TEXT BOOKS:

1. **Cryogenic Systems,** Randall Barron – Oxford Press, 1985
2. **Cryogenic Engineering,** Thomas M. Flynn, Marcel Dekker, Inc N.Y. Basal 1997

REFERENCE BOOK:

1. **Cryogenic Process Engineering,** Klaus D. Timmerhaus & Thomas M. Flynn, Plenum Press, New York & London 1989.

SMART MATERIALS

Subject Code	**: 10ME764**	**IA Marks**	**: 25**
Hours/Week	**: 04**	**Exam Hours**	**: 03**
Total Hours	**: 52**	**Exam Marks**	**: 100**

PART - A

UNIT - 1

Introduction: Characteristics of composites and ceramics materials, Dynamics and controls, concepts, Electro-magnetic materials and shape memory alloys-processing and characteristics

06 Hours

UNIT - 2

Sensing And Actuation: Principles of electromagnetic, acoustics, chemical and mechanical sensing and actuation, Types of sensors and their applications, their compatibility writer conventional and advanced materials, signal processing, principles and characterization.

07 Hours

UNIT - 3

Control Design: Design of shape memory alloys, Types of MR fluids, Characteristics and application, principles of MR fluid value designs, Magnetic circuit design, MR Dampers, Design issues.

06 Hours

UNIT - 4

Optics And Electromagnetic: Principles of optical fiber technology, characteristics of active and adaptive optical system and components, design and manufacturing principles.

07 Hours

PART – B

UNIT - 5

Structures: Principles of drag and turbulence control through smart skins, applications in environment such as aerospace and transportation vehicles, manufacturing, repair and maintainability aspects.

07 Hours

UNIT - 6

Controls: Principles of structural acoustic control, distributed, analog and digital feed back controls, Dimensional implications for structural control.

06 Hours

UNIT - 7

Principles Of Vibration And Modal Analysis: PZT Actuators, MEMS, Magnetic shape Memory Alloys, Characteristics and Applications.

07 Hours

UNIT - 8

Information Processing: Neural Network, Data Processing, Data Visualisation and Reliability – Principles and Application domains.

06 Hours

TEXT BOOKS:

1. **Analysis and Design',** A. V. Srinivasan, 'Smart Structures – Cambridge Universities Press, New York, 2001, (ISBN : 0521650267)
2. **'Smart Materials and Structures',** M V Gandhi and B S Thompson Chapmen & Hall, London, 1992 (ISBN : 0412370107)

REFERENCE BOOKS:

1. **'Smart Materials and Structures',** Banks HT, RC Smith, Y Wang, Massow S A, Paris 1996
2. **G P Gibss'Adaptive Structres',** Clark R L, W R Saunolers, Jhon Wiles and Sons, New York, 1998
3. **An introduction for scientists and Engineers',** Esic Udd, Optic Sensors : Jhon Wiley & Sons, New York, 1991 (ISBN : 0471830070)

AGILE MANUFACTURING

Subject Code	**: 10ME765**	**IA Marks**	**: 25**
Hours/Week	**: 04**	**Exam Hours**	**: 03**
Total Hours	**: 52**	**Exam Marks**	**: 100**

PART – A

UNIT - 1

Agile Manufacturing: Definition, business need, conceptual frame work, characteristics, generic features.

06 Hours

UNIT - 2

Developing Agile Manufacturing: Enterprise, Strategies, integration of organization, workforce and technology, reference models, examples.

07 Hours

UNIT - 3

Integration Of Product /Process Development: Principles, Robust design approach, Approaches to enhance ability in manufacturing, Role of QFD, Managing people in Agile organization, Approaches.

06 Hours

UNIT - 4

Application Of It/Is Concepts In Agile Manufacturing: Strategies, Management of complexities and information. flow, approaches,