Hall Ticket No: | | | | | | | | | | | Course Code: 18AMSP101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

M.Tech I Year I Semester (R18) Regular End Semester Examinations – January 2019

ADVANCED MACHINING PROCESSES

(Advanced Manufacturing Systems)

Time: 3Hrs Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A)	(i) Explain the reasons for the development of advanced machining process.	6 M
	(ii) Name the important factors that should be considered during the selection of an advanced machining process for a given job.	6 M
	OR	
Q.1(B)	(i) Explain in detail about dry machining and hard turning.	6 M
	(ii) Make a comparison between traditional and advanced machining process in terms of cost, applications, scope and machining time.	6 M
Q.2(A)	(i) Explain the process parameters that influence water jet machining.	6 M
	(ii) Briefly discuss about the mechanisms involved in material removal by ultrasonic machining.	6 M
	OR	
Q.2(B)	(i) Discuss the operation of abrasive jet machining in detail with a neat sketch.	6 M
	(ii) What are the various process parameters that govern the process criteria in ultrasonic machining?	6 M
Q.3(A)	(i) Describe with a neat sketch the working of wire electro-discharge machining.	6 M
	(ii) Differentiate between electron beam machining and laser beam machining by considering at least five aspects.	6 M
	OR	
Q.3(B)	(i) Explain the production of laser beam with a neat sketch.	6 M
	(ii) Explain the construction and working of plasma beam machining process with a neat sketch.	6 M
Q.4(A)	(i) Explain the construction details of micro-ECM.	6 M
	(ii) Describe the quality of machining and accuracy obtained in chemical machining process.	6 M
	OR	
Q.4(B)	(i) What are various etchants used in chemical machining and also mention their characteristics?	6 M
	(ii) What are the various process parameters to be considered to obtain higher MRR and quality of machine surface in electro chemical machining?	6 M
Q.5(A)	(i) Differentiate between electro chemical grinding and conventional grinding.	6 M
	(ii) List the advantages and disadvantages of electro chemical honing.	6 M
	OR	
Q.5(B)	Write a short note on electro-erosion dissolution machining and abrasive electro-discharge machining.	12M

END

Hall Ticket No: | | | | | | | | | | | Course Code: 18AMSP102

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

M.Tech I Year I Semester (R18) Regular End Semester Examinations – January 2019

AUTOMATION IN MANUFACTURING

(Advanced Manufacturing Systems)

Time: 3Hrs **Max Marks: 50**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A)	(i) What are manufacturing systems and how are they distinguished from production systems?	5 M
	(ii) Briefly explain about basic elements of an automated system.	5 M
	OR	
Q.1(B)	(i) List the strategies used for automation and process improvement.	5 M
	(ii) What is the difference between direct labor cost and material cost in manufacturing?	5 M
Q.2(A)	(i) Discuss the importance of a material handling system.	5 M
	(ii) Explain about various guidance methods available for an automated guided vehicles.	5 M
	OR	
Q.2(B)	(i) Write the difference between rail-guided vehicles and automated guided vehicles.	5 M
	(ii) Calculate the number of AGVs required with a vehicle speed of 50 m/min with an average loaded travel distance of 180 m. The average empty travel distance is 120 m. The total time required for loading and unloading is 1 minute. The number of delivers to be made is 50 per hour. Assume a traffic factor of 0.85.	5 M
Q.3(A)	(i) Briefly describe the measures used to assess the performance of a storage system.	5 M
	(ii) Explain in detail about basic categories of automated storage systems.	5 M
	OR	
Q.3(B)	(i) What is a carousel storage system? Write the advantage of a vertical storage carousel over a horizontal storage carousel.	5 M
	(ii) Briefly explain about various bar code technologies used for automatic identification.	5 M
Q.4(A)	(i) What are the advantages of segmented in-line configuration over straight-line configuration?	5 M
	(ii) What is a manual assembly line? List factors that favor the use of manual assembly line.	5 M
	OR	

Q.4(B) (i) What are the basic control functions that must be accomplished to operate an automated production line? 5 M

(ii) Define the terms cycle time, service time, balance efficient, precedence constraint and manning level. 5 M

Q.5(A) (i) List various conditions under which automated assembly technology should be considered. 5 M

(ii) Why are automated assembly systems more cost effective than automated transfer lines? 5 M

OR

Q.5(B) The table below defines the precedence relationships and element times for a new model toy. (i) construct the precedence diagram for this job; (ii) if the ideal cycle time = 1.1 minutes, repositioning time = 0.1 minute and uptime proportion is assumed to be 1. What is the theoretical minimum number of workstations required to minimize the balance delay under the assumption that there will be one worker per station? (iii) use the Kilbridge and Wester method to assign work elements to stations; (d) compute the balance delay for your solution. 10M

Work element	T_e (min)	immediate predecessors
1	0.5	-
2	0.3	1
3	0.8	1
4	0.2	2
5	0.1	2
6	0.6	3
7	0.4	4,5
8	0.5	3,5
9	0.3	7,8
10	0.6	6,9

END

Hall Ticket No: | | | | | | | | | | | Course Code: 18AMSP402

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

M.Tech I Year I Semester (R18) Regular End Semester Examinations – January 2019

MATERIALS CHARACTERIZATION TECHNIQUES

(Advanced Manufacturing Systems)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A)	i. Explain Bragg's law with neat sketch?	6M
	ii. Briefly explain the operating principle of XRD with neat diagram	6M
	OR	
Q.1(B)	Write the Scherrer equation and define each term in it. Calculate the crystallite size for spherical shape having Cu radiation λ=0154 nm. Bragg angle = 27°and FWHM =0.5°.	12M
Q.2(A)	Draw a neat and clean schematic diagram for electron-solid interactions and define each term in details. Write down the differences between AFM and STM?	12M
	OR	
Q.2(B)	Discuss different sample preparation methods used in TEM for characterize metal, ceramic and polymer samples? Write down the differences between SEM and TEM?	12M
Q.3(A)	What are the process which can effect weight loss and weight gain in TGA? Explain the process with neat TG curves?	12M
	OR	
Q.3(B)	Explain two probe method and four probe method for measuring electrical resistivity of the materials? State the Hall effects and discuss its applications?	12M
Q.4(A)	What is spectroscopy? Discuss Beer–Lambert law? Explain the working principle of the UV spectroscopy?	12M
	OR	
Q.4(B)	What is FTIR? Explain working principle, construction, applications, advantages and limitations?	12M
Q.5(A)	Discuss the application of ultrasconic testing in the NDT world? Explain the different types of data presentation used in ultrasconic testing (Scan A, B and C) with neat diagram?	12M
	OR	
Q.5(B)	What are types of indenter used in nano indentation? Explain load –displacement curves and factor affecting nano indentation test?	12M

END

Hall Ticket No: | | | | | | | | | | | Course Code: 18AMSP406

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

M.Tech I Year I Semester (R18) Regular End Semester Examinations – January 2019

MATERIALS TECHNOLOGY

(AMS)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A)	Explain various types of bonds in solids in detail. Why are primary bonds stronger than secondary ones, evaluate in detail.	12M
	OR	
Q.1(B)	Explain the plastic deformation mechanisms in materials.	12M
Q.2(A)	Explain work hardening in detail. What is solid solution strengthening. Explain its importance along with example.	12M
	OR	
Q.2(B)	Explain Gibbs Phase Rule in detail and its application in phase diagrams.	12M
Q.3(A)	Draw and explain TTT diagram of eutectoid steel and its various phases.	12M
	OR	
Q.3(B)	With a neat sketch explain Iron – Iron Carbide Diagram. Explain all the vital reactions along with suitable reactions.	12M
Q.4(A)	How are polymeric materials classified? For an high temperature application which type of polymeric material do you use? Explain.	12M
	OR	
Q.4(B)	Explain the structure, importance and application of CBN and Diamond.	12M
Q.5(A)	How are composites classified? Explain each with suitable examples.	12M
	OR	
Q.5(B)	How are composites selected based on their mechanical property? Explain with multiple examples.	12M

*****END*****

Hall Ticket No: | | | | | | | | | | | Course Code: 18RMP101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

M.Tech I Year I Semester (R18) Regular End Semester Examinations – January 2019

RESEARCH METHODOLOGY AND IPR

(Common to ALL)

Time: 3Hrs Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part A or Part B only.

Q.1(A)	List the objectives of research and briefly explain any two of your choice.	12M
	OR	
Q.1(B)	Explain fundamental research and applied research with suitable examples pertaining to them?	13M
Q.2(A)	How good research paper can be written and elements of information needed?	12M
	OR	
Q.2(B)	Discuss briefly about the investigation of a research problem?	12M
Q.3(A)	You are one of the evaluators for a thesis or research paper. How you will do review of the same?	12M
	OR	
Q.3(B)	Describe the steps involved in successful technology licensing?	12M
Q.4(A)	Describe briefly the steps involved in patenting process in India.	12M
	OR	
Q.4(B)	Describe shortly the terms listed below: a. Patents b. Copyright c. Plagiarism	12M
Q.5(A)	Write a short note on Nagoya protocol?	12M
	OR	
Q.5(B)	Describe briefly the contents of patent application form.	12M

END