VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E -DEGREE EXAMINATIONS - FEB-2022
MANUFACTURING ENGINEERING
Third Semester
ADVANCED MANUFACTURING PROCESSES
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours   Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

1   List out the process parameters affecting the MRP in AJM.
2   Reuse of abrasives is not recommended in AJM. Why?
3   List out the limitations of ECM.
4   List out the application of ECG.
5   Define EBM.
6   List out the advantage of EBM.
7   What are the types of semi conductors?
8   What is meant by bulk machining?
9   What are all Programmable Devices?
10   List out different types of moulding.

PART-B (5 x 16 = 80)

11 a.   (i) Explain the principle of USM with neat diagram.
         (ii) List the commonly used abrasive powder for the tooling of USM and their
                properties.

OR

b.   (a) Distinguish between flow masking and spray masking. When are they preferred?
      (b) Describe production of a Printed Circuit Board using Chemical Machining. What are the
      precautions required in this case?

12 a.   (a) Name various process parameters which influence the MRR.
         (b) Name materials used for Electrodes. Mention the relative advantages.

OR

b.   For a relaxation circuit used in E.D.M. process prove that

   $V_c = V_0(1 - e^{-t/R_cC})$ Where

   V_c = Charged voltage of condenser in volts

   V_0 = e.m.f. Applied across the circuit for charging the condenser in volts

   R_c = Charging resistance in ohms

   C = Capacitance of condenser in farads

   t = time in sec.

13 a.   i) Explain the principle of PAM with sketch

   (ii) List out the advantage and limitation of PAM process.

OR

b.   Describe the construction and working principle of electron beam machining. Also, mention its limitations.

14 a.   Explain the Process of Film Purification.

OR

b.   Explain LIGA process and State its advantages and disadvantages.

15 a.   Define moulding? Explain various types of moulding process?

OR

b.   Explain the process of surface mount technology and its merits and de merits.

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Sl.No. 3056

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E -DEGREE EXAMINATIONS - FEB-2022
MANUFACTURING ENGINEERING
Third Semester
AUTOMATED COMPUTER INTEGRATED MANUFACTURING SYSTEMS
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours   Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

1   What is the role of computer in CIM?

2   What is mean by "Multiplexing"?

3   What is a rotary indexing mechanism?

4   Write down the methods of AGV routing.

5   List the methods of grouping the parts into families?

6   Describe shortly about " cellular manufacturing".

7   What are the stages of generative CAPP system?

8   List the informations contained in the route sheet.

9   List the tasks carried out by the Vision systems.

10   Write short notes on feed back control.

PART-B (5 x 16 = 80)

11 a.   Explain briefly CIM as concept and technology.
OR
  b.   Write explanatory notes on the seven layers of OSI model.

12 a.   Explain the different types of Load Transfer of AGVs.
OR
  b.   Explain the types of conveyors.

13 a.   Explain the MICLASS system of parts classification and coding.
OR
  b.   Explain the FMS components.

14 a.   Explain the role of process planning in CAD/CAM integration.
OR
  b.   Discuss in detail about the Product development through Computer aided process planning.

15 a.   Write detailed notes on Contact bar code readers.
OR
  b.   Discuss in detail about the Supervisory computer control in Computer process monitoring.

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VINAYAKA MISSIONS RESEARCH FOUNDATION
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M.E -DEGREE EXAMINATIONS - FEB-2022
MANUFACTURING ENGINEERING
Third/Fifth Semester
ELECTIVE - ADVANCES IN CASTING AND WELDING PROCESSES

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours   Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

1   Where skeleton patterns are employed?
2   Define choke area in castings?
3   Mention some important alloys of copper and their applications.
4   How impurities or slag are removed in direct arc furnace?
5   Differentiate between shell moulding and precision investment casting.
6   List the application of counter gravity low pressure casting.
7   What is meant by weld solidification rate?
8   What are the types of destructive testing of welds?
9   Name two functions of the filter glasses used in metal arc welding.
10   What is an inert gas?

PART-B (5 x 16 = 80)

11 a.   Explain the procedure for calculation of dimensions of a gating system. Illustrate with an example.

OR

   b.   Explain the terms a). Directional solidification b). Use of internal and external chills. c). Bind risers. d). Use of exothermic and insulating materials for riser.

12 a.   How does mold design affect the quality of castings. Explain with illustrations.

OR

   b.   What are the factors that affect the quality demands of S.G iron? Explain.

13 a.   Explain briefly the process of continuous casting. In what way is it superior then rolling process?

OR

   b.   What are the main reasons of pollution in fettling shop? Explain how can there be controlled?

14 a.   Explain methods to reduce welding stresses.

OR

   b.   Briefly explain welding characteristics of magnesium.

15 a.   Briefly explain ultrasonic welding process.

OR

   b.   Describe with suitable sketch the explosive welding process and its limitations as well as applications.

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VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E -DEGREE EXAMINATIONS - FEB-2022
MANUFACTURING ENGINEERING
Third/Fifth Semester
ELECTIVE - FLUID POWER AUTOMATION
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours   Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

1   What is bulk modulus?

2   Draw the hydraulic symbol for the following. (i)Unloading valve. (i) Counter balancing valve

3   What is a positive displacement pump?

4   Which type of sealing materials used for high temperature operation?

5   Why direction control valves needed in a hydraulic system?

6   Explain Tandem centre valve

7   What are the factors that should be considered while selecting a fluid power circuit?

8   Define slip counter.

9   What is programmable logic control (PLC)

10   State one situation where you use an electrical timer.

PART-B (5 x 16 = 80)

11 a.   Comment on the difference between using pneumatic fluid power and hydraulic systems.
OR
b.   Discuss about the maintenance of the hydraulic oils.

12 a.   Explain the working of piston pumps and discharge rates (swash plate type).
OR
b.   (a).Explain the working of double acting cylinder. (b).Explain about the telescoping cylinder with neat sketch.

13 a.   How does a pressure relief valve differ from pressure reducing valve? How does a pressure reducing valve work? Explain with sketch.
OR
b.   Explain the following centre conditions of spool valves (a) Open centre valve. (b) Tandem centre valve (c) Closed centre valve. (d) Float centered valve

14 a.   Explain with neat sketch of the step counter and its principle?
OR

(p.t.o)

b. What is a functional diagram? How does it different from a circuit diagram? What are the advantages of such a diagram while trouble-shooting?

15 a. Explain with neat sketch the electrical control of a regenerative cycle?

OR

b. What wall – attachment theory is as applied in fluidics? Also illustrate the wall – attachment phenomenon?

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Sl.No. 3037

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E -DEGREE EXAMINATIONS - FEB-2022
MANUFACTURING ENGINEERING
Third /Fifth Semester
ELECTIVE - MANUFACTURING MANAGEMENT
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours   Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

1   What is meant by plant location ?
2   State the principle of good layout.
3   What is work measurement ?
4   Write various stages of value analysis.
5   Write any two function of break even chart.
6   Write the purpose of sales forecasting.
7   What the types of scheduling ?
8   What is total project time ?
9   What is responsibility ?
10   Define advertising.

PART-B (5 x 16 = 80)

11 a.   Explain the types of plant layout.
OR
   b.   Explain about the combination layout.

12 a.   Explain the basic steps in time study.
OR
   b.   Explain about the ergonomics.

13 a.   Explain the forecasting process.
OR
   b.   Explain the basic elements sales forecasting technique.

14 a.   Explain the scheduling procedure and techniques.
OR
   b.   Explain the process of network analysis.

15 a.   Explain the aims of personnel management.
OR
   b.   Explain the functions of advertising.

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VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E -DEGREE EXAMINATIONS - FEB-2022
MANUFACTURING ENGINEERING
Third/Fifth Semester
ELECTIVE - QUALITY AND RELIABILITY ENGINEERING
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours   Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

1 What is an R Chart?

2 Distinguish between a 'defect' and a 'defective'.

3 What do you understand by producer's risk and consumer's risk?

4 What is an OC Curve and what information does it convey?

5 What do you mean by factorial experiments?

6 What are two factorial experiments?

7 What is wear out failures?

8 What is system reliability?

9 Define maintainability?

10 What is preventive maintenance?

PART-B (5 x 16 = 80)

11 a. What are the areas of applications of quality control?

OR

b. Following inspection data refers to 10 samples of 100 items each, concerning the production of bottle corks. Construct a P chart and comment.

Sample number	1	2	3	4	5	6	7	8	9	10
Number of defectives k	5	3	3	6	5	6	8	10	10	4

12 a. Explain in detail OC Curve in single sampling fraction defective plan.

OR

b. Explain in detail on consumer's risk and producer's risk in sampling plans.

13 a. Explain Taguchi's quality loss function

OR

b. What are the steps in quality process suggested by Taguchi?

14 a. Explain the measures of reliability?

OR

(P.T.O)

b. Explain briefly parallel system reliability?

15 a. Write short notes on reliability life testing?

OR

b. Briefly explain the following (1) corrective maintenance (2) Predictive maintenance (3) Preventive maintenance.

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Sl.No. 3026

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E -DEGREE EXAMINATIONS - FEB-2022
MANUFACTURING ENGINEERING
Second Semester
MANUFACTURING METROLOGY AND QUALITY CONTROL
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours   Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

1   Define engineering metrology.
2   State the applications of laser interferometry.
3   Define high inertia laser.
4   What is high inertia laser scan technique?
5   Define displacement devices.
6   What is probe sensor?
7   Define digital image processing?
8   Write the comparison of laser scanning and vision system.
9   Need for quality management.
10   Write the need for quality management system

PART-B (5 x 16 = 80)

11 a.   Explain briefly types of interferometry and its applications.
OR
   b.   Explain briefly laser doopler anemometry, with suitable diagram.

12 a.   Explain briefly high inertia laser techniques with suitable example.
OR
   b.   Describe the classification of optical scanning system

13 a.   Define co-ordinate metrology and its applications.
OR
   b.   Describe about the co-ordinate metrology.

14 a.   Explain briefly about image analysis techniques.
OR
   b.   Explain briefly comparison Laser scanning with vision system.

15 a.   Explain briefly poya yoke?and its applications.
OR
   b.   Define briefly quality engineering technique.

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VINAYAKA MISSIONS RESEARCH FOUNDATION
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M.E -DEGREE EXAMINATIONS - FEB-2022
MANUFACTURING ENGINEERING
Second Semester
MEMS & NANOTECHNOLOGY
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours   Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

1   Define MEMS.
2   What is micro fluidics?
3   Define Galiumarsenide.
4   Define Epitaxy.
5   List out the applications of smart materials.
6   List the application of Actuators.
7   Mention the concept used in top down processes and bottom up processes.
8   Define Gas Condensation process.
9   List out the mechanical properties of Nano materials.
10   Define scanning electron microscopy.

PART-B (5 x 16 = 80)

11 a.   Describe the working principle and application of microsystems.
OR
  b.   Describe the design and fabrication process of MEMS.

12 a.   Examine detail about bulk and surface machining.
OR
  b.   Why silicon is widely used in MEMS and explain the mechanical properties of silicon?

13 a.   Describe various pressure sensors and flow sensors.
OR
  b.   List the types of smart materials with examples.

14 a.   Briefly narrate the history of Nano-materials.
OR
  b.   Explain mechanical milling process for synthesis of Nanoparticles.

15 a.   Describe the Nano processing and Nano measuring systems.
OR
  b.
       Explain the working principle of scanning electron microscopy and its applications.

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VINAYAKA MISSIONS RESEARCH FOUNDATION
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M.E/M.TECH- DEGREE EXAMINATIONS – FEB-2022
MANUFACTURING ENGINEERING
First Semester

NUMERICAL METHODS AND GRAPH THEORY
(Candidates admitted under 2017 Regulations-CBCS)

Time: Three hours   Maximum:100Marks

Answer **ALL** questions

PART – A (10 x 2 = 20 marks)

1. Explain Gauss-Seidel method to solve a system of simultaneous equations.

2. Explain briefly about LU-Decomposition method.

3. State Gauss backward interpolation formula

4. Evaluate $\int_{1}^{2} \dfrac{1}{1+x^2}\,dx$ using Gaussian two-point formula

5. Using the Taylor's series method compute $y(0.1)$ correct to 4 decimal places

6. Write Milne's Predictor – Corrector formula

7. Mention the difference between Isomorphic and non-Isomorphic Graphs.

8. Draw a connected graph that becomes disconnected when any edge is removed from it.

9. Define the weight of a spanning tree.

10. Define the term (i) inflow into (ii) outflow from.

PART – B (5 x 16 = 80 marks)

11. a) By the LU-Decomposition method, solve the following system

$$5x - 2y + z = 4,\ 7x + y - 5z = 8,\ 3x + 7y + 4z = 10$$

OR

(p.t.o)

b) Solve the system of equation by Gauss-elimination method

$$10x - 2y + 3z = 23, \ 2x + 10y - 5z = -33, \ 3x - 4y + 10z = 41$$

12. a) Find the cubic Spline approximation for the function $y = f(x)$ from the following data, given data $y_0'' = y_1'' = 0$

x	-1	0	1	2
y	-1	1	3	35

OR

b) Evaluate $\displaystyle\int_1^2 \frac{dx}{1+x^3}$ using (i) Gaussian two-point

13. a) Find the Taylor series solution of $y(0.1)$ given

that $\dfrac{dy}{dx} - y^2 = e^x; \ . \ y(0) = 1$ Compute

using the first five terms.

OR

b) Find the values of $y(0.2)$ and $y(0.4)$ using the Runge-Kutta method of fourth order

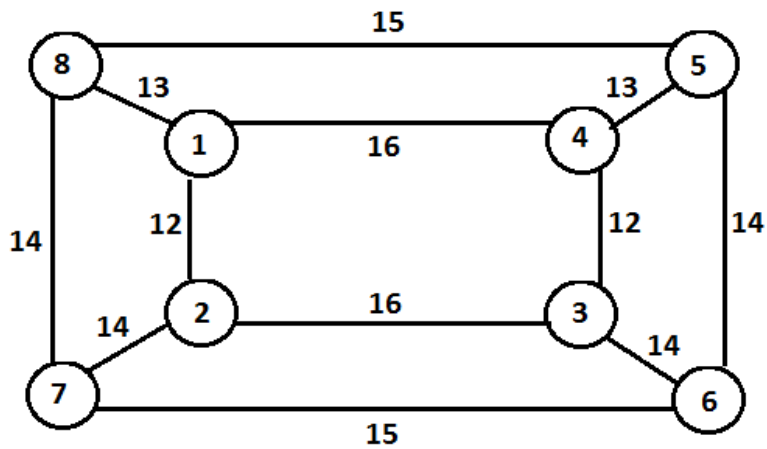$$h = 0.2, \text{ given that } \frac{dy}{dx} = \sqrt{x^2 + y^2}; \ y(0) = 0.8$$

(P.T.O)

14. a) Prove that every circuit has an even number of edges in common with only cutest.

OR

b). Prove that every circuit in a connected graph '*G*' which contains atleast one branch of every spanning tree.

15. a) Obtain a minimum spanning tree in the network using Kruskal's algorithm

OR

b) Obtain the SD and SP from vertex 1 to every other vertex in the network

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Sl.No.ME-3083