QP 93776

Program: Mechanical Engineering
Curriculum Scheme: Rev2019
Third Year, Semester VI

31/5/2022

Course Code: MEDLO-6023 and Course Name: Metal Forming Technology

	Choose the correct option for following questions. All the Questions carry equal marks
1.	Roll forging.....
Option A:	Causes a steadily applied pressure instead of impact force
Option B:	Is used to force the end of a heated bar into a desired shape
Option C:	Is a forging operation in which two halves of rotating die open and close rapidly while impacting the end of the heated tube or shell
Option D:	Is a forging method for reducing the diameter of a bar and in the process making it longer
2.	For obtaining a cup of diameter 25mm and 15mm height by drawing, the size of the round blank should be approximately
Option A:	42mm
Option B:	44mm
Option C:	46mm
Option D:	48mm
3.	Forging of a plain carbon steel is carried out...
Option A:	750°C
Option B:	900°C
Option C:	1100°C
Option D:	1300°C
4.	Coining is the operation of
Option A:	Cold forging
Option B:	Hot forging
Option C:	piercing
Option D:	Cold extrusion
5.	The process in which the product emerges in the same direction as the movement of the ram is
Option A:	Direct extrusion
Option B:	Indirect extrusion
Option C:	Hydrostatic extrusion
Option D:	Impact extrusion
6.	The seamless tubes in mass production are manufactured by the following process
Option A:	rolling
Option B:	extrusion
Option C:	spinning
Option D:	drawing
7.	In a rolling process, the state of stress of the material undergoing deformation is

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Option A:	Pure compression
Option B:	Pure Shear
Option C:	Compression and Shear
Option D:	Tension and Shear
8.	A rolling mill is used to reduce the thickness of plate from 50 mm to 25 mm. The roll diameter is 700 mm and the coefficient of friction at the roll interface is 0.1. It is required that the draft in each pass must be the same. Assuming no front and back tensions, the minimum number of passes required in rolling are:
Option A:	16
Option B:	8
Option C:	4
Option D:	12
9.	A strip of thickness 40 mm is to be rolled to thickness of 20 mm using a two-high mill having rolls of diameter 200mm. Coefficient of friction and arc length in mm, respectively are
Option A:	0.45 and 38.84
Option B:	0.39 and 38.84
Option C:	0.39 and 44.72
Option D:	0.45 and 44.72
10.	Hot working operation is carried at
Option A:	Recrystallization temperature
Option B:	Above Recrystallization temperature
Option C:	Below Recrystallization temperature
Option D:	Above room temperature

Q2(20 Marks)	**Solve any Four out of Six** **5 marks each**
A	Explain with neat figure different extrusion equipment used for Extrusion process.
B	Classify and discuss the extrusion processes.
C	Classify the different types of metal forming processes and explain in brief any one of them.
D	What is slip and how is the slip calculated for the process of rolling?
E	Draw Schematic and explain the different types of roller arrangements.
F	Classify different defects in extruded products.
Q3 (20 Marks)	**Solve any Two Questions out of Three** **10 marks each**
A	A wire is drawn through a die with entrance angle = 15. Starting diameter is 2.5 mm and final diameter = 2 mm. The coefficient f friction at work die interface is 0.07. The metal has a strength coefficient K = 205 MPa. And strain hardening exponent n= 0.2. Determine the draw stress and draw force in this operation.
B	Differentiate elaborately between Hot and Cold working processes.
C	Define the forging process, state its applications, Draw the schematic stress flow patterns of forging

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Q4(20 Marks)	Solve any Two Questions out of Three	10 marks each
A	Explain how seamless pipes are manufactured by extrusion process.	
B	A 300 mm wide strip, 25 mm thick is fed through a rolling mill with two powered rolls each of radius 250 mm. The workpiece thickness is reduced to 22 mm in one pass at a roll speed of 50 rev/min. The work piece material has a flow curve defined by K = 275 MPa and n=0.15, and the co-efficient of friction is 0.12.Determine the roll force and power.	
C	Discuss the mechanism of plastic deformation in any metal forming process.	

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