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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S3 (R) (FT/WP) Examination November 2025 (2024 Scheme).

Course Code: PBMET304

Course Name: MANUFACTURING PROCESSES

Max. Marks: 40 Duration: 2 hours 30 minutes

PART A

		(Answer all questions. Each question carries 2 marks)	CO	Marks
1		Discuss the characteristic of moulding sand used for sand casting.	CO1	(2)
2		Compare sand casting and die casting process	CO1	(2)
3		Explain the effect of porosity on the mechanical properties of weld	CO2	(2)
4		State the function of tungsten electrode in TIG welding	CO2	(2)
5		Differentiate hot rolling with cold rolling	CO3	(2)
6		Mention two defects commonly found rolled products.	CO3	(2)
7		Discuss the importance of grain flow in forged components and its effect on strength.	CO4	(2)
8		Define springback as observed in sheet metal forming operation.	CO4	(2)

PART B

(Answer any one full question from each module, each question carries 6 marks)

Module -1

9	a)	With sketches discuss the various types of defects generated during the casting process.	CO1	(4)
	b)	Explain precision investment casting	CO1	(2)

10	a)	A steel casting of volume 700 cm^3 and surface area 500 cm^2 is poured in a sand mold. If the mold constant is 4 min/cm^2, calculate the solidification time using Chvorinov's rule. Compare it with another casting of the same volume but surface area of 500 cm^2.	CO1	(3)
	b)	Discuss the mechanisms of sintering and the influence of process parameters.	CO1	(3)

Module -2

11	a)	Describe oxyacetylene gas welding process and explain various types of flames and its applications.	CO2	(4)
	b)	Explain Thermit welding.	CO2	(2)
12	a)	Compare brazing, soldering and adhesive bonding.	CO2	(3)
	b)	Discuss the effects of heat affected zone in welding.	CO2	(3)

Module -3

13	a)	Explain different types of rolling mills used in metal forming operations with neat sketches.	CO3	(4)
	b)	State the difference between blanking and punching	CO3	(2)
14	a)	Describe the sequence of operations involved in ring rolling process with a neat sketch.	CO3	(3)
	b)	$\mu > \tan \alpha$ where μ= coefficient of friction and α= angle of bite or angle of contact. From the above statement write down the roll bite condition in rolling	CO3	(3)

Module -4

15	a)	Compare direct and indirect extrusion processes on the basis of their working principles, advantages and limitations.	CO4	(4)
	b)	Explain the terms bend allowance and bend deduction.	CO4	(2)
16	a)	Explain deep drawing process.	CO4	(3)
	b)	Differentiate between open die forging and closed die forging	CO4	(3)

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