

MANUFACTURING BY SHAPING
AND JOINING

Time : 3 hours

Full Marks : 70

Instructions :

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Choose the correct option of the following
(any seven) : 2×7=14

- (a) Twin electrode carbon arc welding is used for
 - (i) straight polarity DC
 - (ii) reverse polarity DC
 - (iii) AC
 - (iv) pulsed AC
- (b) Soldering and brazing are the examples of
 - (i) autogeneous joining
 - (ii) homogeneous joining
 - (iii) heterogenous joining
 - (iv) plastic joining

- (c) In oxyacetylene gas welding, for complete combustion, the volume of oxygen required per unit of acetylene is
 - (i) 1
 - (ii) 1.5
 - (iii) 2
 - (iv) 2.5
- (d) Dump box and heated metal pattern are used in
 - (i) investment casting
 - (ii) sell-mould casting
 - (iii) centrifugal casting
 - (iv) die casting
- (e) Bronze is best cast by
 - (i) shell-mould casting
 - (ii) plaster mould casting
 - (iii) die casting
 - (iv) centrifugal casting
- (f) Which of the following casting processes is used in making jewellery products?
 - (i) Send casting
 - (ii) Centrifugal casting
 - (iii) Investment casting
 - (iv) Vacuum casting

- (g) Powder metallurgy is used for
- (i) pressure
 - (ii) heat
 - (iii) pressure and heat both
 - (iv) No pressure
- (h) Which of the following metals has the greatest sintering temperature?
- (i) Copper
 - (ii) Iron
 - (iii) Tungsten
 - (iv) Stainless steel
- (i) Which of the following methods converts metal oxides into metallic form?
- (i) Electrolytic deposition
 - (ii) Reduction
 - (iii) Atomization
 - (iv) Sintering
- (j) Which of the following operations can produce a seamless tube?
- (i) Roll forging
 - (ii) Blanking
 - (iii) Piercing
 - (iv) Embossing

2. (a) What are the requirements of a good moulding sand? 7
- (b) What is a centrifugal casting? For what type of jobs would you recommend this casting process? 7
3. (a) What are the types of foundries? 7
- (b) Explain various defects relating to forming processes. 7
4. Compare the features of powder metallurgy with casting, forging (hot), extrusion (hot) and machining processes. 14
5. (a) Explain briefly 'particle size, distribution and shape' in powder metallurgy technique. 7
- (b) What are laminated plastics? Explain briefly. 7
6. (a) Explain the process of joining in brazing and discuss the influence of gap on the strength of the joint. 7
- (b) What points should be kept in view to avoid the weld defects? 7

7. (a) List the factors which affect the selection of electrodes for electric arc welding. 7
- (b) List the advantages and disadvantages of gas welding. 7
8. (a) Explain briefly about soft soldering and hard soldering. 7
- (b) What is 'brazing'? Explain briefly. 7
9. Explain briefly on any *two* of the following :
7×2=14
- (a) Swaging
- (b) Tube rolling
- (c) Riser