

B. MECHANICAL 2nd Year 1st Semester Supple. Examination 2017 (OLD)**MANUFACTURING PROCESS (OLD)**

Time: 3hrs.

Full Marks: 100

Answer any *five* questions
taking at least *two* from each Group

GROUP - A

Use pencil for drawing works.

The figures in the margin indicate full marks.

1. (a) With neat and explanatory diagram discuss about shell molding process. Mention at least three important advantages and limitations of this process.
(b) Discuss, with figures, about different type of risers. Which one should be used as an ideal riser out of equal volume of three geometrical shapes namely a cylinder (height equals to its diameter), a sphere and a cube? Justify your answer with appropriate mathematical explanations. 8+(6+6)=20
2. (a) What are the commonly used additives and binders in green sand molding? Discuss about the role of additives and binders in molding.
(b) Drawing explanatory figures discuss about major casting defects. Suggest also the remedial activities in that regard. 10+10=20
3. (a) ~~With adequate~~ diagram and mentioning the technical details discuss about drop forging operation.
(b) What is meant by 'drawing' and 'deep drawing' operations? Stating about the legends and drawing a neat figure discuss about the total force needed in deep drawing operation. 10+10=20

OR

- (a) Drawing an explanatory diagram discuss about different geometrical considerations and forces acting during a flat rolling operation. Show that the strip velocity at exit is much higher than that of at entry. What is 'forward slip' and 'no slip' point?
(b) Prove the relation between maximum possible draft, coefficient of friction and the projected length in flat rolling operation. 16+4=20
4. Write explanatory notes on the following:
 - (a) Laboratory method of clay content test in molding sand.
 - (b) Preservation of acetylene gas in cylinder.
 - (c) DCSP and DCRP.
 - (d) Shrinkage allowance in pattern making. 5×4=20

[Turn over

GROUP - B**Answer any FIVE questions**

1. (a) What are the similarities and dissimilarities between a pattern and a casting? What are the different types of pattern materials used in foundry? Explain Match Plate pattern
3 + 3 + 4 = 10

(b) why sand is used primarily as molding material? State at least two molding materials other than sand. How permeability and green compression strength related to the % clay content and % moisture content?
4 + 2 + 4 = 10
2. (a) Draw a neat sketch of a Feeding System of a casting of simple shape. What is pressurized and non-pressurized gating system ? How it affects on the soundness of a casting?
4 + 4 + 4 = 12
(b) What is Riser or Feeder in casting ? What is the use of it ? What is the best shape of riser ? How it affects on the overall yield of the casting?
2 + 2 + 2 + 2 = 8
3. (a) Draw a neat sketch of a cold Blast Cupola or Coke Less Cupola with proper labeling and discuss its operation in brief. 10

(b) Explain the causes of following casting defects (give figures where applicable).
(i) Slag inclusion (ii) Blow hole (iii) Shrinkage (iv) Mis-run (v) Rough surface 10
4. (a) What is draught in rolling? Explain the effect of die angles with extrusion pressure in extrusion process with suitable explanations. 2 + 8 = 10

(b) What type of rolling mill would be suggested for cold rolling of mild steel? Draw the schematic diagram of suitable rolling stands for the purpose. 10
5. (a) Broadly classify different types of welding processes . Explain different types of flames in gas welding with suitable sketches. 10

(b) What is TIG welding process? Mention its advantages and disadvantages over
6. Write short notes on :
(a) Closed Die Forging (b) Upsetting (c) Spinning (d) Drop Forging 20
7. What are the differences between : (Any four) 20

(a) Destructive & Non Destructive Testing of castings (b) Lost foam process & Investment Casting Process (c) Hot & Cold working (d) Pressure Die casting & Gravity Die Casting (e) Brazing & Soldering (f) Direct & Indirect Extrusion