Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **B.Tech.**
PME6J001

6th Semester Regular Examination 2017-18
PRODUCT DESIGN & PRODUCTION TOOLING
BRANCH : MECH
Time : 3 Hours
Max Marks : 100
Q.CODE : C373

Answer Question No.1 and 2 which are compulsory and any four from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions : *multiple type or dash fill up type :*** **(2 x 10)**

a) Which of the following is the preliminary stage of Production planning
(a) Capacity planning (b) Material requirements planning
(c) Scheduling (d) Product development and design

b) Product cost can be reduced by considering the following aspect(s) at the design stage
(a) Minimum number of operations
(b) Unnecessary tight tolerance should not be provided
(c) Design should consist of standard parts
(d) All of the above

c) _____ helps in establishing the interchangeability of products
(a) Standardization (b) Simplification
(c) Diversification (d) Specialization

d) Shaping of metal by squeezing them in between two or more dies in order to obtain desire shape is done by?
(a) Forming (b) Forging
(c) Welding (d) Grinding

e) In which of the following forging metal is kept in the lower die?
(a) Open die (b) Closed die
(c) Impression dies (d) None of the Mentioned

f) The extra metal which settles down in the gutter is known as?
(a) Flash (b) Slag
(c) Flux (d) Barreling

g) With the use of Jigs and fixture rate of production will
(a) Increase (b) Decrease
(c) Remains same (d) Jigs are not used in any production process

h) Which of the following type of gauge has gauging sections combined on one end
(a) Limit gauge (b) Fixed gauge
(c) Progressive gauge (d) Go and No Go gauge

i) In sheet metal blanking, shear is provided on punches and dies so that
(a) press load is reduced
(b) good cut edge is obtained
(c) warping of sheet is minimized
(d)cut blanks are straight

j) The term applied to the first operation in an impression die forging is called
(a) Fullering (b) Blocking
(c) Trimming (d) Coining

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Q2 **Answer the following questions : *Short answer type :*** **(2 x 10)**

a) Define different product design processes.
b) Name the different factors consider in value analysis.
c) Compare single impression and multi impression die.
d) Justify the importance of the position of parting line.
e) What is the significance of process planning in industry?
f) How the size of forging machine is specified?
g) What are the main difference between Jigs and fixtures?
h) Write two important limitations of limit gauge.
i) Define “Deep Drawability”.
j) Distinguish between blanking and piercing operation.

Q3 **a)** Describe in detail the role of computer in product design. **(8)**
b) What is mean by product specification? What are the components of it? Briefly explain the components. **(7)**

Q4 **a)** Explain briefly the major factors a designer must consider before starting a product design and describe the product planning process. **(10)**
b) Discuss various considerations in determining the sequence of operations. **(5)**

Q5 **a)** A symmetrical cup of 80mm diameter and 250mm height is to be fabricated on a deep drawing die. How many drawing operations will be necessary if no intervening annealing is done? Also, find the drawing force. **(10)**
b) Explain about the different losses must be considered while calculating the stock size in case of forging. **(5)**

Q6 **a)** Differentiate between compound die and progressive die. **(8)**
b) What are the various types of strippers? Explain their functions with the help of suitable sketches. **(7)**

Q7 **a)** Write the principle and need of location in a Jig or Fixture, Explain briefly different locating methods. **(10)**
b) Describe the design principles of drilling Jigs. **(5)**

Q8 **a)** Sketch a typical internal broach and its tooth shape. Explain in detail its different elements and aspects to design the same. **(10)**
b) Explain the basic rules for die design for Upset forging. **(5)**

Q9 **a)** Design a single point cutting tool (HSS) for rough turning of C-20 steel. Sketch the standard tool shank and suggest suitable tool signature. Assume all data required. **(10)**
b) What is meant by tool layout of turret lathe? **(5)**