : in between
05:55 PM	Candidate Face Partially Visible
05:56 PM	Candidate Looking Away from Screen
06:04 PM	Finished the test

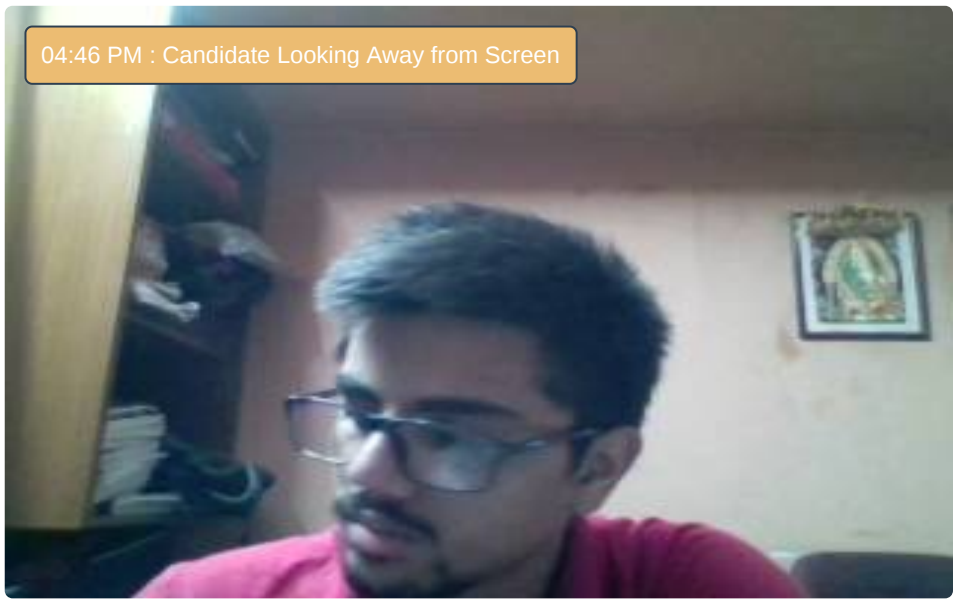
Profile Picture Snapshot

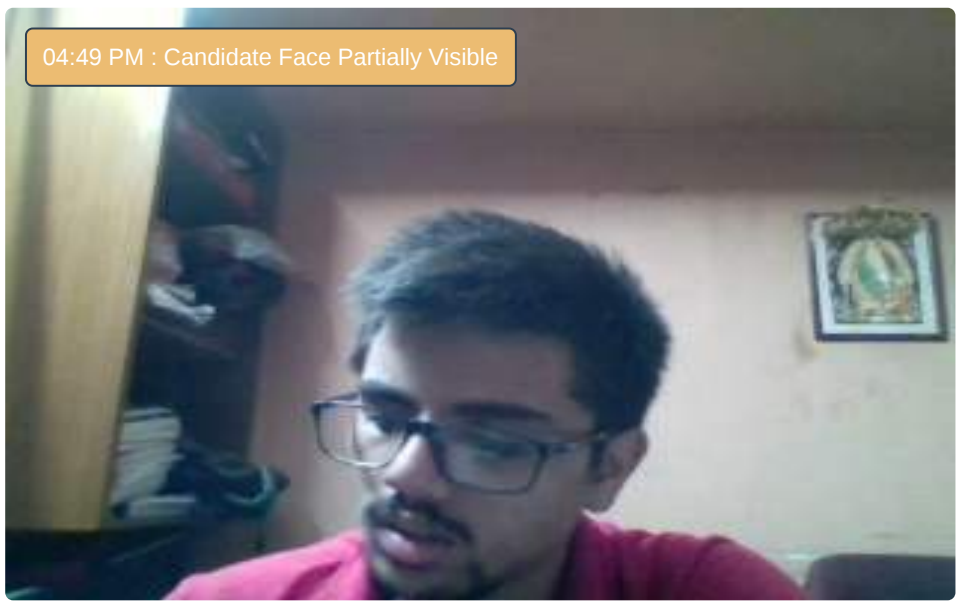
Identity Card Snapshot

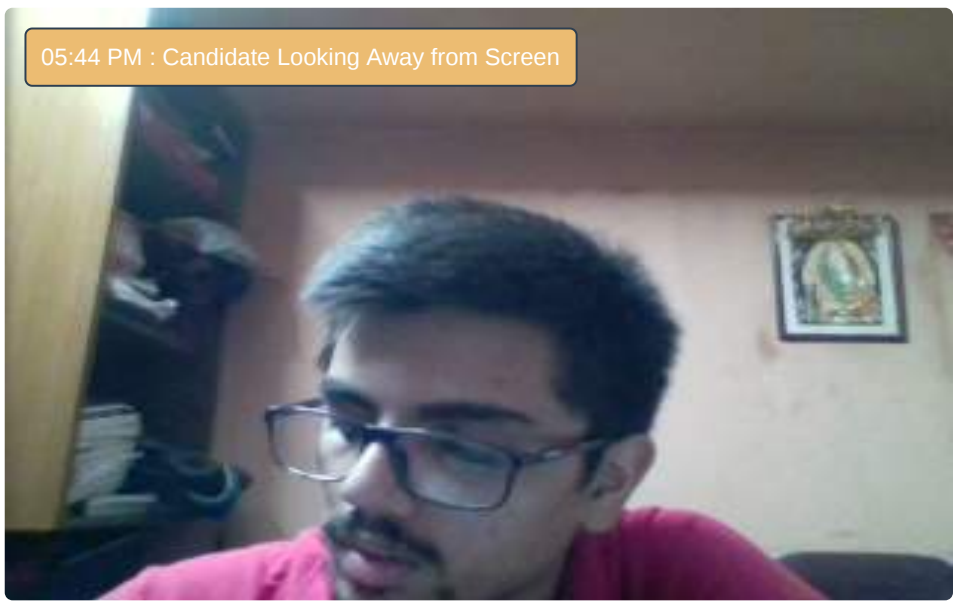
Images of Test-Taker

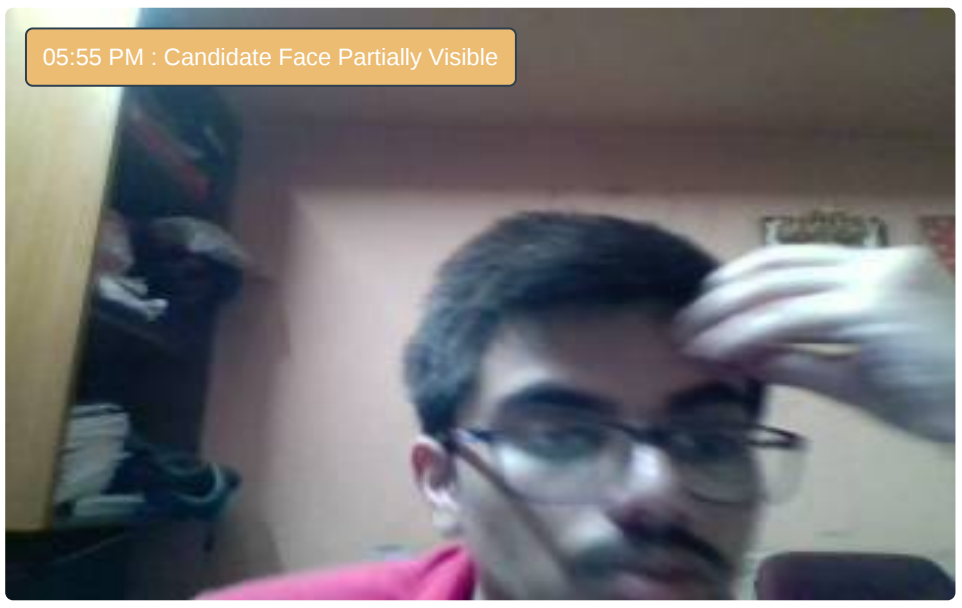


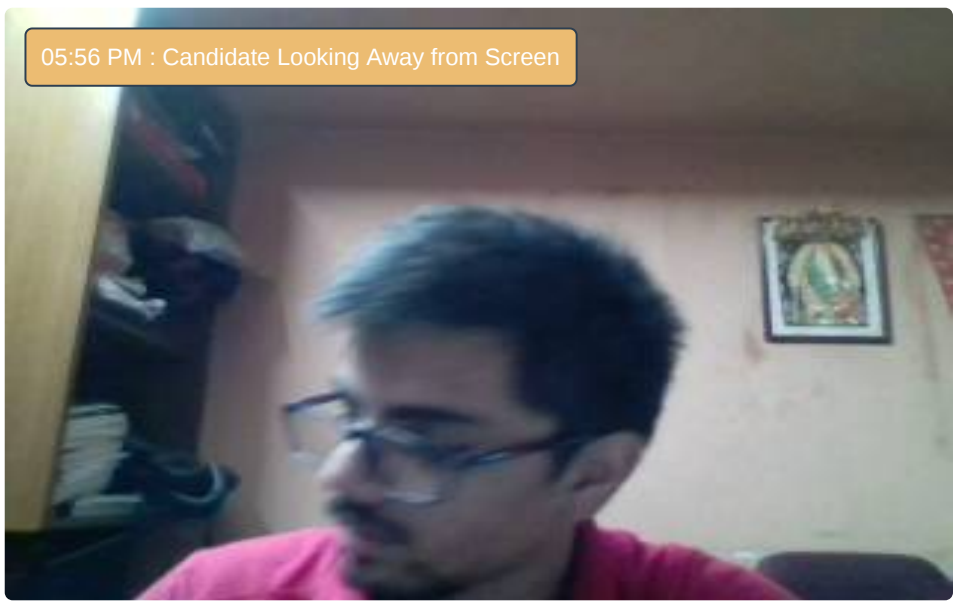

04:41 PM


04:46 PM : Candidate Looking Away from Screen


04:49 PM : Candidate Face Partially Visible


05:44 PM : Candidate Looking Away from Screen


05:55 PM : Candidate Face Partially Visible


05:56 PM : Candidate Looking Away from Screen

Test Log

Authorization data

22nd Jul 2021 04:15 PM

Profile Picture Snapshot

Identity Card Snapshot

22nd Jul 2021 05:05 PM

Profile Picture Snapshot

Identity Card Snapshot