Reg. No.															

Question Paper Code	13211

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024

Third Semester

Mechanical Engineering

20MEPC301 - MANUFACTURING PROCESSES

Regulations - 2020

Duration: 3 Hours Max. Marks: 100

PART - A (MCQ) (20 × 1 = 20 Marks)

Answer ALL Questions

	Marks	K – Level	CO
1. What is the purpose of the riser? (a) Act as a reservoir for the molten metal (b) Deliver molten metal into the mould cavity (c) Deliver molten metal from the pouring basin to the gate (d) Feed the molten metal to the casting to compensate for the shrinkage	1	K1	CO1
2. Find the Porosity in a weld is typically caused by: (a)Inadequate shielding gas coverage (b) Excessive heat input (c) Lack of fusion (d) Insufficient electrode diameter	1	K1	CO1
3. Choose the correct option: Gas welding is a fusion welding process that primarily uses____ (a) Oxygen and acetylene (b) Argon and helium (c) Hydrogen and propane (d) Nitrogen and carbon dioxide	1	K1	CO1
4. Find the forging processes involved: (a) Heating metal to its melting point and pouring it into a mold (b) Applying pressure to shape metal using dies (c) Cutting metal into desired shapes using shearing forces (d) Melting metal and pouring it into a mold	1	K1	CO2
5. Choose: Shape rolling operations are commonly used to produce_____ (a) Flat sheets (b) Cylindrical bars (c) Structural sections with complex shapes (d) Wire and cables	1	K1	CO2
6. Name the operation called when a flat sheet is cut into the desired shape. (a) Punching (b) Piercing (c) Blanking (d) Shearing	1	K1	CO2
7. Choose the correct option: Tool life refers to_____ (a)The duration for which a tool can be used before it needs replacement (b) The time taken to manufacture a cutting tool (c) The lifespan of a machine tool (d) The time required for a tool to achieve maximum efficiency	1	K1	CO3
8. Which lathe type is specifically designed for high-speed production of small parts with complex shapes? (a) Centre lathe (b) Capstan lathe (c) Turret lathe (d) Automatic lath	1	K1	CO3
9. What is the primary advantage of using a multi-spindle automatic lathe? (a) Higher spindle speeds (b) Simultaneous machining of multiple workpieces (c) Lower setup time (d) Greater flexibility in tool selection	1	K1	CO3
10. Which of the following machine tools is primarily used for producing flat surfaces? (a) Shaper (b) Planer (c) Slotter (d) Drilling machine	1	K1	CO4

11. Identify the primary purpose of tapping. (a) Making holes with precise dimensions (b) Enlarging existing holes (c) Adding threads to a hole (d) Removing material from a workpiece reduces the temperature	*1*	*K2*	*CO4*
12. Which gear-cutting method involves using a rotating cutting tool to remove material gradually and create gear teeth? (a) Shaping (b) Hobbing (c) Forming (d) Lapping	*1*	*K1*	*CO4*
13. Choose the correct option: Cylindrical grinding is primarily used for_____ (a) Grinding flat surfaces (b) Grinding external surfaces of cylindrical workpieces (c) Grinding internal surfaces of cylindrical workpieces (d) Grinding irregularly shaped workpieces	*1*	*K1*	*CO5*
14. In grinding processes, what is the role of a grinding wheel? (a) To cool the workpiece (b) To provide support for the workpiece (c) To remove material from the workpiece (d) To hold the workpiece in place	*1*	*K1*	*CO5*
15. Which type of broaching machine is designed for performing broaching operations with a continuous, uninterrupted cut? (a) Push Broaching Machine (b) Pull Broaching Machine (c) Surface Broaching Machine (d) Continuous Broaching Machine	*1*	*K1*	*CO5*
16. What is the primary purpose of honing? (a) Enlarging existing holes (b) Producing high-precision internal surfaces (c) Removing material from a workpiece (d) Adding threads to a holed surface	*1*	*K1*	*CO5*
17. Which of the following is an advantage of metal casting? (a) High tooling cost (b) Complex shapes can be produced (c) Requires high operating temperature (d) Difficult to produce large parts	*1*	*K1*	*CO6*
18. Identify the limitations of welding processes: (a) Suitable only for plastics (b) Generates excessive heat (c) May cause distortions in the workpiece (d) Cannot join similar metals	*1*	*K2*	*CO6*
19. What is the primary advantage of metal-cutting processes? (a) High tooling costs (b) Low precision and accuracy (c) High dimensional accuracy (d) High material waste	*1*	*K1*	*CO6*
20. Which machine is best suited for machining long workpieces? (a) Shaper (b) Planer (c) Slotter (d) Milling machine	*1*	*K1*	*CO6*

PART - B (10 × 2 = 20 Marks)

Answer ALL Questions

21. List the types of pattern materials.	*2*	*K1*	*CO1*
22. Differentiate the TIG and MIG welding processes.	*2*	*K2*	*CO1*
23. Identify any four defects in rolled parts.	*2*	*K2*	*CO2*
24. Explain the formability of sheet metal.	*2*	*K2*	*CO2*
25. Identify the desired properties of cutting fluids.	*2*	*K2*	*CO3*

26.	What are the four major parts of Swiss-type automatic lathes?	*2*	*K1*	*CO3*
27.	Compare drilling, boring, and reaming.	*2*	*K2*	*CO4*
28.	List the advantages and limitations of gear hobbing.	*2*	*K1*	*CO4*
29.	How are grinding wheels designated?	*2*	*K1*	*CO5*
30.	List the applications of the broaching process.	*2*	*K1*	*CO6*

PART - C (6 × 10 = 60 Marks)

Answer ALL Questions

31.	a)	Illustrate the various types of patterns with neat sketches and explain any four.	*10*	*K2*	*CO1*
		OR			
	b)	Outline any three types of welding defects, their causes, and potential remedies.	*10*	*K2*	*CO1*
32.	a)	Identify the different types of arrangements of rolls in the rolling mill and illustrate any three with neat sketches.	*10*	*K3*	*CO2*
		OR			
	b)	How are toothpaste tubes manufactured? Apply the suitable engineering principle behind it and explain the process in detail.	*10*	*K3*	*CO2*
33.	a)	Identify the different types of chips produced in the machining operation and explain them.	*10*	*K3*	*CO3*
		OR			
	b)	Show the differences between the following: (i) Capstan and turret lathes. (ii) Automatic lathes and Semi-automatic lathes.	*10*	*K3*	*CO3*
34.	a)	Classify the types of milling cutters used in milling operations and explain any two with neat sketches.	*10*	*K2*	*CO4*
		OR			
	b)	Summarize any two-gear finishing processes with neat sketches.	*10*	*K2*	*CO4*
35.	a)	Demonstrate the working principle of the centreless grinding process with a neat sketch.	*10*	*K2*	*CO5*
		OR			
	b)	Illustrate the construction and working principles of the continuous broaching machine with a neat sketch.	*10*	*K2*	*CO5*
36.	a)	Show the different industrial applications of the welding process and list the limitations of the casting process.	*10*	*K2*	*CO6*
		OR			
	b)	Summarize the recent emerging areas in the primary manufacturing process.	*10*	*K2*	*CO6*