BIRLA INSTITUTE OF TECHNOLOGY MESRA, RANCHI
(MID SEMESTER EXAMINATION)

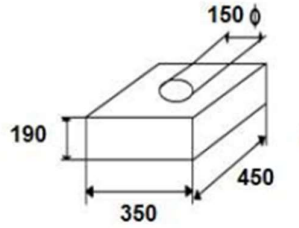
CLASS: B.Tech. **SEMESTER : III/ADD**
BRANCH: MECH **SESSION : MO/2024**

SUBJECT: PE213 MANUFACTURING PROCESSES

TIME: 2 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	Why is casting still a significant manufacturing process in-spite of several limitations?	[2]	3	4
Q.1(b)	The casting shown in figure is to be made in cast iron using a wooden pattern. Considering relevant data (shrinkage and machining allowance) from table given below, calculate the dimensions of the pattern. All dimensions are in mm. You plan to consider the shrinkage, machining and draft allowances of 1^0 for the casting.	[3]	4	3



Metal	Shrinkage Allowance (mm)	Machining Allowance (mm)
Cast iron	1.0 per 100 mm.	3 (up to 300 mm dimension) 5 (300-500 mm dimension) 6.25 (500-1000 mm dimension)

Q.2 (a)	Enlist the components of gating system in moulding with their functions.	[2]	1	2
Q.2(b)	Compare true centrifugal casting, semi centrifugal casting and centrifuging on the basis of principle of operation and nature of products produced.	[3]	2	4
Q.3 (a)	Differentiate between orthogonal cutting and oblique cutting.	[2]	1	2
Q.3 (b)	Justify the significance of rake angle of single point cutting tool in machining operation. Draw suitable diagram.	[3]	3	3
Q.4(a)	How does the continuous chip with built-up edge form during machining operation?	[2]	1	2
Q.4(b)	During an orthogonal cutting a chip length of 160 mm was obtained from an uncut chip length of 350 mm. The cutting tool has 22° rake angle and a depth of cut is 0.8 mm. Determine the shear plane angle and chip thickness.	[3]	4	3
Q.5(a)	Explain 'quick return mechanism' in shaper machine.	[2]	1	2
Q.5(b)	How can you specify a lathe machine?	[3]	1	2

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