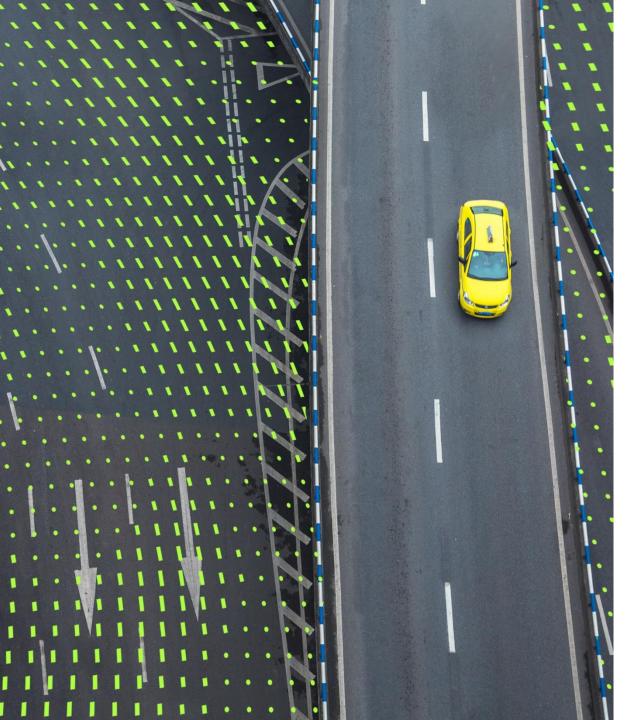
KPI1.

Instructions for KPIT's Engineering Graduates Hiring

19th and 20th June 2021



About the Registration Process and the Test



About the Registration Process and the Test

- Job Description and Eligibility
- Registration Process in TalentOjo
- Overall Test Structure and Three-stage Selection Process
 - <u>Day 1</u>: Sat, 19 June 21 (Open to all candidates who register)
 - Day 2: Sun, 20 June 21 (For short-listed candidates from Day-1)
 - <u>Day 3</u>: Tue, 22 June 21 (For short-listed candidates from Day-2)
- Syllabus for the Tests
- Instructions / Rules for the Exam
- About the Assessment Platform, Mercer-Mettl
- Key Takeaways
- Contact Details



Job Description

Upon joining, you will undertake jobs of the following nature (depending upon the department you are assigned to):

- Work on projects in the domains of Autonomous Driving, Connected Vehicles, Mobility, Power-train, etc.
- Analyze the requirements given for the projects.
- Design or understand algorithms / concepts and convert into a mathematical model.
- Undertake programming in C, C++, MATLAB®, Simulink or Python.
- Testing of code and Simulink models (Verification and Validation, Hardware-in-the-loop testing).
- Optimization and porting of code onto microprocessors and microcontrollers.
- Few of you will get an opportunity to work in Machine Learning, Deep Learning, Java & allied technologies.

Joining CTC and Five-year Accelerated Career Progression Plan

• Cost to Company (CTC) upon Joining:

- 3.6 Lac per year (LPA).
- Please note that there is a two-year bond.

• If you

- Perform excellent in our Genesis program (KPIT's Graduate Training Program for Freshers); and
- You are consistently in top 5%,
- Your CTC can grow up to approx. 10 LPA in five years (nearly a three-time jump in five years!)

Other Benefits (may change / improve)

- Medical Insurance for Employees- 6 Lac
- Parental Health Insurance 5 Lac for parents and in-laws (payment basis, 50% cheaper than market)
- Personal Accident Insurance 20 Lac
- Free Annual Health check for employees and their family members (parents, in-laws, spouse)

Eligibility

Bachelors of Engineering:

- Electronics and Communication / Electrical and Electronics / Electronics and Telecommunication /
 Instrumentation
 (will be called as "Circuit Branches" in this presentation)
- Computer Science / Information Technology

Academic Qualifications (one of the three tracks below):

- 10^{th} (60%) \rightarrow 12th (60%) \rightarrow B.E. or B.Tech (60% aggregate or equivalent in case of CGPA)
- 10^{th} (60%) \rightarrow Diploma (60%) \rightarrow B.E. or B.Tech (60% aggregate or equivalent in case of CGPA)
- 10th (60%) → 12th (60%) → Diploma (60%) → B.E or B.Tech. (60% aggregate or equivalent in case of CGPA) In this case you are requested to enter your 12th Marks in the registration form
- No Year gap during the graduation
- No Active backlog
- Students should have completed their graduation in 2020

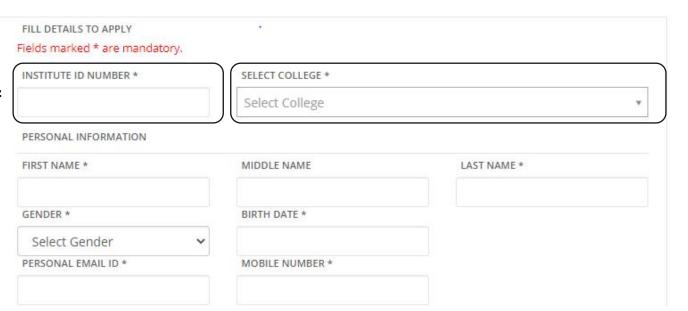
Registration Process in Talent Ojo

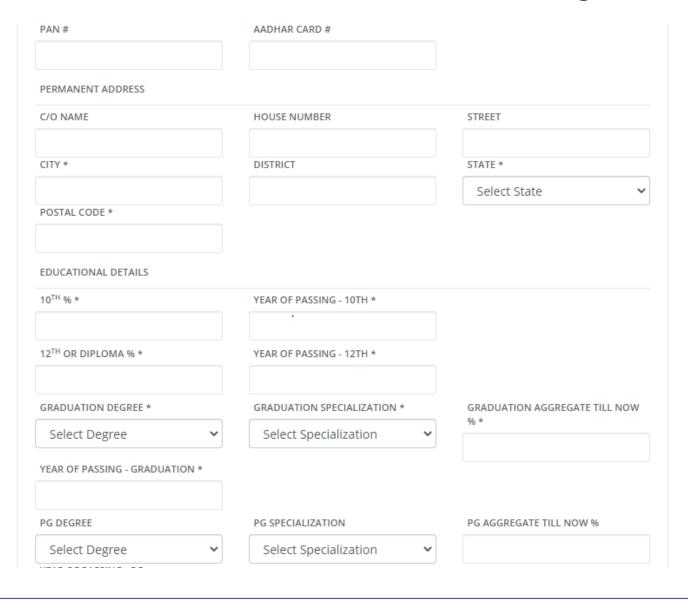
- Please click on the below link to register for the drive https://talentojo-kel.kpit.com/tojo/app/job-apply/#/Campus/37084/77
- Request you to kindly login to TalentOjo Portal by using below login credential:
 - <u>User ID</u>: personal email-id
 - <u>Password</u>: Create a new password using the following process.
 - You can reset it by clicking on 'forgot password' link.
 - Then follow the instructions to create a new password.



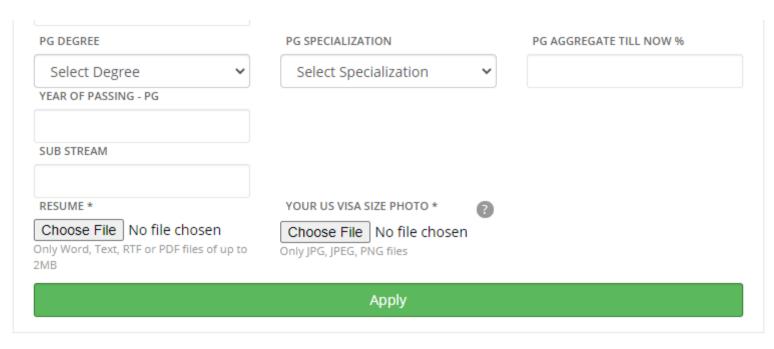
Please review the information carefully before submitting.

University / College Registration Number of the student









For any queries or assistance, please write to us at campus@kpit.com.



Test structure

Day 1: 19 June 2021

(2.5 hours in total for both sections)

8:45 AM to 11:30 AM – you are allowed to log into the test from 8:45 AM to 9:30 AM only



Day 1: Section A

- Aptitude
- **Engineering Mathematics**
- Professional skills and Knowledge of English Language
- Basics of C Language
- Algorithmic thinking



Day 1: Section B Questions specific to your degree of BE/B.Tech

(Attempt any one section)

- Circuit Branches
- 2. Computer/IT Engineering

Day 2: 20 June 2021 (3 hours)

08:45 AM to 12:00 PM

 you are allowed to log into the test from 8:45 AM to 9:30 AM only

Day 3: 22 June 2021 (1 hour)

Behavioral Assessment Please keep 09:00 AM to 11:00 AM free. No preparation is required by the candidates.

Shortlisted candidates

<u>Day 2</u>: Coding round

<u>Track 1</u>:Programming in C and Embedded C

<u>Track 2</u>: Programming in C++

<u>Track 3</u>: MATLAB, Simulink

and C Programming

<u>Track 4</u>: Machine Learning /

Deep Learning Track 5: Java

Shortlisted

candidates



Offer letter to the selected candidates will be issued on or before 8th July 2021



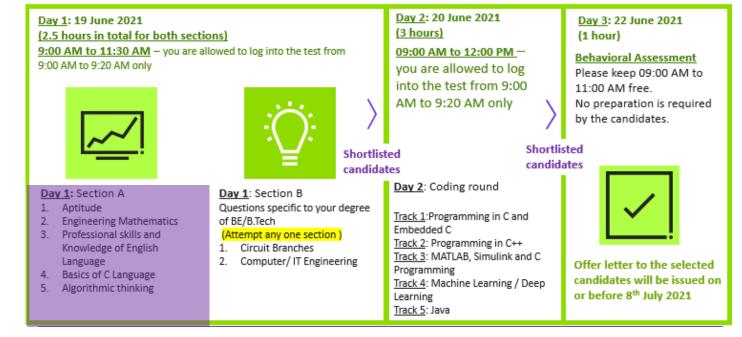


Day 1: Section A

What should you expect in this section?

This is <u>common</u> for all the participants

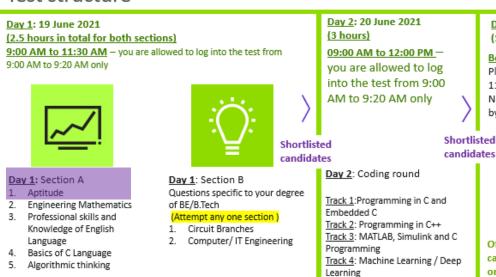
- 1. Aptitude
- 2. Engineering Mathematics
- 3. Professional Skills and Knowledge of English Language
- 4. Basics of C Language
- 5. Algorithmic Thinking



Example Problem on Aptitude

- 1. The percentage profit earned by selling an item for Rs. 1920 is equal to the percentage loss incurred by selling the same item for Rs. 1280. At what price should the item be sold to make 25% profit?
- A. Insufficient Data
- B. Rs. 3000
- C. Rs. 2000
- D. Rs. 2200
- 2. The average age of a class of 22 students is 21 years. The average increased by 1 when the teacher's age also included. What is the age of the teacher?
- A. 48
- B. 45
- C. 43
- D. 44

Test structure



Track 5: Java

Day 3: 22 June 2021

Behavioral Assessment

Please keep 09:00 AM to

No preparation is required

Offer letter to the selected

or before 8th July 2021

candidates will be issued on

(1 hour)

11:00 AM free.

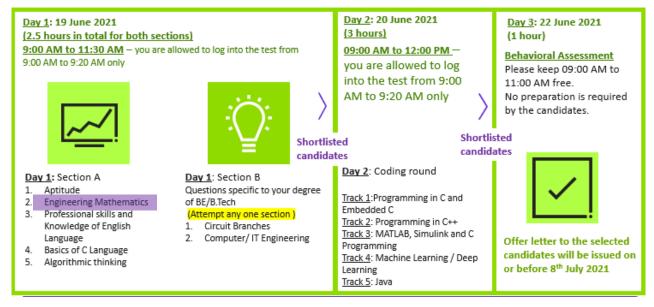
by the candidates.

Example Problem on Engineering Mathematics

1. The lowest eigen value of the matrix

 $\begin{bmatrix} 4 & 2 \\ 1 & 3 \end{bmatrix}$

- A. 5
- B. 2
- C. 1
- D. 4
- 2. Solve $\lim_{x \to \infty} \frac{1 \cos(x)}{x^2}$
- A. 0.25
- B. 0.5
- C. 1
- D. 2



Example Problem on Professional Skills and Knowledge of English Lang test structure

1. Select the option in which both the columns are exactly same:

A. KPIT Technology Ltd KPIT

Technologies Ltd

B. Larsen and Tuobro Ltd Larsen and

Toubro Ltd

C. Tata Consultancy Service Tata Consultancy

Services

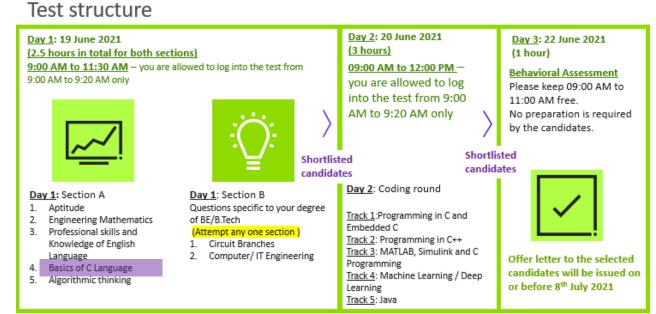
D. Google Inc. Ltd. Google Inc. Ltd.

Day 2: 20 June 2021 Day 1: 19 June 2021 Day 3: 22 June 2021 (3 hours) (2.5 hours in total for both sections) (1 hour) 9:00 AM to 11:30 AM - you are allowed to log into the test from 09:00 AM to 12:00 PM -Behavioral Assessment 9:00 AM to 9:20 AM only you are allowed to log Please keep 09:00 AM to into the test from 9:00 11:00 AM free. AM to 9:20 AM only No preparation is required by the candidates. Shortlisted Shortlisted candidates candidates Day 2: Coding round Day 1: Section A Day 1: Section B Aptitude Questions specific to your degree Track 1:Programming in C and Engineering Mathematics of BE/B.Tech Embedded C Professional skills and (Attempt any one section) Track 2: Programming in C++ Knowledge of English Circuit Branches Track 3: MATLAB, Simulink and C 2. Computer/IT Engineering Language Offer letter to the selected Programming Basics of C Language candidates will be issued on Track 4: Machine Learning / Deep Algorithmic thinking or before 8th July 2021 Learning Track 5: Java

- 2. I ___ watching TV when Paul and Simon arrived.
- A. were
- B. is
- C. was
- D. aKPI

Example Problem on Basics of C Language

- In statement "char *const q = "KPIT";" q is a:
- A. pointer to constant
- B. constant pointer
- C. const pointer to constant
- 2. A structure can be nested inside another structure. This statement is:
- A. True
- B. False



Example Problem on Algorithmic Thinking

For the following problem, what are the correct steps to obtain the right solution?

Find the dimensions of a rectangle with perimeter 1000 meters so that the area of the rectangle is a maximum.

- Find the derivative of the equation: A(x) = 500 x 100 xYou will get max(A) at $\frac{dA}{dx} = 0$. and solve the equation
- Find the double derivative of the equation: $A(x) = 500 x x^2$ В.
- Find the relation between x and y i.e., 1000 = 2x + 2y. Hence, y = 500 - x
- Find the equation for area. A(x) = xy = x(500 x) = xy = x(500 x) $500x - x^2$
- Apply constrains $0 \le x \le 500$
- a) C, D, A
- b) A, B, C, D
- c) E, B, D
- d) E, A, B, C, D

Test structure



Day 1: Section B

Circuit Branches

of BE/B.Tech

Questions specific to your degree

(Attempt any one section)

2. Computer/ IT Engineering

Day 1: Section A

- Aptitude
- Engineering Mathematics
- Professional skills and Knowledge of English Language
- 4. Basics of C Language
- Algorithmic thinking

Day 2: 20 June 2021 (3 hours)

09:00 AM to 12:00 PM you are allowed to log into the test from 9:00 AM to 9:20 AM only

(1 hour)

11:00 AM free. No preparation is required by the candidates.

Day 3: 22 June 2021

Behavioral Assessment

Please keep 09:00 AM to

Shortlisted candidates

Day 2: Coding round

candidates

Track 1:Programming in C and Embedded C

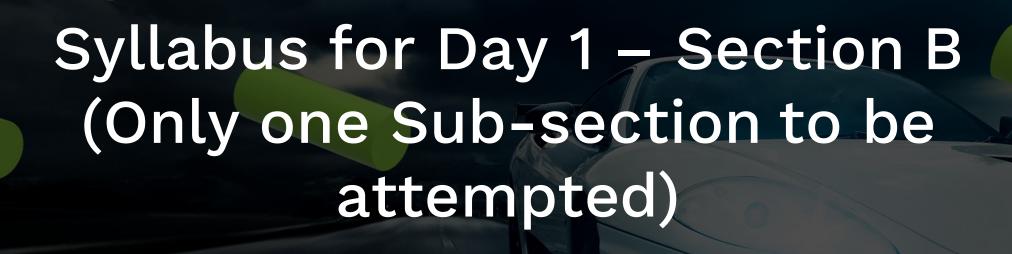
Track 2: Programming in C++ Track 3: MATLAB, Simulink and C Programming

Track 4: Machine Learning / Deep Learning

Track 5: Java



Offer letter to the selected candidates will be issued on or before 8th July 2021



Circuit Branches:

Day 1: Section B

You should expect Multiple Choice Questions on these topics / subjects. (Electronics and Communication / Electrical and Electronics / Electronics and Telecommunication / Instrumentation)

CONTROL SYSTEMS
SIGNAL PROCESSING





DIGITAL ELECTRONICS

ANALOG ELECTRONICS CIRCUIT THEORY





COMPUTER ORGANIZATION

Example Problem for Circuit Branches

1. Which of the following transfer function will have the greatest maximum overshoot?

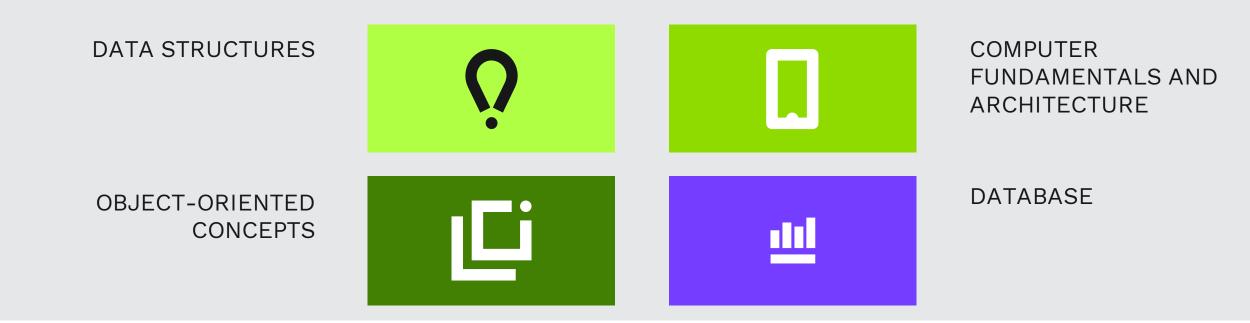
- A. 9/(s2+2s+9)
- B. 16/(s2+2s+16)
- C. 25/(s2+2s+25)
- D. 36/(s2+2s+36)
- 2. Simplify Y = AB' + (A' + B)C.
- A. AB'+C
- B. AB + AC
- C. A'B + AC'
- D. AB + A



Day 1: Section B

Computer Science / IT Engineering

You should expect Multiple Choice Questions on these topics / subjects.

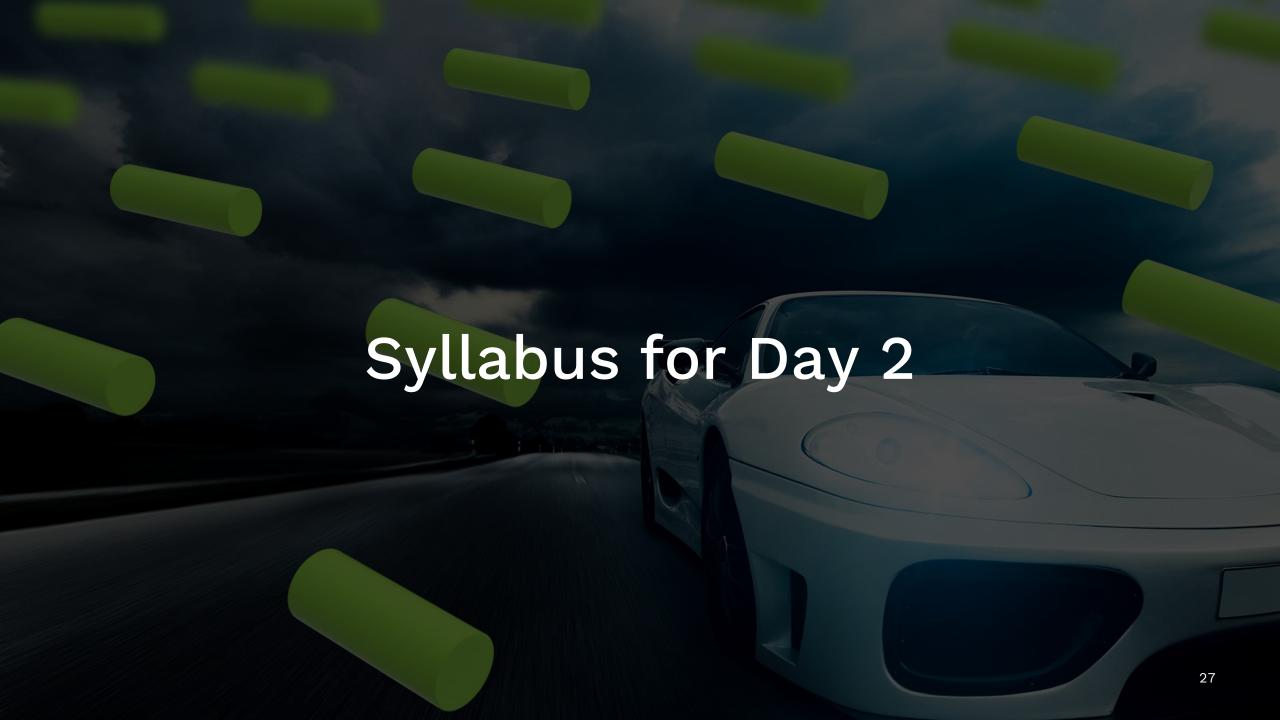


Example Problem for CS/ IT Engineering

1. Which of the following recursive formula can be used to find the factorial of a number?

- A. fact(n) = n * fact(n)
- B. fact(n) = n * fact(n+1)
- C. fact(n) = n * fact(n-1)
- D. fact(n) = n * fact(1)
- 2. Which among the following best defines abstraction?
- A. Hiding the implementation
- B. Showing the important data
- C. Hiding the important data
- D. Hiding the implementation and showing only the features

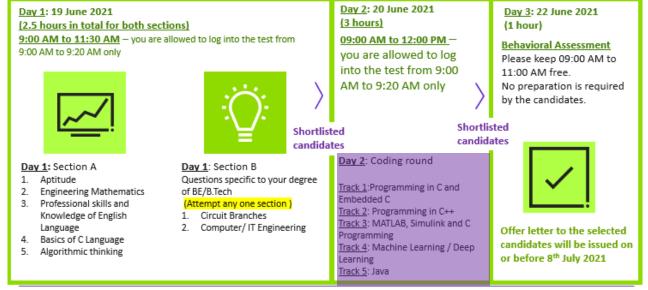




Day 2 - Track 1: Programming in C and Embedded C

You should expect the following sections

- Section 1: MCQ of C: 25 questions (approx. 35 min)
- <u>Section 2</u>: Five code snippets in Embedded Software Development (approx. 35 min)
- <u>Section 3</u>: MCQ of Embedded C: 25 questions (approx. 35 min)
- <u>Section 4</u>: Two Coding assignments in C (approx. 75 min)



Example Problem in Track 1

Identify the speed-optimized code out of the below code snippets.

Code snippet #1:

```
#include <stdio.h>
int main(void)
int data[1000];
int x = 1, y = 5, c = 25, d = 7;
for (int i = 0; i < 1000; ++i) {
data[i] = (((c \% d) * x / y) \% d) * i;
return 0;
```

Code snippet #2:

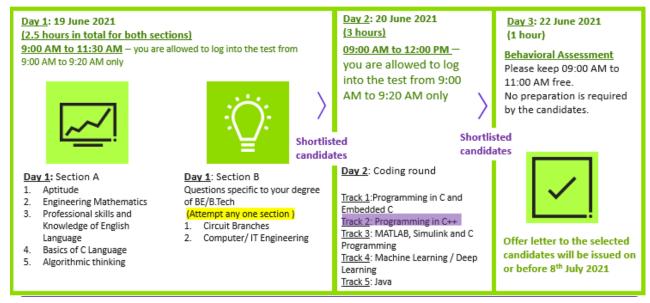
```
#include <stdio.h>
int main(void)
int data[1000];
int x = 1, y = 5, c = 25, d = 7;
int value = (((c % d) * x / y) % d);
for (int i = 0; i < 1000; ++i) {
data[i] = value * i;
return 0;
```

- A. Code snippet #1 and code snippet 2 both leads to speed optimized code
- B. Code snippet #1 leads to speed optimized code
- C. Code snippet #2 leads to speed optimized code
- D. Code snippet #1 and code snippet #2 will have same execution times in similar environment

Day 2 - Track 2: Programming in C++

You should expect the following sections

- <u>Section 1</u>: MCQ of C++ and OOPS Concepts: 60 questions (75 min)
- <u>Section 2</u>: One Coding challenge in C++ (75 min)



Example Problem in Track 2

Predict the output of given code snippet?

```
Code Snippet question for CPP:
#include <iostream>
using namespace std;
int i;
class A
public:
~A()
i=10;
```

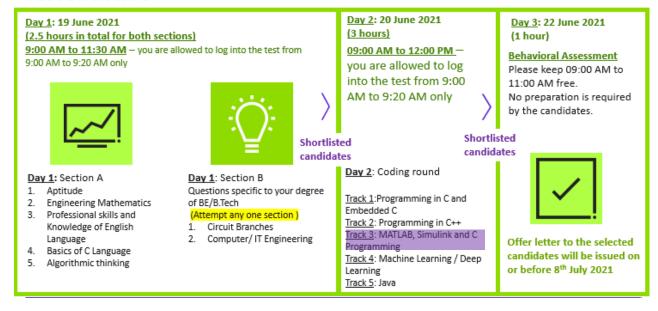
```
int foo()
i=3;
A ob;
return i;
int main()
cout << foo() << endl;</pre>
return 0;
```

- A. 0
- B. 3
- C. 10
- D. None of the above

Day 2 - Track 3: MATLAB, Simulink and C Programming

You should expect the following sections

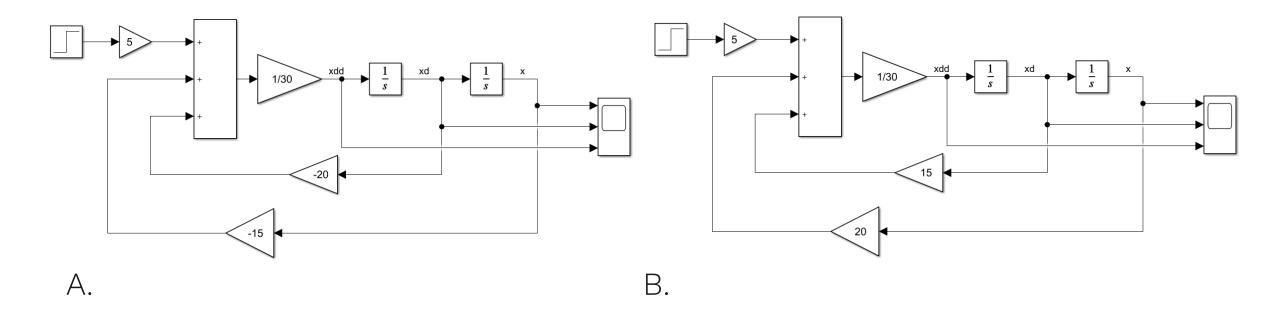
- <u>Section 1</u>: MCQ of C: 15 questions (15 min)
- <u>Section 2</u>: Four code snippets in C (20 min)
- <u>Section 3</u>: MCQ on MATLAB (MATLAB Programming and Signal Processing): 10 questions (20 min)
- <u>Section 4</u>: Five code snippets in MATLAB (25 min)
- <u>Section 5</u>: MCQ on Simulink (Math Modelling, Control System, Stateflow and Physical Modelling with Simscape): 10 questions (45 min)
- <u>Section 6</u>: Two Coding assignments in C (approx. 55 min)



Example Problem in Track 3

What is the correct model representation in the given options for the following equation?

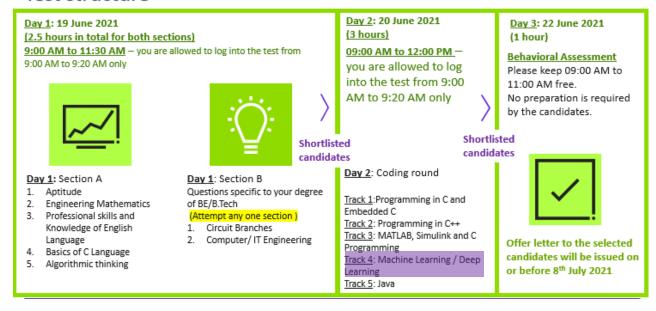
$$30\frac{d^2}{dt^2}x + 20\frac{d}{dt}x + 15x = 5 * u(t)$$



Day 2 - Track 4: ML / DL and C Programming

You should expect the following sections

- <u>Section 1</u>: MCQ of C: 15 questions (25 min)
- <u>Section 2</u>: Two Coding assignments in C (approx. 55 min)
- <u>Section 3</u>: MCQ of Machine Learning and Deep Learning: 25 Questions (100 Mins)



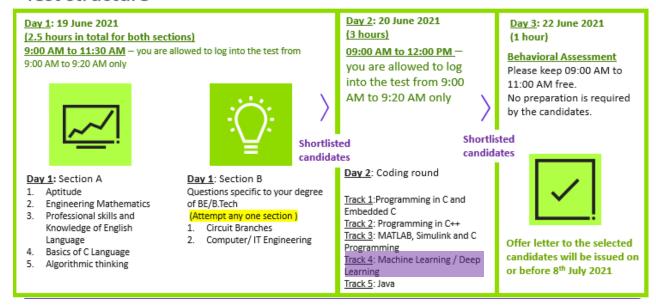
Day 2 - Track 4: Example Problem

Which of the following is/are Limitations of deep learning?

- A. Data labeling
- B. Obtain huge training datasets
- C. Both A and B
- D. None of the above

CNN is mostly used when there is an?

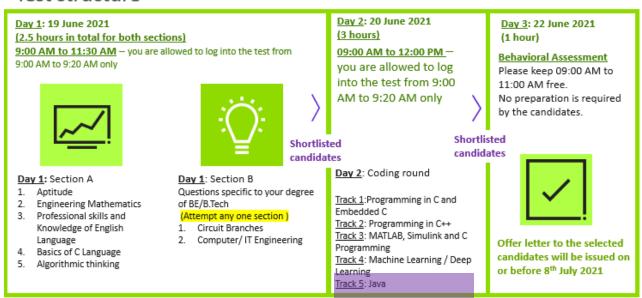
- A. structured data
- B. unstructured data
- C. Both A and B
- D. None of the above



Day 2 - Track 5: Java

You should expect the following sections

 <u>Section 1</u>: MCQ of Java and OOPS: 70 questions (180 min)



Day 2 - Track 5: Example Problem

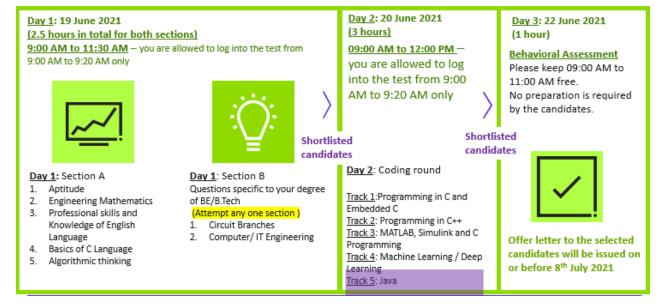
Which of the following is/are Limitations of deep learning?

- A. Data labeling
- B. Obtain huge training datasets
- C. Both A and B
- D. None of the above

CNN is mostly used when there is an?

- A. structured data
- B. unstructured data
- C. Both A and B
- D. None of the above

Test structure



Resources to revise MATLAB® and Simulink® Skills

- 1. Please visit https://matlabacademy.mathworks.com/
- 2. Here you will find following Onramp courses



^{*} Picture taken from https://matlabacademy.mathworks.com/

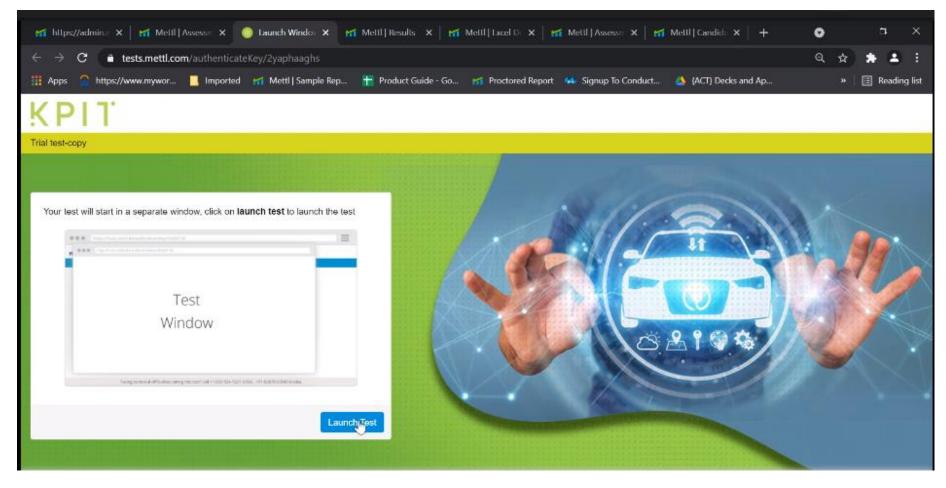


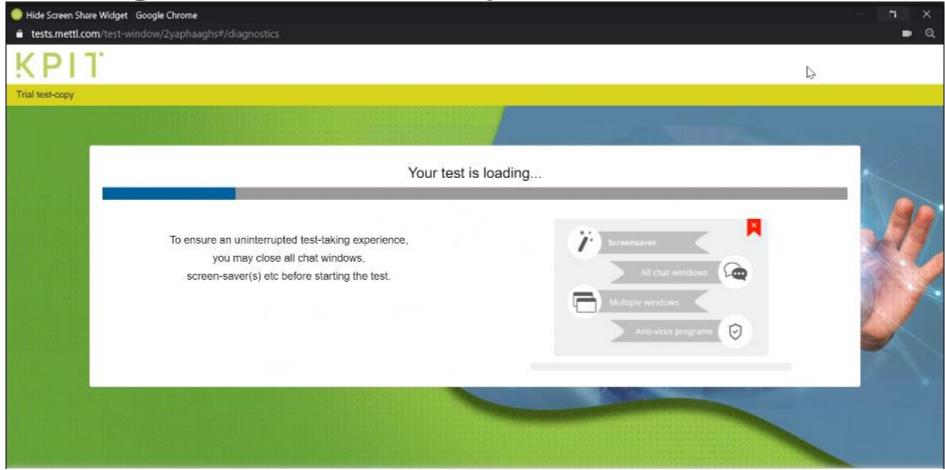
How Should You Arrange Your Test Environment?

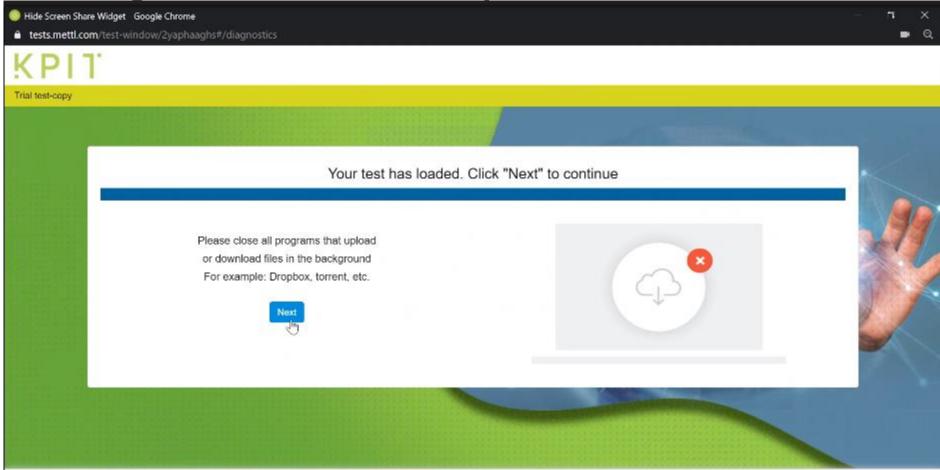
- Please ensure that your monitor / laptop is close to a wall and no one can stand behind the monitor.
- You will be asked to show the room <u>anytime during the test</u>. Hence ...
 - Ensure that no one else is in your room during the test.
 - You should not have any digital device or textbook around you when the test is being conducted.
 - You should not keep a mobile-phone or any video-casting device around you.
- Please have a high-resolution camera mounted on the monitor. **Do not change its position**.
- Please do keep some rough-paper, pen and calculator with you, because many questions would require calculations.
- No water-breaks / toilet-breaks are allowed. Please, do keep some water and snacks handy.
- The test-platform shall automatically log you out if ...
 - Your complete face is not visible throughout the test.
 - Please ensure that you are facing a light-source, so that your face is clearly visible. Also, there should not be any light-source behind you.
 - Someone else is talking in the room or there is some noise in the room.
 - You are wearing tinted glasses or sun-glasses.
 - You are browsing any web-site.
 - You connect any additional monitor over VGA, HDMI or Bluetooth / Wi-Fi.

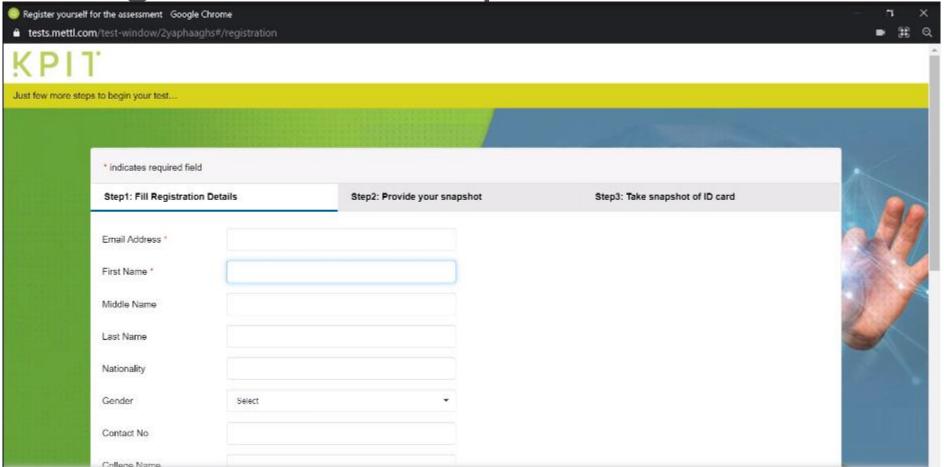


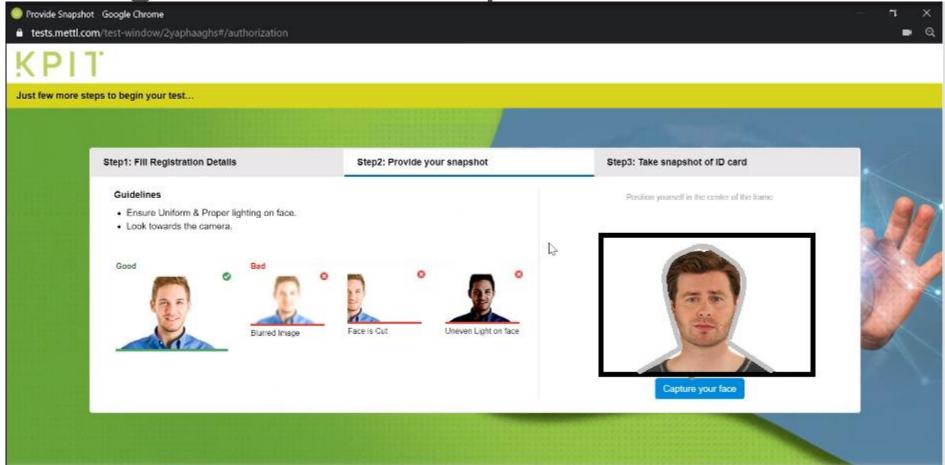


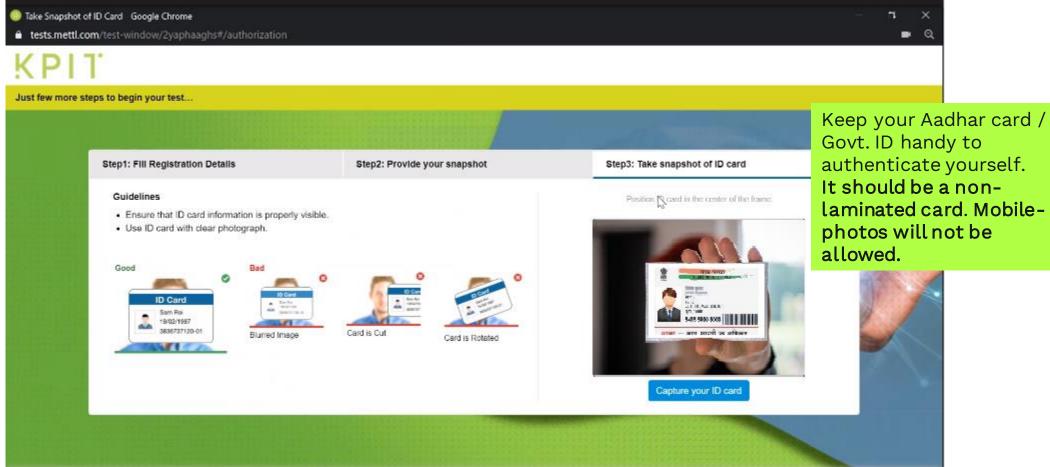




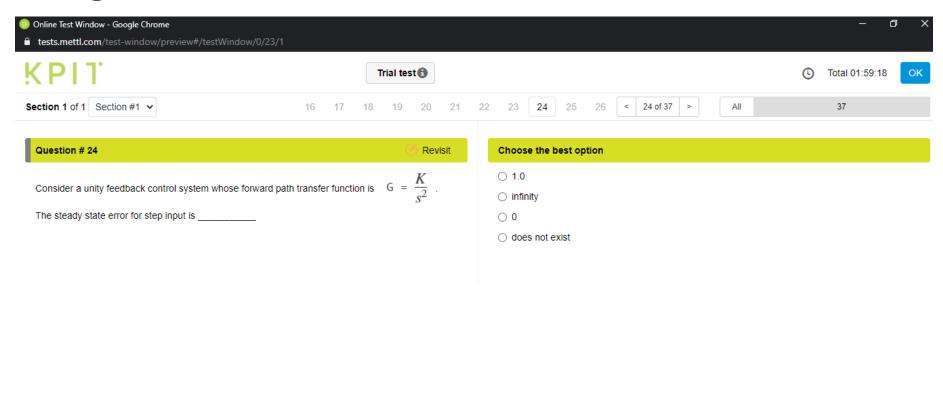








Your MCQ test environment will look like this



Key Takeaways

You should remember following things before you appear for this test.



Reliable and highspeed internet connection.

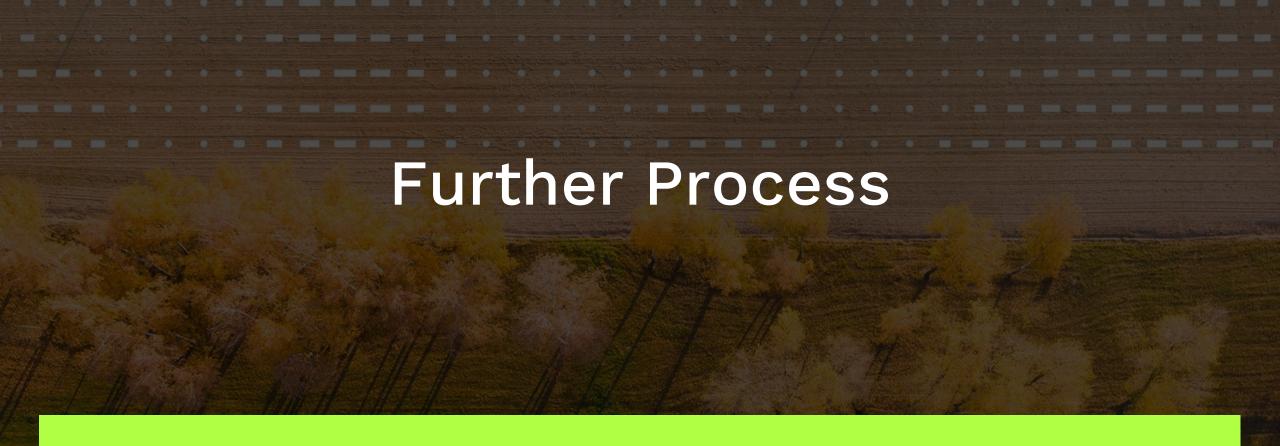


A High-Resolution camera so we can proctor your test.



Dedicated time for the test duration and for the initial registration process.







After Day 1 test, we will share the list of shortlisted candidates for Day 2. Similarly, after Day 2, we shall share the list of shortlisted candidates for Day 3. Final selected candidates shall be intimated on or before 8th July 2021

Contact Details for this Process

Campus Team, KPIT

campus@kpit.com

Please do not communicate with anyone else.

KPIT does not charge any money from anyone for the Recruitment Process.

Beware of Fraudsters !!!

In case of fraud, KPIT Legal / Campus Team will be unable to help you in any manner.







Thank You