



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY :: PUTTUR
(AUTONOMOUS)**

(Approved by AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
(Accredited by NBA & Accredited by NAAC with 'A' Grade)
(An ISO 9001:2008 Certified Institution)

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QUESTION BANK

Subject with Code: Advances in Manufacturing Technology (18ME3015)

Course & Branch: M. Tech(CAD&M)

Year/Sem : I/II

Regulation: R18

UNIT-I

- 1 Discuss the principles of fusion welding process in detail. (12M)
- 2 Discuss the principles of solid state welding process in detail. (12M)
- 3 a. Define automation. (2M)
- b. List the purpose of automation. (2M)
- c. Discuss the automatic welding with neat sketch. (8M)
- 4 Explain the design aspects of welding. (12M)
- 5 Discuss the design recommendations/ aspects of welding through cost reduction and weld strength with neat sketch. (12M)
- 6 Explain the typical welding problems in aluminum alloys (12M)
- 7 Describe the weldability of titanium alloys. (12M)
- 8 Shortly discuss about the Non destructive testing (NDT). (2M)
- List the various NDT techniques is used to inspect weld joints. (3M)
- With neat sketch discuss about the liquid penetrant testing is used to inspect weld joints. (7M)
- 9 Describe the principle of magnetic particle testing is used to inspect weld joints. (6 M)
- Sketch and describe the common visual inspection method is used to test welding. (6 M)

- 10 Explain in detail about the residual stresses and distortion in weldments. (12M)
- 11 Explain in detail about the plating and related processes. (12M)
- 12 With neat sketch discuss about the physical vapor deposition (PVD) process. (12M)
- 13 With neat sketch discuss about the chemical vapor deposition (CVD) process. (12M)
- 14 Explain in detail about the organic coatings. (12M)
- 15 Describe the porcelain enameling with neat sketch. (12M)
- 16 Explain the Ceramic coatings with suitable block diagrams. (12M)
- 17 Elaborately discuss about the thermal coating processes. (12M)
- 18 Explain in detail about the mechanical coating processes. (12M)

UNIT-II

- 1 a. List the various components of abrasive jet machining (AJM). (2M)
b. Discuss the individual components of abrasive jet machining with suitable sketch. (10M)
- 2 a. What is meant by abrasive jet machining? (2M)
b. Explain the working process of AJM with schematic layout. (10M)
- 3 a. List the features of abrasive jet machining. (3M)
b. Enumerate the machine aspects of abrasive jet machining. (3M)
c. List the types of abrasive materials. (3M)
d. What are the advantages of AJM? (3M)
- 4 a. Give the operating principles in abrasive jet machining. (3M)
b. List the disadvantages of AJM. (3M)
c. Discuss shortly about the effects of various parameters on material removal rate. (6M)
- 5 a. Shortly discuss about the common characteristics of the AJM process. (4M)
b. Enumerate the applications of the AJM process. (4M)
c. Shortly describe the use of nozzle in the AJM process. (4M)
- 6 a. Explain the accuracy and surface finish process characteristics of AJM (8M)

- process. (4M)
- b. What are the various AJM elements influencing AJM process.
- 7 a. What is meant by ultrasonic machining? (3M)
- b. Give some work samples machined by USM. (3M)
- c. Discuss shortly about the effects of various parameters on material removal rate of ultrasonic machining. (6M)
- 8 Explain the working process of ultrasonic machining with typical setup layout. (12M)
- 9 a. Shortly discuss about the tool materials and tool size of ultrasonic machining. (6M)
- b. Shortly discuss about the abrasive slurry of ultrasonic machining. (6M)
- 10 Explain in detail about the following process characteristics of ultrasonic machining: (4M)
- a. Tool wear (4M)
- b. Accuracy (4M)
- c. Surface finish
- 11 a. What are the advantages of USM? (4M)
- b. List the disadvantages of USM. (4M)
- c. Enumerate the applications of the USM process. (4M)
- 12 a. Discuss about the tool holder of USM. (5M)
- b. Describe the transducer of USM with suitable sketch. (7M)

UNIT-III

- 1 Discuss in detail about the fundamentals working principle of electro-chemical (ECM) machine with neat sketch. (12M)
- 2 Explain the electrolytes and electro system of electro-chemical machine. (12M)
- 3 Explain the Material removal rate (MRR), Accuracy and Surface finish of ECM process characteristics. (12M)
- 4 Describe the ECM tooling procedures of electro-chemical machine. (12M)

- 5 Discuss any three applications of electro-chemical processes with neat layout. (12M)
- 6 Describe the mechanical and surface properties of metals processed by electro chemical metal removal methods. (12M)
- 7 Discuss the schematic illustration of the wire EDM or electrical-discharge wire cutting process. (12M)
- 8 Explain the electrode manufacture and electrode wear of wire EDM tools (electrode). (12M)
- 9 Describe the following of wire EDM: a) Dielectric fluid (6 M), and Spark generator (6 M) (12M)
- 10 Explain the following wire EDM process characteristics: a) Material removal rate. (3 M), b) Accuracy. (3 M), c) Surface finish. (3 M) (12M)
- 11 Discuss in detail about the choice of machining operations, electrode material selection, machine settings, under sizing and length of electrode, and machining time of wire EDM tool design. (12M)

UNIT-IV

- 1 Explain the generation and control of electron beam for machining. (12M)
- 2 Discuss in detail about the theory and principle of electron beam machining (EBM). (12M)
- 3 List the advantages and limitations of electron beam machining. (12M)
- 4 Describe the process characteristics of electron beam machining. (12M)
- 5 Discuss any three applications of electron beam machining with suitable sketch. (12M)
- 6 Explain the theory and principle of and principle of plasma arc machining (PAM). (12M)
- 7 Briefly describe the following of PAM:
 - a. Plasma turning applications (6M)
 - b. Advantages (3M)

- c. Disadvantages (3M)
- 8 Discuss the following of plasma arc machining: a) Selection of gas (4 M) and (12M)
b) Process characteristics (8 M)
- 9 Discuss in detail about the working principle of laser beam machining (LBM). (12M)
- 10 Explain the effect of machining parameters on surface finish of laser beam (12M)
machining.
- 11 Enumerate the advantages and limitations of laser beam machining. (6M + 6M)

UNIT-V

- 1 a. Shortly discuss about the fundamentals of rapid prototyping technology (4M)
(RPT). (4M)
- b. Shortly discuss about the basic process of RPT. (4M)
- c. Give the basic operating principles of RPT.
- 2 Discuss the process, material, advantages, and limitations of Stereolithography. (12M)
- 3 Explain the process, material, advantages, and limitations of fused deposition (12M)
method.
- 4 Explain the process, material, advantages, and limitations of laser sintering. (12M)
- 5 a. Enumerate the general advantages of RPT. (4M)
- b. Discuss about the 3-D ink jet printing. (8M)
- 6 a. List the types of rapid prototyping technology. (3M)
- b. Give the disadvantages of RPT. (3M)
- c. Enumerate the applications of rapid prototyping technology. (6M)
- 7 a. Shortly discuss about the fundamentals of nano technology. (6M)
- b. Discuss the various applications of nano technology. (6M)
- 8 a. List the advantages of nano technology. (4M)
- b. Enumerate the pitfalls of nano technology. (4M)
- c. Give the various manufacturing processes are used to produce nano (4M)
materials.

- 9 Explain in detail about the wet milling of dry milling nano milling processes (12M)
- 10 With schematic diagram explain the ball milling process. (12M)
- 11 Discuss the fabrication of nano tubes, advantages of nano tubes, and its mechanical properties. (12M)

