

**BACHELOR OF ENGINEERING (MECHANICAL ENGINEERING) FIFTH YEAR
FIRST SEMESTER (OLD) – 2019
ADVANCED MANUFACTURING**

Time: 3 hour

Full Marks: 100

Answer any *five* questions.

1. a) Explain “automation” in the context of manufacturing systems. What are meant by “fixed automation”, “programmable automation” and “flexible automation”? Mention about typical features of each of them.
b) Discuss about any two of the following:
 - (i) Cutter offset
 - (ii) CAPP
 - (iii) Interpolation in NC-CNC systems

12 + 8
2. a) How the manufacturing process is developing progressively day by day? Discuss in detail.
b) What are the different types of R.P Methods and discuss at least one process with schematic diagram.

10 + 10
3. a) Discuss about “vehicle guidance technology”, “traffic control” and “vehicle safety” in AGVS.
b) Discuss about applications of AGVS

14 + 6
4. a) What is Additive Manufacturing? What are the advantages and disadvantages?
b) Explain the term “Concurrent Engineering”. How “Concurrent Engineering” affects the product development time?

10 + 10
5. Discuss about any two of the following techniques of GMP with relevant sketches.
 - i) Selective Laser Sintering
 - ii) Stereolithography with Photopolymerization
 - iii) Selective powder binding (3-D Printing)

10 + 10
6. a) Differentiate between ECM and EDM processes.
b) Write down the elements of Electro Chemical Machining. Discuss its advantages and disadvantages.

10 + 10
7. a) Write down the principle, process characteristics and application of Water Jet Machining in detail.
b) Draw a schematic diagram of Water Jet Machining system.

10 + 10
8. a) Explain USM process with necessary representation and discuss its process parameters.
b) Write down the applications of LBM, PAM, WEDM and USM.

10 + 10