

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: IV - THEORY EXAMINATION (2023 - 2024)

Subject: Manufacturing Technology-II

Time: 3 Hours

Max. Marks: 100

General Instructions:

IMP: Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.
2. Maximum marks for each question are indicated on right -hand side of each question.
3. Illustrate your answers with neat sketches wherever necessary.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.
6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A

20

1. Attempt all parts:-

- 1-a. Why metal removal process is costly? (CO1) 1
- (a) more energy is required
 - (b) some of the material is wasted
 - (c) both more energy is required and some of the material is wasted
 - (d) none of the mentioned
- 1-b. Which of the following process is not grouped under metal removal process? (CO1) 1
- (a) boring
 - (b) milling
 - (c) tumbling
 - (d) rolling
- 1-c. Which machine tool is known as the mother of all machine tools? (CO2) 1
- (a) milling
 - (b) none of mentioned
 - (c) drill
 - (d) lathe
- 1-d. Which type of surface is produced by turning operation in lathe machine? (CO2) 1
- (a) flat
 - (b) cylindrical

- (c) taper
- (d) none of the mentioned
- 1-e. Grinding wheel is specified as “C 8 K 5 B 17”. Grain size of a wheel will be (CO3) 1
- (a) Coarse
- (b) Medium
- (c) Fine
- (d) Very Fine
- 1-f. Which of the following specified grinding wheel will have Aluminum oxide abrasive? (CO3) 1
- (a) A 46 K 5 B 17
- (b) C 600 K 5 B 17
- (c) C 8 K 5 B 17
- (d) Z 46 K 5 B 17
- 1-g. Which of the following is an unconventional process of machining? (CO4) 1
- (a) Milling
- (b) WJM
- (c) Drilling
- (d) None of the mentioned
- 1-h. For machining of plastic material which of the unconventional process can be used effectively? (CO4) 1
- (a) Electro chemical machining
- (b) Electron beam machining
- (c) Water jet machining process
- (d) None of the mentioned
- 1-i. Which of the following material removal mechanisms is implemented by ECM? (CO5) 1
- (a) Mechanical abrasion
- (b) Electrochemical dissolution
- (c) Chemical corrosion
- (d) Mechanical erosion
- 1-j. Chemical equivalent is the ratio of which of the following factors? (CO5) 1
- (a) Work piece valence to the atomic weight
- (b) Atomic weight to work piece valence
- (c) Tool valence to molecular weight
- (d) Molecular weight to tool valence

2. Attempt all parts:-

- 2.a. Write any two reasons for flank wear in cutting tools? (CO1) 2

- 2.b. What are the various thread cutting methods? (CO2) 2
- 2.c. Write the applications of abrasive jet machining? (CO3) 2
- 2.d. What are the types of tool materials for USM? (CO4) 2
- 2.e. List the applications of chemical machining. (CO5) 2

SECTION-B

30

3. Answer any five of the following:-

- 3-a. Discuss the different types of chips produced during machining process with neat sketches? (CO1) 6
- 3-b. Discuss the various type of cutting fluids? (CO1) 6
- 3-c. Explain briefly Up-milling process and Down milling process. (CO2) 6
- 3-d. Write difference between the capstan and turret lathe? (CO2) 6
- 3.e. What is a grinding wheel? Give different bonding materials used in it. (CO3) 6
- 3.f. With a typical component explain the working of a wire EDM system.(CO4) 6
- 3.g. What are the important process parameters that control the material removal rate in EDM? Explain any four of them in detail? (CO5) 6

SECTION-C

50

4. Answer any one of the following:-

- 4-a. Derive the Merchant metal cutting theory with suitable diagram? (CO1) 10
- 4-b. List the important characteristics of cutting tool materials? (CO1) 10

5. Answer any one of the following:-

- 5-a. What are the various method used for gear finishing? Discuss any two methods? (CO2) 10
- 5-b. Why is gear finishing required? Discuss the various types of gear finishing operations? (CO2) 10

6. Answer any one of the following:-

- 6-a. What is grinding process? Explain the centerless grinding process. Which material is used to make the grinding wheel? (CO3) 10
- 6-b. Discuss the various types of CNC Machine based on tool motion? (CO3) 10

7. Answer any one of the following:-

- 7-a. Draw the schematic layout of AJM and explain its operating characteristics. What are the methods adopted to have an effective control over the mass flow rate of the abrasive? (CO4) 10
- 7-b. State the principle of ultrasonic machining process? State the benefits of Water Jet Machining process. (CO4) 10

8. Answer any one of the following:-

- 8-a. Explain the process of PAM with a neat sketch. With respect to principle, equipment process parameter, advantages, disadvantages and applications. (CO5) 10
- 8-b. Explain the process of LBM and PAM with neat sketches. (CO5) 10