



Shirpur Education Society's
R. C. PATEL INSTITUTE OF TECHNOLOGY, SHIRPUR

An Autonomous Institute

(Affiliated to Dr. Babasaheb Ambedkar Technological University, Lonere)

आर. सी. पटेल इन्स्टिट्यूट ऑफ टेक्नोलॉजी, शिरपूर
(स्वायत्त महाविद्यालय)



Programme: B.Tech in Mechanical Engineering **Year:** II/Semester III (**Exam Year:** 2024-2025)

Subject: Manufacturing Processes

Time: 09:00 am - 11:00 am (02:00 Hrs.)

Date: 20 Dec 2024

Max Marks: 60

END SEMESTER EXAMINATION ODD SEM-III(2024-2025) REGULAR

Instructions: 1. This question paper contains 2 pages

2. All Questions are compulsory
3. Figure in right hand side indicates full marks
4. Draw neat label diagrams wherever necessary.
5. Assume suitable data wherever required, but justify it.

1.	<p>A. . Select the correct alternatives from the given choices</p> <p>i. The molten metal in the _____ compensates the shrinkage during solidification of the casting to avoiding the shrinkage defect in the casting. a) Riser b) Runner c) Sprue d) Gate</p> <p>ii. The extrusion process used for production of tooth paste tube is _____. (a). Forward extrusion (b). Backward extrusion (c). Impact extrusion (d). Hydrostatic extrusion</p> <p>iii. What type of tool is used in thread cutting operations? a) Drill bit b) Reamer c) Tap d) Broach</p> <p>iv. In CNC programming, what is the purpose of a canned cycle? - A) To repeat specific operations within a loop - B) To simplify common machining operations - C) To change the cutting tool automatically - D) To check tool wear and breakage</p> <p>v. Basic process operation creates the _____ shape to the process being planned. a)final b) intermediate c) initial d) secondary</p> <p>vi. The _____ defect occurs when two portion of metal flow together but no fusion occurs between them due to premature freezing.) Cold shut b) cold short c) Misrun d) Sc</p> <p>vii. What type of force is applied through a die in forging operation? (a).Tensile force (b).Shear force (c).Compressive force (d). None of these</p> <p>viii. What is the main difference between brazing and soldering? a) Brazing uses a filler metal, while soldering does not b) Soldering requires higher temperatures than brazing c) Brazing uses a higher temperature filler metal than soldering d) Soldering is stronger than brazing</p> <p>ix. A point-to-point control system is suitable for which of the following application(s). a) Turning b) Drilling c) Spot Welding d) Both drilling and spot welding</p> <p>x. Long wires are made by which of the following process? a) Lancing b) Wire drawing c) Notching d) Coining</p>	15
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B. .	(Attempt Any 1 Question)	5
i.	Write a short note on the process of thread cutting using a lathe.	5
ii.	Explain in brief point-to-point, straight cut and contouring motion control in NC system	5
2.	In an orthogonal cutting operation, the following data have been observed: Width of cut = 1.8 mm, Feed = 0.23 mm/rev, Chip thickness = 0.3 mm. Cutting force in cutting velocity direction F_c = 1000 N. Feed force / thrust force = F_t = 600 N, Rake angle = 10 degree, Cutting speed = 180 m/min. Determine: i) Chip thickness ratio ii) Shear angle iii) Friction force iv) Friction angle v) Resultant force	15
B. .		10
i		10
a.	Explain Hydraulic Press forging with neat sketch.	5
b.	What are auxiliary process operations? Explain with example.	5
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ii. .	Write a CNC part program for given component drawing using G & M codes. Assuming the work piece is Aluminium and the speed is 200 rpm, feed 2 mm/min. Assume suitable data if necessary. Raw material: Aluminium rod of 100 mm diameter and 100 mm length.	10
3.	State True or False with justification(Attempt Any 5 Questions)	15
A.	Expendable casting processes use molds that are destroyed after each casting.	3
B.	<u>Planetary rolling mill is used for manufacturing of thin sheet of metal</u> from <u>hot slab</u> directly.	3
C.	The Merchant theory of metal cutting helps in optimizing cutting forces and tool geometry.	3
D.	In Absolute position programming , coordinates are always relative to the part origin.	3
E.	Expendable molds are made of metals and can be reused again and again.	3
F.	Forgings are inherently stronger than the castings.	3
G.	TIG welding uses a non-consumable electrode to melt the base metal and form the weld.	3
4.		15
A. .	Differentiate the following(Attempt Any 2 Questions)	10
i.	Investment casting vs Die casting	5
ii.	Difference between Cold working and hot working process.	5
iii.	Difference between Single point cutting tool and Multipoint cutting tool.	5
B. .	(Attempt Any 1 Question)	5
i.	Discuss various types of rolling defects and their remedies.	5
ii.	Explain the concept of adaptive control in CNC machining.	5