

CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY
HEAD OFFICE : GUINDY, CHENNAI – 600 032.
ACADEMIC CELL
SECOND SEMESTER EXAMINATION – JULY 2024

Duration : 3 Hours
Course : PD-PMD with CAD/CAM
Subject : Plastics Mould Design – II

Max. Marks: 60
Date : 02.07.2024
Time : 10.00 a.m. to 01.00 p.m.

(DO NOT CHANGE SEQUENCE OF QUESTION NUMBER IN ANSWER SCRIPT)

PART – A

Answer **all** questions

12 x 1 = 12

- Which of these material is suitable for blow mould construction
(a) Aluminium alloy (b) Beryllium Copper alloy (c) Stainless Steel (d) All of these
- What is the part of hot runner mould, which conveys the molten material from manifold to cavity?
(a) Primary Nozzle (b) Secondary Nozzle (c) Manifold bush (d) Shut-off Valve
- Range of land length multiplied with pipe wall thickness considered In designing of pipe is _____
- _____ method is used for side core actuation.
(a) Finger cam actuation (b) Spring actuation (c) Hydraulic actuation (d) All of the above
- In _____ design, the moulding is unscrewed manually by machine operator.
- _____ gas is used in gas assisted injection moulding process.
- The core rod in injection blow moulding is to form the internal diameter of neck of the preform
- Say True or False
- A component, which has a local undercut portion, can be successfully moulded in the conventional mould by incorporating the undercut form on a pin – Say True or False
- 'P' stands for Plastics in P-20 designated steel – Say True or False
- Expand BUR
- Expand UHMWPE
- Expand ISO

PART – B

Answer **all** questions (Max. 40 words)

4 x 2 = 8

- How Outsert moulding differs from Insert moulding in injection moulding method?
- Give the empirical formula to calculate the finger cam length (L) in split cavity type Injection mould design
- What are the types of impression lay out available in unscrewing Injection mould design?
- What are the Geometrical shapes of the Manifold Blocks most widely used in industries?

PART – C

Answer any **six** questions (Max. 100 words)

6 x 4 = 24

- What are the Spilt Mould Actuation Methods used in Injection moulds for moulding external undercut product?
- Explain Loose threaded core design, with a neat sketch, used in Injection moulds for internal threaded component
- Draw a neat sketch with nomenclature of a Divergent Die Head used in Extrusion Blow moulding & explain its working principle
- Enlist the function of Breaker plate used in Extruders
- Explain Gas Assisted Injection Moulding process with simple sketch of process steps
- Show the approach section and Land section in cross sectional view of a solid Extrusion die
- Discuss on various types of Mould Materials used for Thermoforming Mould and their advantages and disadvantages

PART – D

Answer any **two** questions (Max. 300 words)

2 x 8 = 16

1. Draw a neat diagram indicating Cam Track actuated split cavity in an Injection mould and explain the formula used to calculate the movement (M) of each split
2. Explain the following
 - a) Manifold & Drop in an Hot runner system
 - b) Collapsible core system
 - c) Pinch-off section in the Blow mould
 - d) Die swell
3. With a neat sketch explain the following
 - a) Plug Assisted type Thermoforming
 - b) Matched Die type Thermoforming

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ACADEMIC CELL
SECOND SEMESTER EXAMINATION – JULY 2024

Duration : 3 Hours
Course : PD-PMD with CAD/CAM
Subject : Mould Manufacturing Technology

Max. Marks: 60
Date : 03.07.2024
Time : 10.00 a.m. to 01.00 p.m.

(DO NOT CHANGE SEQUENCE OF QUESTION NUMBER IN ANSWER SCRIPT)

PART – A

Answer **all** questions

12 x 1 = 12

1. Brass is an alloy of _____.
(a) Copper and Tin (b) Copper and Zinc (c) Iron and Carbon (d) Copper, Tin and Zinc
2. Surface roughness number (Ra) is expressed in _____.
(a) mm (b) cm (c) m (d) μm
3. _____ is the operation to create internal thread in a smaller diameter hole.
(a) Drilling (b) Boring (c) Reaming (d) Tapping
4. The M Code for Tool change command in CNC milling program is _____.
5. In EDM machine _____ and _____ piece must be electrical conductive.
6. Rough machining of Guide pillar and guide bush is done in _____ machine.
7. The mould surface finish is categorised into four types: Glossy finish, Semi glossy finish, matt finish and Texture finish. Say True or False
8. Cylindrical grinding operation done on guide pillar and guide bush before hardening. Say True or False.
9. Nitriding is a surface treatment process .Say true or False.
10. MRR stands for _____.
11. MDI stands for _____.
12. Expand CMM.

PART – B

Answer **all** questions (Max. 40 words)

4 x 2 = 8

1. What is mould dry run in injection moulding?
2. Write down the process plan for Guide pillar and guide bush manufacturing.
3. Specify the materials suitable for blow mould manufacturing.
4. What is the function of U & V axis in CNC wire cut EDM Machine?

PART – C

Answer any **six** questions (Max. 100 words)

6 x 4 = 24

1. Write short notes on stainless steel material.
2. Explain how these operations helpful to manufacture a mould: Drilling, Boring, Reaming & Tapping?
3. Write down the application of CAM in CNC machining.
4. Write down the application of CNC milling machine in mould manufacturing.
5. Write down the name of instruments used for angle measurements and explain any one instrument..
6. Explain jig boring machine with sketch.
7. Explain mould surface texturing.

PART – D

Answer any **two** questions (Max. 300 words)

2 x 8 = 16

1. Explain the CNC Wire cut EDM machine with sketch. Write down its application in mould manufacturing.
2. Write short notes on
(i) Electro deposition process (ii) Explain the steps involved in Injection Mould manufacturing.
3. Explain the mould assembly procedure.

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ACADEMIC CELL
SECOND SEMESTER EXAMINATION – JULY 2024

Duration : 3 Hours
Course : PD-PMD with CAD/CAM
Subject : Reverse Engineering & Rapid Prototyping

Max. Marks: 60
Date : 04.07.2024
Time : 10.00 a.m. to 01.00 p.m.

(DO NOT CHANGE SEQUENCE OF QUESTION NUMBER IN ANSWER SCRIPT)

PART – A

Answer **all** questions

12 x 1 = 12

1. In rapid tooling methods are used that allow injection molding and die-casting inserts to be built directly from
 - a) Three-dimensional CAD models
 - b) Two-dimensional CAD models
 - c) Die insert Method
 - d) All of these
2. The core of reverse engineering is an activity called
 - a) restructure code
 - b) directionality
 - c) extract abstractions
 - d) interactivity
3. Primitives are used to generate _____ modelling
 - a) wire frame
 - b) solid
 - c) B-spline
 - d) none
4. Wire Frame Modelling consists of _____, _____ & _____
5. Paper is used as RP material in LOM RP process. Say True or False
6. STL file format is used for importing 3D model files in SLA . Say True or False
7. CMM stands for Coordinate Measuring Machine Say True or False
8. Most rapid prototyping modelling systems build models by _____
9. SLS Stands for _____
10. IGES Stands for _____
11. CAD Stands for _____
12. _____ is a process of retrieving new geometry from a manufactured part by digitizing and modifying an existing CAD model.

PART – B

Answer **all** questions (Max. 40 words)

4 x 2 = 8

1. List out various geometric models
2. Define Rapid Prototyping?
3. What are the limitations of 3D-printing?
4. Define Reverse Engineering

PART – C

Answer any **six** questions (Max. 100 words)

6 x 4 = 24

1. List the Design benefits of Rapid Prototyping.
2. Write a short note on Geometric Data acquisition
3. Explain about Development of RP systems
4. Write a short note on Measuring Devices-contact type & non-contact type.
5. Write a short note on various materials used in Rapid Prototyping process.
6. Explain about Metal RP system process
7. What are the Limitations of Rapid Prototyping

PART – D

Answer any **two** questions (Max. 300 words)

2 x 8 = 16

1. Explain importance of Reverse Engineering in Product development
2. Explain Fused deposition Modelling with a neat sketch and advantages and applications
3. Explain Soft Tooling and Hard Tooling and its Applications

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SECOND SEMESTER EXAMINATION – JULY 2024

Duration : 3 Hours
Course : PD-PMD with CAD/CAM
Subject : Process Planning & Cost Estimation

Max. Marks: 60
Date : 05.07.2024
Time : 10.00 a.m. to 01.00 p.m.

(DO NOT CHANGE SEQUENCE OF QUESTION NUMBER IN ANSWER SCRIPT)

PART – A

Answer **all** questions

12 x 1 = 12

- _____ is responsible for the order of processing each activity under Production Planning and Control.
a) Loading b) Sequencing c) Routing d) Scheduling
- The process of Production Planning and Control starts with _____.
a) Expediting b) Scheduling c) Estimating d) Routing
- Basic tool in work study is
(a) graph paper (b) process chart (c) planning chart (d) stop watch
- Machine Hour Rate= _____/ Total no. of Hours for which machine runs
- The fixation of time and date for each operation is called. _____.
- Work measurement is also known as _____.
- The objectives of costing is to evaluate alternate design of product- Say True or False
- Labour costs represent the total expenditure incurred by employers for the employment of employees -Say True/false
- Motion Study and Time Study are same. Say true or false
- BOM stands for
- DFM stands for
- EOQ stands for

PART – B

Answer **all** questions (Max. 40 words)

4 x 2 = 8

- What is the purpose of process planning?
- What is the difference between Direct Material and Indirect Material
- What is direct expenses & In direct expenses.
- What is Depreciation?

PART – C

Answer any **six** questions (Max. 100 words)

6 x 4 = 24

- Explain Break even analysis with a sketch.
- What are the methods used for selection of machinery?
- Define Cost estimation & its objective?
- Explain the Factors influencing the choice of Machinery.
- Write the Mensuration formulas for estimating -Ellipse, Semi circle, and Rectangle.
- What do you mean by Routing& its procedure?
- Explain the use of computers in process planning and cost estimation

PART – D

Answer any **two** questions (Max. 300 words)

2 x 8 = 16

- Illustrate the objectives & importance of process planning
- List the factors involved in machine selection in detail?
- Explain Computer aided process planning with its merits and demerits ?
