Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA ENGINEERING – SEMESTER –VI • EXAMINATION – WINTER 2015

Subject Code: 361909 **Date: 08/12/2015**

Subject Name: Advance Manufacturing System

Time: 02:30 PM TO 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **English version is considered to be Authentic.**

Q.1	(a)	List Group technology codification systems. Explain any one with suitable example.	**07**
	(b)	What is advance manufacturing system (AMS) and how it is useful in present manufacturing scenario?	**07**
Q.2			
	(a)	State the different types of flexibilities and Explain any two Flexibilities in detail.	**07**
	(b)	Explain concept, meaning and Objectives of Flexible Manufacturing system.	**07**
		OR	
	(b)	State and Explain different layouts of flexible manufacturing systems.	**07**
Q.3			
	(a)	State types and applications of Automated Guided Vehicle Systems. (AGV's).	**07**
	(b)	Draw block diagram of Computer Integrated Manufacturing (CIM). Explain its components.	**07**
		OR	
Q.3	(a)	Write short notes on (1) Automated Storage and Retrieval System. (ASRS) (2) Computer Aided Process planning. (CAPP)	**07**
	(b)	Prepare and explain Optiz code for the component shown in Figure- 1.	**07**
Q.4			
	(a)	Explain the activities involved in integration of CAD with CAM.	**07**
	(b)	Write brief notes on 1. Coordinate measuring machine (CMM). 2. Concurrent Engineering.	**07**
		OR	
Q. 4	(a)	Write short note on 1. Applications of Robots 2. KANBAN System.	**07**
	(b)	Give classification of Robots according to configuration with neat sketch.	**07**
Q.5			
	(a)	Define Cellular Manufacturing system. Enlist various types of cells and explain any one in detail with sketch.	**08**
	(b)	Explain following terms.	**06**

(1) Pitch (2) yaw (3) roll in Robots.

OR

Q.5 (a) Explain following terms. **06**
(1) design similarities in GT (2) Manufacturing similarities in GT (3) Routing flexibility in FMS

(b) Explain Machining Centre & Turning Centre in brief. **08**

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Q.1 (a) ગ્રુપ ટેકનોલોજી કોડીફીકેશન સીસ્ટ્મ્સની યાદી બનાવો. કોઇપણ એક ઉદાહરણ સાથે સમજાવો. **07**

(b) એડવાન્સ મેનુફેક્ચરિંગ સીસ્ટમ શું છે? હાલના મેનુફેક્ચરિંગ વાતાવરણમાં તે કઇ રીતે ઉપયોગી છે? **07**

Q.2 (a) ફ્લેક્સીબીલીટી ના પ્રકાર જણાવો અને કોઇપણ બે વિસ્તારથી સમજાવો. **07**

(b) ફ્લેક્સીબલ મેનુફેક્ચરિંગ સીસ્ટમનો અર્થ, ખ્યાલ અને હેતું સમજાવો. **07**

OR

(b) ફ્લેક્સીબલ મેનુફેક્ચરિંગ સીસ્ટમના લે-આઉટ જણાવો અને સમજાવો. **07**

Q.3

(a) ઓટોમેટેડ ગાઈડેડ વ્હિકલના સીસ્ટમના પ્રકાર અને ઉપયોગો લખો. **07**

(b) CIM નો બ્લોક ડાયાગ્રામ દોરો અને તેનાં અંગો જણાવો. **07**

OR

Q.3

(a) ટુંક નોંધ લખો. (1) ઓટોમેટેડ સ્ટોરેજ એન્ડ રીટ્રીવલ સીસ્ટમ. (ASRS) **07**
(2) કોમ્પ્યુટર એડેડ પ્રોસેસ પ્લાનીંગ. (CAPP)

(b) આકૃતિ-1 માં બતાવેલા પાર્ટ માટે ઓપ્ટીઝ કોડ લખો અને સમજાવો . **07**

Q.4

(a) CAD અને CAM ના ઈન્ટીગ્રેશન માટેની એક્ટીવીટીઝ સમજાવો. **07**

(b) ટુંક નોંધ લખો. (1) કો-ઑરડીનેટ મેઝરીંગ મશીન. (CMM) **07**
(2) કોન્કરન્ટ એંજીનીયરીંગ.

OR

Q.4

(a) ટુંક નોંધ લખો. (1) રોબોટના ઉપયોગો. **07**
(2) KANBAN સીસ્ટમ

(b) રોબોટ ના પ્રકાર તેના કોંફીગ્યુરેશનના આધારે આકૃતિ સાથે વર્ણવો. **07**

Q.5

(a) સેલ્યુલર મેનુફેક્ચરિંગ સીસ્ટમની વ્યાખ્યા આપો. જુદા-જુદા ટાઇપના સેલની યાદી લખો અને કોઇ એક વર્ણવો. **08**

(b) નીચેના પદો સમજાવો. (1) પીચ (2) યો (3) રોલ (રોબોટ ના સંદર્ભમાં) **06**

OR

Q.5

(a) નીચેના પદો સમજાવો. (1) ડીઝાઇનની સમાનતા (2) મેનુફેક્ચરિંગની સમાનતા (ગ્રુપ ટેક્નોલોજીના સંદર્ભમાં) (3) રુટીંગ ફ્લેક્સીબીલીટી (FMS ના સંદર્ભમાં) **06**

(b) મશીનીંગ સેંટર અને ટર્નીંગ સેંટર વિશે ટુંકમા સમજાવો. **08**

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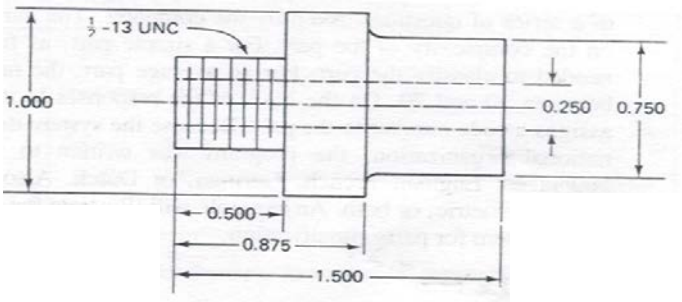
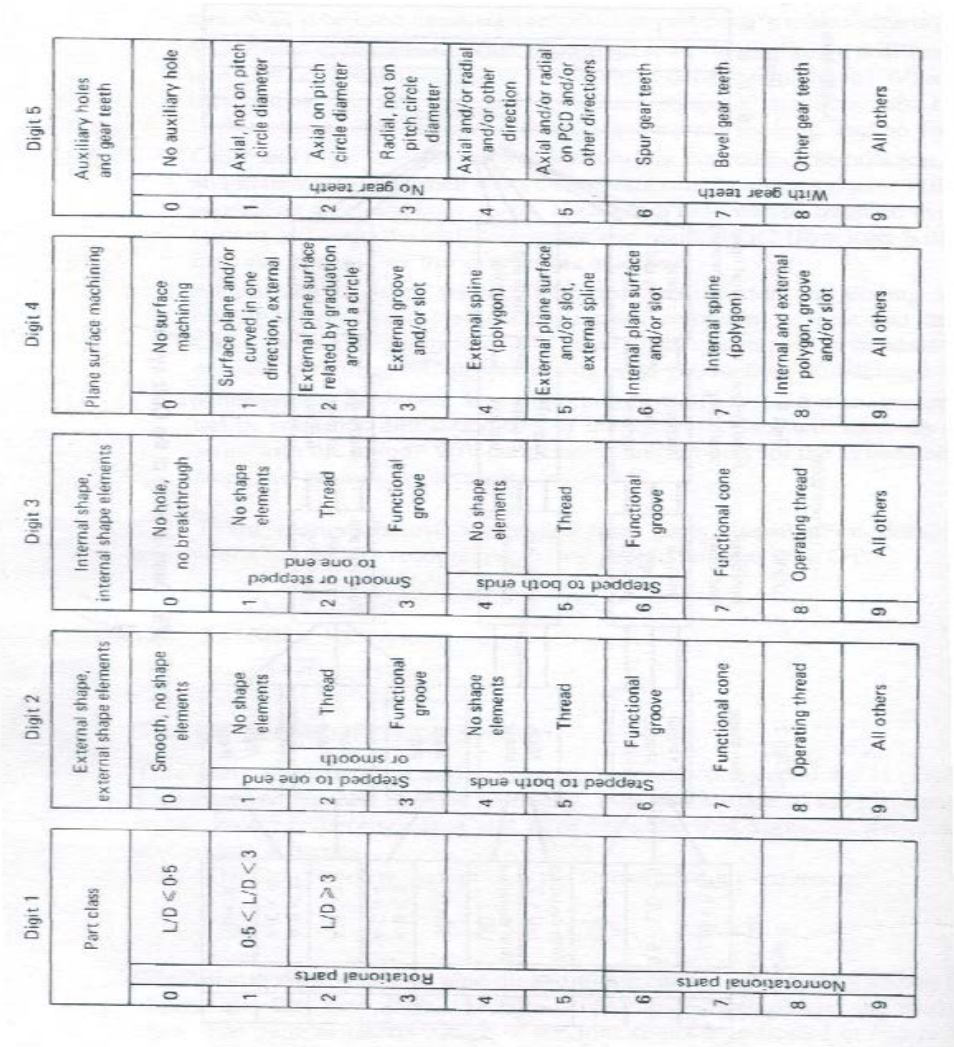


આકૃતિ-1(માપ ઇંચમા છે.)



Digit 1		Digit 2		Digit 3		Digit 4		Digit 5	
Part class		External shape, external shape elements		Internal shape, internal shape elements		Plane surface machining		Auxiliary holes and gear teeth	
		Smooth, no shape elements		No hole, no breakthrough		No surface machining		No auxiliary hole	
			Stepped to one end or smooth		Smooth or stepped to one end			Axial, not on pitch circle diameter	No gear teeth
						Surface plane and/or curved in one direction, external		Axial on pitch circle diameter	
						External plane surface related by graduation around a circle		Radial, not on pitch circle diameter	
						External groove and/or slot		Axial and/or radial and/or other direction	
					Stepped to both ends	External spline (polygon)		Axial and/or radial on PCD and/or other directions	
						External plane surface and/or slot, external spline		Spur gear teeth	With gear teeth
						Internal plane surface and/or slot		Bevel gear teeth	
						Internal spline (polygon)		Other gear teeth	
						Internal and external polygon, groove and/or slot		All others	
						All others			
0	L/D ≤ 0·5	0	Smooth, no shape elements	0	No hole, no breakthrough	0	No surface machining	0	No auxiliary hole
1	0·5 < L/D < 3	1	No shape elements	1	No shape elements	1	Surface plane and/or curved in one direction, external	1	Axial, not on pitch circle diameter
2	L/D ≥ 3	2	Thread	2	Thread	2	External plane surface related by graduation around a circle	2	Axial on pitch circle diameter
3		3	Functional groove	3	Functional groove	3	External groove and/or slot	3	Radial, not on pitch circle diameter
4		4	No shape elements	4	No shape elements	4	External spline (polygon)	4	Axial and/or radial and/or other direction
5		5	Thread	5	Thread	5	External plane surface and/or slot, external spline	5	Axial and/or radial on PCD and/or other directions
6		6	Functional groove	6	Functional groove	6	Internal plane surface and/or slot	6	Spur gear teeth
7		7	Functional cone	7	Functional cone	7	Internal spline (polygon)	7	Bevel gear teeth
8		8	Operating thread	8	Operating thread	8	Internal and external polygon, groove and/or slot	8	Other gear teeth
9		9	All others	9	All others	9	All others	9	All others
Rotational parts		Stepped to one end or smooth		Smooth or stepped to one end				No gear teeth	
Nonrotational parts		Stepped to both ends		Stepped to both ends				With gear teeth	

Optiz code for rotational part