

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



VII SEMESTER B.TECH (AUTOMOBILE ENGINEERING) END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: COMPUTER INTEGRATED MANUFACTURING [AAE 453]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ANY FIVE FULL the questions.
- ✤ Missing data may suitably assumed.
- Draw sketches in PENCIL only
- **1A.** Enumerate the causes of low productivity in NC machining system and **(02)** explain with example the remedy recommended to improve the productivity.
- **1B.** Explain with neat sketch two different physical configuration of industrial **(03)** robot.
- 1C. Define Group technology. Explain ways and means to identify part families. (05) Explain how parts classification and coding is done in group technology? What are the benefits of group technology in manufacturing?
- **2A.** Explain different types of Flexible manufacturing system (FMS) based on **(05)** number of machines and also advantages of FMS.
- **2B.** Write a program to machine the component on Vertical Machining Centre, as **(05)** per the given fig 2B (cut per path 0.5 mm).
- **3A.** What is vibration? What are the cause and effect of vibration in NC **(03)** machines? Recommend some corrective measures to overcome vibrations.
- **3B.** Write a program to machine a component on CNC turning centre as per (07) given drawing in Fig 3B. (Bar size is $\oint 60 \times 140 \text{ mm}$).
- **4A.** Write a program to machine a component on CNC turning centre as per **(03)** given drawing in Fig 4A. (Bar size is Ø 100 X 110 mm).
- **4B.** Explain three different design approaches of computer aided process **(05)** planning, CAPP systems and discuss the advantages of CAPP.
- **4C.** Define & classify inspection. Explain typical sequence of inspection. **(02)**

- **5A.** What is the role of interlocks in work cell control? Explain with example **(03)** outgoing & incoming interlocks.
- **5B.** What is jib? What is its significance? Explain the condition under which jib is **(02)** recommended in machine tools?
- **5C.** Explain adaptive control machining system? What is the objective of ACS? **(05)** Identify the source of variables in machining. Explain how the ACS is going to play an important role in machining system?
- **6A.** Define machine vision system. Explain with neat diagram functioning of basic **(05)** machine vision system in three steps and also enumerate its applications.
- **6B.** Define PLC and explain with neat block diagram major components of **(05)** common PLC. Also explain what is the function of AC input module?









