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Total Number of Pages: 01

B.TECH
PEME4401

7th Semester Regular / Back Examination 2015-16
PRODUCT DESIGN AND PRODUCTION TOOLING

BRANCH: MECH

Time: 3 Hours

Max Marks: 70

Q.Code: T647

Answer Question No.1 which is compulsory and any five from the rest.

The figures in the right hand margin indicate marks.

- Q1** Answer the following questions: **(2 x 10)**
- a) Name the essential elements which make up a Jig or a fixture.
 - b) What error is caused by the improper orientation of V-locator?
 - c) What are the various work holding devices used in a lathe?
 - d) Define freezing ratio in casting.
 - e) Write the two main role of computer in product design.
 - f) Differentiate between compound die and combination die.
 - g) Define "Deep Drawability".
 - h) How the size of forging machine is specified?
 - i) What is the significance of process planning in industries?
 - j) How the impressions are sunk on a die block?
- Q2** a) Explain the six point location principle with suitable sketch. **(6)**
b) Describe the design principles of drilling Jigs. **(4)**
- Q3** a) Explain the product planning process. **(5)**
b) Describe in detail the different types of limit gauge tolerances **(5)**
- Q4** Write the principle and need of clamping in a Jig or Fixture, Explain briefly different clamping methods. **(10)**
- Q5** a) A hole of 60mm diameter is to be produced in steel plate 2.5mm thick. The ultimate shear strength of the plate material is 450N/mm². If the punching force is to be reduced to half of the force using a punch without shear, estimate the amount of shear on the punch. Take the percentage of penetration as 40%. **(5)**
b) Explain the various types of strippers with their functions, **(5)**
- Q6** Describe in detail with neat diagram the components of a gating system. **(10)**
- Q7** a) Describe the factors to be considered in forging die design. **(5)**
b) Explain the basic rules for die design for Upset forging. **(5)**
- Q8** Write short notes on any two. **(5 x 2)**
- a) Form tool
 - b) Product specification
 - c) Strip layout