

Unit 3 - Week 01

Course outline

How does an NPTEL online course work?

Week 00

Week 01

Lecture 1, Introduction to CIM (part 1 of 2), Dr. Janakarajan Ramkumar

Lecture 2, Introduction to CIM (part 2 of 2), Dr. Janakarajan Ramkumar

Lecture 3, Computers and Manufacturing Systems (part 1 of 3), Dr. Janakarajan Ramkumar

Lecture 4, Computers and Manufacturing Systems (part 2 of 3), Dr. Janakarajan Ramkumar

Lecture 5, Computers and Manufacturing Systems (part 3 of 3), Dr. Janakarajan Ramkumar

Quiz : Assignment 01

Computer Integrated Manufacturing: Week 1 Feedback

Solution: Assignment 01

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Assignment 01

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-02-12, 23:59 IST.

1) Productivity is the ratio of minimum output produced with the maximum Input.

1 point

- ☐ True
- ☐ False

No, the answer is incorrect.

Score: 0

Accepted Answers:
False

2) Material handling system handles the system by providing right quantity at right time and at right location.

1 point

- ☐ True
- ☐ False

No, the answer is incorrect.

Score: 0

Accepted Answers:
True

3) Three type of CIM integration are _____, Application & Business.

1 point

- ☐ Environmental
- ☐ Physical
- ☐ Chemical
- ☐ Mechanical

No, the answer is incorrect.

Score: 0

Accepted Answers:
Physical

4) What area(s) are covered in Manufacturing Planning and Control?

1 point

- ☐ Materials
- ☐ Scheduling
- ☐ Quality Planning
- ☐ All of these

No, the answer is incorrect.

Score: 0

Accepted Answers:
All of these

5) Manufacturing support system in Production system includes Product design, Manufacturing Control, Manufacturing planning & _____.

1 point

- ☐ Customer support
- ☐ Business function
- ☐ Forecasting
- ☐ None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:
Business function

6) Manufacturing system is a _____ of equipment & workers in factory.

1 point

- ☐ random arrangement
- ☐ sequence grouping
- ☐ logical grouping
- ☐ description

No, the answer is incorrect.

Score: 0

Accepted Answers:
logical grouping

7) Driver running a bus, operator use a drill machine to hole, washerman using a washing machine to wash the clothes are the example of:

1 point

- ☐ Manual work system
- ☐ Worker-machine system
- ☐ Automated system
- ☐ All of these

No, the answer is incorrect.

Score: 0

Accepted Answers:
Worker-machine system

8) Which automation is suited for high production quantities:

1 point

- ☐ Fixed Automation
- ☐ Programmable Automation
- ☐ Flexible Automation
- ☐ None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:
Fixed Automation

9) The computerized technology that is used to draft/design parts is known as:

1 point

- ☐ CAD
- ☐ CIM
- ☐ CAM
- ☐ All of these

No, the answer is incorrect.

Score: 0

Accepted Answers:
CAD

10) Which manufacturing system is best suited for batch production?

1 point

- ☐ Fixed Automation
- ☐ Flexible Automation
- ☐ Programmable Automation
- ☐ Any of these

No, the answer is incorrect.

Score: 0

Accepted Answers:
Programmable Automation

Unit 6 - Week 04

Course outline

How does an NPTEL online course work?

Week 00

Week 01

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Week 04

☒ Lecture 16, CNC Machining (part 1 of 2), Dr. Janakarajan Ramkumar

☐ Lecture 17, CNC Machining (part 2 of 2), Dr. Janakarajan Ramkumar

☐ Lecture 18, CNC Tooling, Dr. Janakarajan Ramkumar

☐ Quiz : Assignment 04

☐ Computer Integrated Manufacturing :Week 04 Feedback

☐ Solution: Assignment 04

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Assignment 04

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-02-26, 23:59 IST.

1) In CNC turning, the tool_____ and the workpiece _____.

1 point

- ☐ rotates, translates
- ☐ translates, rotates
- ☐ rotates, rotates
- ☐ translates, translates

No, the answer is incorrect.

Score: 0

Accepted Answers:
translates, rotates

2) In CNC milling, the tool_____ and the workpiece _____.

1 point

- ☐ rotates, rests
- ☐ rests, rotates
- ☐ rotates, also rotates
- ☐ translates, translates or rotates

No, the answer is incorrect.

Score: 0

Accepted Answers:
rotates, rests

3) The type of milling machine used for the operation primarily depends on the tolerance and weight of the workpiece.

1 point

- ☐ True
- ☐ False

No, the answer is incorrect.

Score: 0

Accepted Answers:
True

4) Arrange the tool material in the ascending order of toughness:

1 point

- ☐ HSS < Cemented Carbide < Coated Carbides < Ceramics
- ☐ Coated Carbides< Cemented carbides< Ceramics < HSS
- ☐ Cemented carbides < Coated Carbides < HSS < Ceramics
- ☐ Ceramics < Coated Carbides < Cemented Carbide < HSS

No, the answer is incorrect.

Score: 0

Accepted Answers:
Ceramics < Coated Carbides < Cemented Carbide < HSS

5) Automatic pallet changer is _____ holding device.

1 point

- ☐ tool
- ☐ workpiece
- ☐ machine
- ☐ All of these

No, the answer is incorrect.

Score: 0

Accepted Answers:
workpiece

6) In the ISO signature of tungsten carbide inserts “S B M G 22 04 12”, what does S and M signifies?

1 point

- ☐ Insert type & insert shape
- ☐ Insert type & tolerance
- ☐ Insert shape & tolerance
- ☐ Tolerance & insert type

No, the answer is incorrect.

Score: 0

Accepted Answers:
Insert shape & tolerance

7) During the machining process, the retention knob in the top of the tool assembly is used for clamping and releasing purpose.

1 point

- ☐ True
- ☐ False

No, the answer is incorrect.

Score: 0

Accepted Answers:
True

8) A rotary encoder is connected directly to the spindle of a machine tool to measure its rotational speed. The encoder generates 60 pulses for each revolution of the spindle. In one reading, the encoder generated 240 pulses in a period of 0.50 sec. What is the rotational speed of the spindle?

1 point

- ☐ 360 rev/min
- ☐ 400 rev/min
- ☐ 8 rev/min
- ☐ 480 rev/min

No, the answer is incorrect.

Score: 0

Accepted Answers:
480 rev/min

9) The step angle of a stepper motor = 1.2 degrees. The motor shaft is to rotate through 20 complete revolutions at an angular velocity of 15 rad/sec. Determine the required number of pulses.

1 point

- ☐ 7000 pulses
- ☐ 6000 pulses
- ☐ 5000 pulses
- ☐ 3600 pulses

No, the answer is incorrect.

Score: 0

Accepted Answers:
6000 pulses

10) What does 11101 mean in binary?

1 point

- ☐ 24
- ☐ 25
- ☐ 28
- ☐ 29

No, the answer is incorrect.

Score: 0

Accepted Answers:
29

Unit 8 - Week 06

Course outline

How does an NPTEL online course work?

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● Lecture 23, Laboratory Demonstration, Computer Aided Design (part 1 of 2), Dr. Amandeep Singh

● Lecture 24, Laboratory Demonstration, Computer Aided Design (part 2 of 2), Dr. Amandeep Singh

○ Lecture 25, CAM softwares, Dr. Amandeep Singh

● Lecture 26, Laboratory Demonstration, Computer Aided Manufacturing (part 1 of 2), Dr. Amandeep Singh

● Lecture 27, Laboratory Demonstration, Computer Aided Manufacturing (part 2 of 2), Dr. Amandeep Singh

○ Quiz : Assignment 06

○ Computer Integrated Manufacturing :Week 06 Feedback

○ Solution: Assignment 06

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Assignment 06

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-03-11, 23:59 IST.

1) In the SolidWorks 2018, _____ is enabled when a sketch such as circle or rectangle is selected from the tab.

1 point

- ☐ Feature Manager
- ☐ Property Manager
- ☐ Configuration Manager
- ☐ None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:
Property Manager

2) Linear-sweep sweeps a cross section along a straight line.

1 point

- ☐ True
- ☐ False

No, the answer is incorrect.

Score: 0

Accepted Answers:
True

3) In surface modelling, the changes are easy to implement because they are not parametric.

1 point

- ☐ True
- ☐ False

No, the answer is incorrect.

Score: 0

Accepted Answers:
False

4) Fillet in SolidWorks provide 'curved' smoothness to the edges.

1 point

- ☐ True
- ☐ False

No, the answer is incorrect.

Score: 0

Accepted Answers:
True

5) Which of the following code is used for 'Coolant ON'?

1 point

- ☐ G40
- ☐ G42
- ☐ M08
- ☐ M09

No, the answer is incorrect.

Score: 0

Accepted Answers:
M08

6) _____ hole is used to provide the space for the screw head.

1 point

- ☐ Blind
- ☐ Through
- ☐ Counterbore
- ☐ None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:
Counterbore

7) _____ software is a system of systems that includes ERP module

1 point

- ☐ MasterCAM
- ☐ PowerMill
- ☐ Solidworks CAM
- ☐ Siemens PLM

No, the answer is incorrect.

Score: 0

Accepted Answers:
Siemens PLM

8) In _____ Lead-in method, the tool moves in both x and z directions.

1 point

- ☐ Plunge
- ☐ Ramp
- ☐ Drill
- ☐ All of these

No, the answer is incorrect.

Score: 0

Accepted Answers:
Ramp

9) _____ are used in CNC machines with pneumatic controls to switch ON/OFF the air flow.

1 point

- ☐ Solenoid valves
- ☐ LVDT
- ☐ Hydraulic valves
- ☐ Hydraulic motors

No, the answer is incorrect.

Score: 0

Accepted Answers:
Solenoid valves

10) Minimum feed rate is given for _____ portion of the CNC code generation.

1 point

- ☐ plunging
- ☐ rapid
- ☐ cutting
- ☐ All of these

No, the answer is incorrect.

Score: 0

Accepted Answers:
plunging

Unit 9 - Week 07

Course outline

How does an NPTEL online course work?

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●

Lecture 28, Group Technology, Dr. Janakarajan Ramkumar

○

Lecture 29, Computer Aided Process Planning (part 1 of 2), Dr. Janakarajan Ramkumar

○

Lecture 30, Computer Aided Process Planning (part 2 of 2), Dr. Janakarajan Ramkumar

○

Quiz : Assignment 07

○

Computer Integrated Manufacturing: Week 7 Feedback

○

Solution: Assignment 07

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Assignment 07

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-03-18, 23:59 IST.

1) Heat treatment and annealing of the processed parts are generally considered as_____ in process planning.

1 point

- ☐

primary or basic operations
- ☐

secondary operations
- ☐

property enhancing operations
- ☐

finishing operation

No, the answer is incorrect.
Score: 0

Accepted Answers:
property enhancing operations

2) In an analogy, 'Route sheet : Process Planner :: Engineering Drawing : Product Designer'.

1 point

- ☐

True
- ☐

False

No, the answer is incorrect.
Score: 0

Accepted Answers:
True

3) For assembly line production, process planning should essentially include:

1 point

- ☐

Therbligs
- ☐

Line balancing
- ☐

Micromotion study
- ☐

All of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
Line balancing

4) In a variant Computer Aided Process planning, the initial challenge is faced in developing the:

1 point

- ☐

variation in the existing process
- ☐

implementation in factory level
- ☐

material and worker handling
- ☐

group technology classification

No, the answer is incorrect.
Score: 0

Accepted Answers:
group technology classification

5) In the part family classification for employing group technology, the parts must be exactly similar with each other to group together in the same family.

1 point

- ☐

True
- ☐

False

No, the answer is incorrect.
Score: 0

Accepted Answers:
False

6) In a cellular layout based on group technology, each cell specializes in producing _____.

1 point

- ☐

multiple number of part families
- ☐

mass customized products
- ☐

one or limited number of part families
- ☐

All of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
one or limited number of part families

7) Classification and coding system in group technology are based upon:

1 point

- ☐

Part design attributes only
- ☐

Part manufacturing attributes only
- ☐

Both part design and manufacturing attributes
- ☐

Neither part design nor manufacturing attributes

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both part design and manufacturing attributes

8) Group Technology may not be suitable for a factory with a large variety of products.

1 point

- ☐

True
- ☐

False

No, the answer is incorrect.
Score: 0

Accepted Answers:
True

9) In Opitz code: 23451 2306, what does the first and the last number signify?

1 point

- ☐

Part class, Accuracy
- ☐

Part Class, Material
- ☐

Dimensions, Material
- ☐

Main shape, Accuracy

No, the answer is incorrect.
Score: 0

Accepted Answers:
Part class, Accuracy

10) In DCLASS Coding System, what does the first three digits signify?

1 point

- ☐

Size
- ☐

Material
- ☐

Precision
- ☐

Basic shape

No, the answer is incorrect.
Score: 0

Accepted Answers:
Basic shape

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<div><div></div><div>Lecture 33, Programmable Logic Controller, Dr. Janakarajan Ramkumar</div></div>
<div><div></div><div>Lecture 34, Automatic Identification and Data Capture, Dr. Amandeep Singh</div></div>
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Assignment 08

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-03-25, 23:59 IST.

- 1) What is the acronym of SCARA robot:

Sustainable Compliance Armor of Robotic Anatomy

Selective Compliance Arm for Robot Assembly

Selective Comfort Attribute of Robot Assembly

Selection Comfort Attribute of Robotic Anatomy

No, the answer is incorrect.
Score: 0
Accepted Answers:
Selective Compliance Arm for Robot Assembly

1 point
- 2) The general acronym used to denote 'revolving joint' in Robotics is:

R

T

V

H

No, the answer is incorrect.
Score: 0
Accepted Answers:
V

1 point
- 3) RFID can store lesser data and are economical than Bar codes.

True

False

No, the answer is incorrect.
Score: 0
Accepted Answers:
False

1 point
- 4) The three dimensional space within which the robot can manipulate the end of the wrist is:

3D space

Work envelope

Working system

Degree of freedom

No, the answer is incorrect.
Score: 0
Accepted Answers:
Work envelope

1 point
- 5) In the PLC, the main function of _____ is to analyze data coming from the input modules, make decisions based on program and return back signal to the output modules.

i/o modules

micro processor

field sensors

field output devices

No, the answer is incorrect.
Score: 0
Accepted Answers:
micro processor

1 point
- 6) Solenoids, lamps, motors in PLC are primarily connected to:

Analog output

Digital output

Analog input

Digital input

No, the answer is incorrect.
Score: 0
Accepted Answers:
Digital output

1 point
- 7) Customized flexibility, scalability, modularity, convertibility, integrate ability, etc. are the features of:

Flexible Manufacturing System

Agile Manufacturing

Reconfigurable Manufacturing System

None of these

No, the answer is incorrect.
Score: 0
Accepted Answers:
Reconfigurable Manufacturing System

1 point
- 8) What best explains Flexible Manufacturing Systems (FMS)?

FMS moves materials between operations

FMS moves and manipulates products, parts or tolls

FMS completely manufactures a range of components without significant human intervention during the processing

FMS co-ordinates the whole process of manufacturing and manufactures a part, component or product

No, the answer is incorrect.
Score: 0
Accepted Answers:
FMS completely manufactures a range of components without significant human intervention during the processing

1 point
- 9) Active RFID tags:

Have their own battery power packs

Possess a larger memory capacity and longer communication range

Have higher cost and used for higher value items

All of these

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of these

1 point
- 10) Which of the following can be the output of PLC?

Relay coils

Solenoids

Indicators

Motors

Lamps

Alarms

Only 1), 2), 3) and 4)

Only 3), 4), 5) and 6)

Only 1), 2), 3) and 5)

All the 1), 2), 3), 4), 5), and 6)

No, the answer is incorrect.
Score: 0
Accepted Answers:
All the 1), 2), 3), 4), 5), and 6)

1 point

Unit 12 - Week 10

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How does an NPTEL online course work?

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☒ Lecture 38, Rapid Manufacturing (part 1 of 2), Dr. Janakarajan Ramkumar

☐ Lecture 39, Rapid Manufacturing (part 2 of 2), Dr. Janakarajan Ramkumar

☐ Lecture 40, Laboratory demonstration, Rapid Manufacturing (part 1 of 2), Dr. Amandeep Singh

☐ Lecture 41, Laboratory demonstration, Rapid Manufacturing (part 2 of 2), Dr. Amandeep Singh

☐ Lecture 42, Laboratory Demonstration, CAD using Fusion 360, an introduction, Dr. Amandeep Singh

☐ Lecture 43, Laboratory Demonstration, CAD using Fusion 360, Rendering and 3D printing, Dr. Amandeep Singh

☐ Quiz : Assignment 10

☐ Computer Integrated Manufacturing: Week 10 Feedback

☐ Solution: Assignment 10

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Assignment 10

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-04-08, 23:59 IST.

- 1) Reverse Engineering is a process of redesigning an existing product to improve and broaden its functions, add quality and to increase the useful life. **1 point**
- ☐ True
- ☐ False

No, the answer is incorrect.
Score: 0
Accepted Answers:
True

- 2) The rapid prototyping classification, based on the form of the starting raw material are Liquid-based, Powder-based, Solid-based and Gaseous Based. **1 point**
- ☐ True
- ☐ False

No, the answer is incorrect.
Score: 0
Accepted Answers:
False

- 3) In a Solid based Rapid Manufacturing process, the material is in the form of wire spools and Sheets. **1 point**
- ☐ True
- ☐ False

No, the answer is incorrect.
Score: 0
Accepted Answers:
True

- 4) In which manufacturing process, the use of tooling of the product is minimal? **1 point**
- ☐ Subtractive Manufacturing
- ☐ Rapid Manufacturing
- ☐ Hybrid Manufacturing
- ☐ All of these

No, the answer is incorrect.
Score: 0
Accepted Answers:
Rapid Manufacturing

- 5) Which manufacturing process is limited to large volume production with simple part design? **1 point**
- ☐ Smart Manufacturing
- ☐ Rapid Manufacturing
- ☐ Subtractive Manufacturing
- ☐ All of these

No, the answer is incorrect.
Score: 0
Accepted Answers:
Subtractive Manufacturing

- 6) In Rapid Manufacturing, STL file format stands for: **1 point**
- ☐ Standardized Tooling Library
- ☐ Standard Training Language
- ☐ Standardized Tessellation Library
- ☐ Standard Tessellation Language

No, the answer is incorrect.
Score: 0
Accepted Answers:
Standard Tessellation Language

- 7) Stereolithography is a rapid prototyping process, for fabricating a solid plastic parts out of a _____ liquid polymer using a directed ultraviolet _____ beam to solidify the polymer. **1 point**
- ☐ heat-sensitive, laser
- ☐ photo-sensitive, light
- ☐ photo-sensitive, laser
- ☐ heat-sensitive, light

No, the answer is incorrect.
Score: 0
Accepted Answers:
photo-sensitive, laser

- 8) Rapid Manufacturing techniques are _____ economical when more prototype needs to built for the _____ component. **1 point**
- ☐ highly, different
- ☐ highly, same
- ☐ not, different
- ☐ not, same

No, the answer is incorrect.
Score: 0
Accepted Answers:
not, same

- 9) The Rapid Manufacturing characteristic in question 8 leads us to a new dimension of “Design for Manufacturing” rather than the conventional “Manufacturing for Design” philosophy. **1 point**
- ☐ True
- ☐ False

No, the answer is incorrect.
Score: 0
Accepted Answers:
False

- 10) _____ is generally only one layer and on the outside and in contact with the print in 3D printing to allow for better adhesion to the printing surface. **1 point**
- ☐ Raft
- ☐ Brim
- ☐ Skirt
- ☐ None of these

No, the answer is incorrect.
Score: 0
Accepted Answers:
Brim

