Printed Pages: 01 **Sub Code: MTME051**

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M. TECH.

(SEM -II) THEORY EXAMINATION 2018-19

FLEXIBLE MANUFACTURING SYSTEM

Time: 3 Hours ***Total Marks: 70***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a. What is the need of flexibility in FMS?

b. What is the scope for FMS in manufacturing today?

c. What is the hierarchy of computer control in FMS?

d. What is an abstract model in FMS simulation?

e. What is the role of group technology in FMS?

f. What is the role of FMS in aerospace machining?

g. What is performance goal?

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a. List out the components of FMS and explain their role in FMS.

b. Discuss how part families are identified and machine tools are grouped in production flow analysis.

c. With the help of a line diagram explain the layout of GT.

d. Differentiate between contact and non-contact type of inspection technique.

e. What results can be achieved with simulation? Explain the main steps involved in execution of a simulation.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a) What are the different levels of automation? List out and explain.

(b) Discuss the features of various communication networks used in FMS.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain various methods of operating and controlling CMM.

(b) "Reverse engineering of the component in coordinate measuring machine is difficult as CMM has only three rectilinear axes for movement and a fixed domain of volume measurement" - Evaluate.

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) With the help of a line diagram explain the layout of GT.

(b) Discuss bond energy algorithm in grouping parts with an example.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) Following the data of AGV system: Vehicle velocity = 45 m/min, Average distance travelled/delivery = 135 m, Pickup time = 45 sec, Drop off time = 45 sec, Average distance travelling empty = 90 m, Traffic factor = 0.9. Determine the number of vehicles required to satisfy the delivery demand if the delivery demand is 40 deliveries per hour. Also determine the handling system efficiency.

(b) Discuss the role of software and considerations for maintenance planning and reporting.

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) What does an unscheduled stop cost you? What is so problematic with "Break Down Maintenance"?

(b) What do you understand by AVG? Explain its practical application in modern industries.

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