

B.TECH 5TH SEMESTER (MME)

FABRICATION OF MATERIAL

FULL MARKS: 70

TIME : 3 HOURS

Answer question No. 1 and any five from the rest

The figure in the right hand margin indicate marks

1. Answer the following in short: 2x10
- (a) What are the functions of riser in the casting?
 - (b) Give two examples of solid state welding process.
 - (c) Give two examples of heterogeneous welding process?
 - (d) What are the advantages and disadvantages of hot working?
 - (e) What are the two stages of solidification?
 - (f) Based on Chvorinov's rule what would be the ideal and actual shape of riser in sand casting?
 - (g) Why cores are used?
 - (h) Describe different types of rolling mills.
 - (i) Write three examples of non destructive testing used in inspection of welding defects.
 - (j) Write different classification of welding joint.
- 2 (a) In casting experiments performed using titanium alloy and a zircon sand mould, it took 155 second for a cube shaped casting to solidify. The cube was 50 mm on a side. If the same alloy and mold type were used, find the total solidification time for a cylindrical casting in which the diameter=30 mm and length= 50 mm. 5
- (b) Discuss different types of pattern allowances in detail with proper diagram. 5
- 3(a) Describe precision investment casting process. Write down the advantages and disadvantages of the casting. 5
- (b) Compare the solidification time of a sphere, cube and cylinder ($H/D = 1.5$) having same volume. 5
- 4(a) what is gating ratio? Discuss their types. 5

- (b) Explain plasma arc welding in details. 5
- 5(a) what are the advantages and disadvantages of hot working and cold working? 5
- (b) Explain the differences between brazing and soldering in details. 5
- 6(a) Explain the differences between TIG and MIG welding process. 5
- (b) In a given welding operation, the power source is at 20 V and 300 amp. If the welding speed is 6 mm/s. and transfer and melting efficiency are 0.8 and 0.3. Calculate the heat input? 5
- 7(a) what are the different types of welding defects? 5
- (b) What are the different types of casting defects? 5
- 8(a) what are the different types of gate in sand casting? Also discuss their their advantages and disadvantages. 5
- (b) In a rolling process sheet of 25 mm thickness is rolled to 20 mm thickness. Roll diameter is 600 mm and it rotate at 100 rpm. What will be the value of contact length? 5