

MANIPAL (A constituent unit of MAHE, Manipal)

# VI SEMESTER B. TECH (MECHANICAL/IP ENGG.) END SEMESTER EXAMINATIONS, APRIL 2019

## SUBJECT: DESIGN FOR MANUFACTURE AND ASSEMBLY

## [MME 4001]

#### **REVISED CREDIT SYSTEM**

Time: 3 Hours

MAX. MARKS: 50

2

#### Instructions to Candidates:

- ✤ Answer ALL the questions.
- Missing data may be suitably assumed.
- 1A. A businessman ready to invest needs to launch a new product in the market. 3 So you being a product developer analyze the various stages in the product development.
- **1B.** A product developer plans to take up a project. Can you cite some of the challenges he may encounter in the due process of product development.
- **1C.** Analyze the various steps in the second phase of morphology of design **5** process.
- 2A. List the different steps in the planning for production process phase. 3
- **2B.** Describe the steps in material selection process.
- **2C.** Explain any 10 design considerations and recommendations for sand casting **5** process with neat sketches.
- **3A.** List the factors which adversely affect dimensional control in investment **3** casting.
- 3B. Answer the following pertaining to turning process a) What will happen if 3 blending of radii is incorporated in design? b) Why carbide cutting tools are recommended? c) Why blanket specification like "break all corners" are not recommended?
- **3C.** Cite 4 cases of parting line considerations in forging process with neat **4** sketches.
- 4A. Apply knowledge of DFM pertaining to drilling process with neat sketches in following cases a) Bad and good examples of entrance and exit lands b) Intersections of drilled holes with other cavities c) Locating the coordinates for holes.

- **4B.** Explain design considerations for reaming with neat sketches. **2**
- **4C.** Describe any 8 design recommendations for heat treatment with the help of **5** neat sketches
- 5A. Answer the following pertaining to die casting process and support your answers with neat sketches a) When to use "kissing cores"? b) Where to introduce extra rib-creating cores and what are its effects? How to avoid surface shrinks beneath a boss?

5B.	Discuss the various defects in deep drawing process.	2

- **5C.** List out the various activities in an assembly process **3**
- **5D.** A blank of diameter 150mm needs to be deep drawn using a punch of **2** diameter 50mm. Will it be successful? Justify your answer.