Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, April 2018

Course: CADD **Semester: VIII**
Program: B.Tech ADE **Time: 03 hrs.**
Course Code: ADEG422. **Max. Marks: 100**

SECTION A

Instructions: ***All the questions in section A are compulsory***

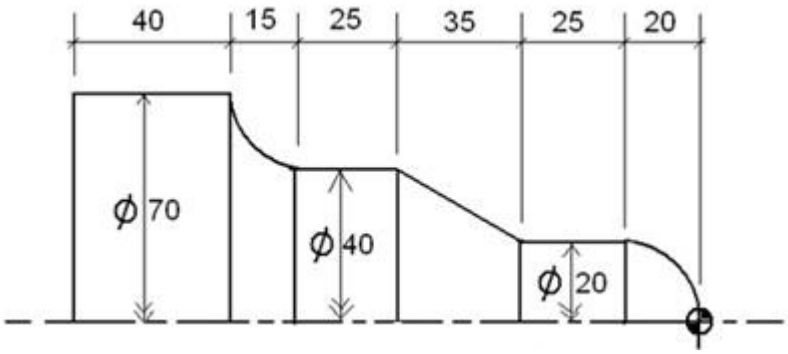
S. No.		Marks	CO
Q 1	Differentiate between generative and variant planning assisted by group technology.	**5**	**CO4**
Q2	A 2-axes CNC machine has stepper motors with step angle 1.8° attached to a lead screw with pitch 1 mm for the table movement. Pulse rate for the machine is 4000 pulses per second. Calculate its Basic Length Unit (BLU) and maximum feed rate possible.	**5**	**CO3**
Q3	Explain the concept of product life cycle with a suitable example.	**5**	**CO1**
Q4	Explain general design rules used in DFA.	**5**	**CO5**

SECTION B

Instructions: ***Questions No 5,6,7 in section B are compulsory. Question No. 8 has an internal choice***

Q5	A line AB starts from point A (2, 4) and ends at point B (10, 10). Calculate the pixel position using Bresenham's Algorithm.	**10**	**CO2**
Q6	Calculate maximum scallop height while machining a hemi-spherical cavity with radius 50mm with a ball end mill cutter of diameter 10mm and step depth of 2mm.	**10**	**CO3**
Q7	Apply Rank order clustering for making manufacturing cells.	**10**	**CO4**

	Component	Processes (OP Code sequences)			
	A-112	Saw01	Lathe 02	Grind 05	Insp 06
	A-115	Mill 02	Drill 01	Insp 03	
	A-120	Saw 01	Lathe 02	Insp 06	
	A-123	Saw 01	Lathe 01	Insp 06	
	A-131	Saw 01	Lathe 02	Insp 06	
	A-212	Mill 05	Insp 03		
	A-230	Mill 05	Insp 03		
	A-432	Saw 01	Lathe 02	Insp 06	
	A-451	Saw 01	Lathe 02	Insp 06	
	A-510	Mill 05	Drill 01	Grind 06	Insp 06
Q8	A Bezier curve P(u) has following control point. A (0, 0), B (4, 4), C (8,-4) and D (12, 0). a) Find the point of inflexion on the curve. b) Find the value of parameter 'u' when slopes are zero. OR Find the expression for blending function $N_{2,4}$ for a B-spline curve when N=5 and K=4.		**10**	**CO2**
	SECTION-C			
Q9	a) Explain the types of flexibilities that can be achieved through FMS b) Explain Miclass and opitz classification system used in GT.		**20**	**CO4**
Q10	a) Write part program for profile turning the part shown in the figure in incremental programming mode. Spindle speed:- 1000 rpm feed:- 0.1 mm/revolution Tool location:- T4			**CO3**



b) Explain the usage of cutter radius compensation.

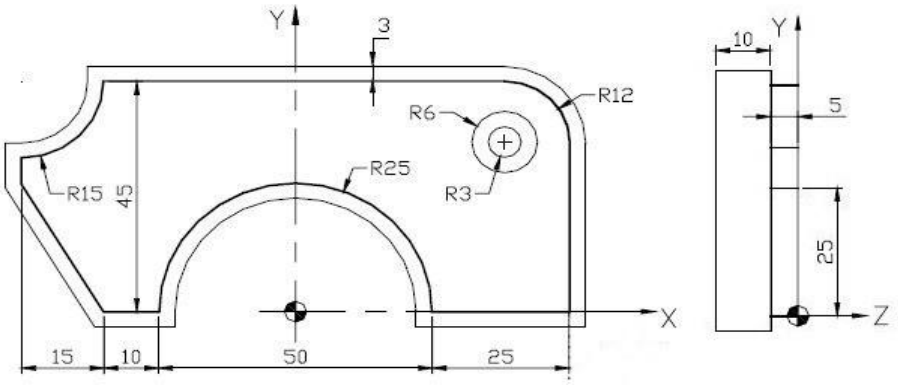
OR

a) Write CNC program for profile milling for the part shown in the figure with following parameters

Spindle speed:- 1200 rpm Tool location:- T2

Tool radius:- 10 mm feed: 100 mm/min

Step depth: 2mm



b) Explain the usage of canned cycle with example