

SL.NO:2261

SUBJECT CODE:40221C01

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E./ M.TECH DEGREE EXAMINATIONS- APRIL -2022
MANUFACTURING ENGINEERING
FIRST SEMESTER
ADVANCES IN MANUFACTURING TECHNOLOGY
(Candidates admitted under 2021 Regulations-SCBCS)

Time : Three Hours

Maximum Marks:100 Marks

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

- 1 What are the different types of abrasive used in AJM?
- 2 What are the commonly used additives in WJM?
- 3 Define electrical discharge machining.
- 4 What are the disadvantages of ECG?
- 5 Write the principle of plasma arc machining.
- 6 Which are the components of ion beam machining?
- 7 List the application of etching agent.
- 8 What is meant by surface mount technology?
- 9 What are all programmable devices?
- 10 Mention the applications of ASIC.

Answer **Any FIVE** questions
Part-B (5 x10 =50 Marks)

- 11 a. Explain the characteristics of water jet cutting process.
OR
b. Explain the principle of USM with neat diagram.
- 12 a. Discuss the influence process parameters and applications of USM.
OR
b. Describe the chemistry involved in ECM process.
- 13 a. Compare Electro Chemical Machining with a single point machining and describe the differences.
OR
b. Elaborately discuss about metal removal rate and surface finish in ECG.
- 14 a. Describe the wire cut EDM equipment, its working, applications and advantages.
OR
b. Explain the principles and elements of EBM, also how the work table is protected from getting damaged by electron beam.

15 a. Compare the characteristics of EBM, LBM and PAM.

OR

b. List out the three types of spark generators used in EDM. Describe them.

16 a. Explain the process of metallization and bulk machining.

OR

b. What is meant by Etching? Explain step by step procedure of etching process.

17 a. What is importance of wafer bonding and discuss anodic bonding.

OR

b. Define wafer preparation. Explain step by step process of wafer preparation.

18 a. Define moulding. Explain various types of moulding process.

OR

b. Explain SAW device development and History in detail.

Answer ALL questions

PART-C (2 x 15 = 30)

19 a. Explain the following in details:(i) Types of transducers for USM (ii) Speed mechanism in USM (iii) USM typical applications (iv) Abrasives for USM.

OR

b. Describe the advantages and limitations of power supply with rotary impulse generator circuit used in EDM.

20 a. With neat sketches, describe the principle the following micromachining techniques. i. Bulk micromachining. ii. Surface micromachining.

OR

b. Brief about Ion Implantation technique to produce Microsystems.

SL.NO:2269

SUBJECT CODE:40221C02

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E./ M.TECH DEGREE EXAMINATIONS- APRIL -2022
MANUFACTURING ENGINEERING
FIRST SEMESTER
COMPUTER INTEGRATED MANUFACTURING SYSTEMS
(candidates admitted under 2021 Regulations)

Time : Three Hours

Maximum Marks:100 Marks

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

- 1 Write down the disadvantages of Asynchronous Transmission.
- 2 List out the disadvantages of Variant approach in CAPP.
- 3 List out the nine major elements of a CIM system.
- 4 Define work part transfer mechanism.
- 5 What is meant by system management in AGV?
- 6 Write down the three categories of parts classification systems.
- 7 Describe shortly about cellular manufacturing.
- 8 Define Generative approach.
- 9 List out the types of Bar code readers.
- 10 Write short notes on steady state optimal control.

Answer **Any FIVE** questions
Part-B (5 x10 =50 Marks)

- 11 a. Explain CIM as concept in detail.

OR

b. Explain the types of AGV in detail.
- 12 a. Explain the need for CIM in detail.

OR

b. Explain the CIM data transmission methods in detail.
- 13 a. Explain the historical background of the Automated Guided vehicle system.

OR

b. With neat sketch, explain the Design of AGV system.
- 14 a. Explain the Design considerations in material handling.

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OR

b. Explain the types of conveyors.

15 a. Explain the FMS components.

OR

b. Explain in detail about FMS applications.

16 a. With the help of flow diagram, explain in detail about Variant type CAPP.

OR

b. Explain the role of process planning in CAD/CAM integration.

17 a. Explain the advantages and limitations of CAPP.

OR

b. Explain the concept of OCR used in AIS.

18 a. Write detailed notes on Contact bar code readers.

OR

b. Explain in detail about the linear feed back control systems.

Answer ALL questions

PART-C (2 x 15 = 30)

19 a. Explain the issues addressed by CIM in detail.

OR

b. Explain about the conventional storage methods in detail.

20 a. List and explain the steps involved in Production Flow Analysis.

OR

b. Write explanatory notes on adaptive control.

SL.NO:2269

SL.NO:2274

SUBJECT CODE:40221C03

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E./ M.TECH DEGREE EXAMINATIONS- APRIL -2022
MANUFACTURING ENGINEERING
FIRST SEMESTER
ADVANCES IN CASTING AND WELDING
(Candidates admitted under 2021 Regulations-SCBCS)

Time : Three Hours

Maximum Marks:100 Marks

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

- 1 List out the points to be considered while design a pattern.
- 2 Where skeleton patterns are employed?
- 3 Tell the reason shrinkage allowance is important.
- 4 Tell why clay is used in sand casting.
- 5 List out the factors to be considered in the choice of metal melting furnace.
- 6 List out the material handling equipments used in foundries.
- 7 Define the term weld solidification rate.
- 8 Define allowable strength of weld.
- 9 List out type of electrode is used in electro slag welding.
- 10 Define narrow gap.

Answer **Any FIVE** questions
Part-B (5 x10 =50 Marks)

- 11 a. Illustrate with help of a phase diagram explain the solidification of hypo and hyper eutectic cast iron.

OR

- b. Describe in detail about various defects occurred in welding and suitable remedies of welding defects.

- 12 a. List out different types of welded joints and and explain each in detail with suitable sketch.

OR

- b. Illustrate with a neat schematic diagram and explain the automated welding system in aerospace industries.

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

OR

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b. Describe the design considerations are to be kept in mind during casting design. On what factors does a tolerance on casting dimensions depend.

14 a. Describe in detail the various methods of achieving directional solidification of castings.

OR

b. Describe the basic functions of feeders and explain the various kinds of shrinkage with specific reference to steel, cast iron and bronze.

15 a. List out special precautions are to be taken in the casting of aluminium alloys? Name some of the cast aluminium alloys used for (i) Foundry pattern (ii) Automobile cylinder blocks.

OR

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

16 a. Describe in detail the steps in sequence for making mould in Co2 process.

OR

b. Explain in detail the various applications of computer in foundry industries.

17 a. Describe in detail about various methods to reduce welding stresses.

OR

b. Explain the various methods of non destructive testing of welds.

18 a. Illustrate with a neat diagram and explain the inertia drive friction welding process.

OR

b. Illustrate with a neat diagram briefly explain the frequency induction welding with advantages.

Answer ALL questions

PART-C (2 x 15 = 30)

19 a. Classify casting defects. How they coocred during casting. Mention some remedy for avoid such defects.

OR

b. Describe the various methods available to a casting designer to increase the casting yield.

20 a. Describe in detail about the analysis of stresses in welded structures with suitable example.

OR

b. Illustrate with a neat schematic diagram and explain the friction stir welding system in nuclear industries.

SL.NO:2274

SL.NO:2282

SUBJECT CODE:40221C04

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E./ M.TECH DEGREE EXAMINATIONS- APRIL -2022
MANUFACTURING ENGINEERING
FIRST SEMESTER
ADVANCED MATERIALS TECHNOLOGY
(Candidates admitted under 2021 Regulations-SCBCS)

Time : Three Hours

Maximum Marks:100 Marks

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

- 1 Classify the electrical properties of material.
- 2 Discuss about precipitation hardening.
- 3 List the effect of temperature in plastic behaviour.
- 4 Discuss about ductility property.
- 5 List out the technological properties of metals.
- 6 Which factor cannot be compromised in the final selection of materials? why?
- 7 What is meant by hypereutectoid steels?
- 8 Classify the tool steels.
- 9 Why are additives added to polymers?
- 10 Define composites.

Answer **Any FIVE** questions
Part-B (5 x10 =50 Marks)

- 11 a. Classify the engineering materials. Briefly explain few of them.
OR
b. Explain in detail about Solid solution hardening of strengthening mechanisms in detail.
- 12 a. Explain the effects on properties of materials due to cold working
OR
b. Discuss in detail about super plasticity with its advantages and applications.
- 13 a. Explain in detail about Solid solution hardening of strengthening mechanisms in detail.
OR
b. Explain briefly various elements of failure analysis.
- 14 a. Illustrate with neat sketch of fatigue failure in detail and what are the variables that affect the fatigue life.

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OR

- b. Briefly discuss about the step by step procedure of failure analysis
- 15 a. Give a detailed explanation of selection of materials in terms of cost basis and service requirements.

OR

- b. Explain in detail the various applications of brasses with its composition.
- 16 a. Explain in detail about the composition, properties and applications of the following. (a) Ferritic stainless steel. (b) Austenitic stainless steel.

OR

- b. Explain in detail about the effect of alloying elements adding to steel.
- 17 a. Describe in detail about the classification of smart materials with its applications.

OR

- b. Briefly discuss about the thermal and mechanical behavior of polymers.
- 18 a. Discuss about the polymer processing in detail.

OR

- b. Discuss in detail about addition polymerization mechanism in structure.

Answer ALL questions

PART-C (2 x 15 = 30)

- 19 a. Compare slip and twinning mechanism of plastic deformation in detail

OR

- b. Explain Larson Miller parameter in detail with a suitable sketch.

- 20 a. Explain the procedures of Case studies of materials selection in relevant to mechanical part.

OR

- b. List advanced ceramic materials in Engineering applications and explain in detail with properties and applications.

SL.NO:2282

SL.NO:2289

SUBJECT CODE:40221P01

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E./ M.TECH DEGREE EXAMINATIONS- APRIL -2022
MANUFACTURING ENGINEERING
FIRST SEMESTER
ELECTIVE - FLUID POWER AUTOMATION

Time : Three Hours

Maximum Marks:100 Marks

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

- 1 Name the basic components required in hydraulic systems.
- 2 List the various pneumatic control elements.
- 3 List the different types of pneumatic valves.
- 4 What is meant by a 3/2 DC valve?
- 5 What is the purpose of fail-safe circuit?
- 6 What is meant by cascading? When it is required?
- 7 Name the different pneumatic position sensors.
- 8 Define bulk modulus.
- 9 Why hydraulic power especially useful when performing heavy work?
- 10 Compare Electrical system and Hydraulic system.

Answer **Any FIVE** questions
Part-B (5 x10 =50 Marks)

- 11 a. List the applications of fluid power in detail.

OR

b. List five advantages and five disadvantages of pneumatics in detail.
- 12 a. Explain relay and timer with neat sketch

OR

b. Compare fluid power with other power sources.
- 13 a. Discuss about the maintenance of the hydraulic oils.

OR

b. Explain the construction and working of internal gear pumps.

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14 a. Explain the construction and working of gerotor pump.

OR

b. With a neat sketch explain the construction and working of a piston type accumulator.

15 a. Explain any two application circuits employing accumulator for different purposes.

OR

b. Draw a schematic of 3/2 DCV that is manually operated and briefly explain its function.

16 a. Explain the working of double acting cylinder.

OR

b. Explain the regenerative circuit for a drilling machine.

17 a. Draw and explain the regenerative hydraulic circuit with suitable example.

OR

b. Sketch and explain in detail about automatic reciprocating cylinder circuit.

18 a. Explain the working principle of a PLC with neat block diagram.

OR

b. Draw a neat sketch of the control of cylinder using pressure switch

Answer ALL questions

PART-C (2 x 15 = 30)

19 a. Give a comparison between Electrical, Hydraulic and Pneumatic systems.

OR

b. With the help of neat sketch explain the working of air filter.

20 a. Show the working of sequencing valve with an application circuit.

OR

b. Explain the Control of a Hydraulic Cylinder using PLC with a circuit.
