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

CLASS: B.TECH **SEMESTER: III**
BRANCH: MECHANICAL **SESSION : MO/2019**

SUBJECT : PE213 MANUFACTURING PROCESSES

TIME: 2:00 HOURS **FULL MARKS: 25**

INSTRUCTIONS:
1. The total marks of the questions are 25.
2. Candidates may attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.

Q1 (a) Draw neat sketch of component of the gating system. State the functions and important of each component. [2]
(b) Explain pattern material. Compare wood and metal as pattern material. [3]

Q2 (a) Described investment casting process and show its advantage. [2]
(b) Write short notes on casting defects. [3]
(i) Blow holes
(ii) Clod shut
(iii) Hot tear
(iv) Run out.

Q3 (a) Derive the relationship of shear velocity, cutting velocity and chip velocity. [2]
(b) Explained the terms “types of chip’ and “orthogonal and oblique cutting’. [3]

Q4 Mild steel is being machine at cutting speed of 200 m/min with a tool of rake angle 10° width of cut was found to be 2 mm, uncut chip thickness was found to be 0.2 mm. Determine shear angle, cutting force, feed (thrust) force, shear force. Assume μ = 0.5 and ζs=400 N/mm^2. [5]

Q5 (a) Explain the terms “flank wear and creator wear” with neat sketch. [2]
(b) A 60 min tool life was obtain using the following cutting condition, Speed (V) = 40 m/min, feed (F) = 0.25 mm, depth of cut (d) = 2 mm. Calculate the effect on the tool life if speed, feed and depth of cut are increasing by 25%. The equations is $V\ T^{0.13}\ F^{0.6}\ d^{0.3} = C$. [3]

::::::25/09/2019 ::::::E