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

CLASS: BE **SEMESTER : V/ADD**
BRANCH: PROD/MECH **SESSION : MO/17**

SUBJECT: PE5001 MANUFACTURING PROCESSES II

TIME: 3. Hours **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	What are different types of moulding machines? When should we go for machine moulding?	[2]
Q.1(b)	Why core is used in casting? Classify cores based on different criteria.	[4]
Q.1(c)	With neat sketches, explain horizontal, vertical, pressurized and un-pressurized gating systems.	[6]
Q.2(a)	'Squeeze casting process combines the advantages of casting and forging' – justify the statement.	[2]
Q.2(b)	State the steps in 'investment casting' with neat sketches.	[4]
Q.2(c)	A vertical, true centrifugal casting process is used to cast brass tubing that is 15.0 inches long and whose outside diameter = 8.0 inches. If the speed of rotation during solidification is 1000 rev/min, determine the inside diameters at the top and bottom of the tubing if the total weight of the final casting = 75.0 lbs. For brass, density $\rho = 0.313$ lb/in^3	[6]
Q.3(a)	Apart from cupola, what are other furnaces those can be used for melting purposes?	[2]
Q.3(b)	Why inspections of castings are essential? Categorize the methods of inspections.	[4]
Q.3(c)	Explain with neat sketch, various gas defects and shrinkage defects arise in casting mentioning their remedies.	[6]
Q.4(a)	State the significance of edge preparation in fusion welding.	[2]
Q.4(b)	Compare oxy-fuel gas welding and oxy-fuel gas cutting.	[4]
Q.4(c)	Explain the principle of manual metal arc welding with schematic diagram. What are the functions of an electrode in arc welding?	[6]
Q.5(a)	'Principle of thermit welding is based on chemical reaction' - justify. Give a specific application of this process.	[2]
Q.5(b)	Distinguish between Gas tungsten arc welding (GTAW) and Plasma arc welding (PAW)	[4]
Q.5(c)	State the advantages of solid state welding processes. Briefly explain friction welding process.	[6]
Q.6(a)	What are the process parameters in resistance welding?	[2]
Q.6(b)	Differentiate between soldering and brazing.	[4]
Q.6(c)	With schematic diagrams, describe resistance seam welding and resistance projection welding.	[6]
Q.7(a)	How non-conventional machining processes are different from conventional machining?	[2]
Q.7(b)	State the applications of laser beam and electron beam machining with their limitations.	[4]
Q.7(c)	Draw and label the major components of an electro discharge machining (EDM) set-up. Why dielectric fluid is used in EDM?	[6]

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