TY – Mid Sem

MGM University
Jawaharlal Nehru Engineering College, Chh Sambhajinagar
Mid Semester Examination – March 2024

Program : B. Tech in _Mechanical Engg.
Course Name: Tool Design
Max Marks: 20
Date:- 07/03/2024
Sem: IV
Subject Code: 20UME604E
Duration:- 1 Hr

Instructions to the students
1. All questions are compulsory
2. Draw neat sketch wherever required
3. Assume suitable data wherever required

Q No		C.O	B.L	Marks
Q 1	(Objective)			6
	1. State the effect of shear angle on cutting force in metal cutting	1	2	
	2. What is positive rake angle?	1	1	
	3. How Build up edge is formed on tool?	1	2	
	4. What is tool signature?	1	1	
	5.For what reamer tools are used?	2	1	
	5. State the property requirement of cutting fluids.	1	1	
Q 2	Solve any two of the following			3 * 2
(A)	Differentiate between orthogonal and oblique cutting process	1	2	
(B)	Draw a neat sketch of Drill tool and give its three nomenclature	2	2	
(C)	What is tool life? Explain the factors affecting tool life	1	1	
Q 3	Solve any one of the following.			8
(A)	In orthogonal cutting test with tool of rake angle 10^0 following observation were made - chip thickness ratio 0.3, Horizontal component of cutting force 1300 N and vertical component of cutting force 1700 N. From the merchant theory calculate the various components of cutting forces(F,N,Fs,Fn) and coefficent of friction between chip tool interface also find friction angle	1	3	
(B)	In metal cutting what type of chips are formed and explain what different factors affect its formation with neat sketch.	1	2	

15 MAR 2024/TY/MSE/MECH/P2/23-24

SY - Mid Sem

MGMU Jawaharlal Nehru Engineering College, Chh.Sambhajinagar

Mid Semester Examination – March 2024

Class : SY- Robotics & Mechatronics
Course Name: CSE
Max Marks: 10 Date:- 05th March 2023

Sem: IV
Subject Code:22UMM4021D
Duration:- 45 Minutes

Note: All questions are compulsory

Q No 1	**Solve the following questions.**	**C.O**	**B.L**	**Marks**
a)	Define Control system	C01	BL-1	1
b)	What is the feedback control system	C02	BL-2	1
c)	Enlist the Generalized elements of control system.	C02	BL-1	1
Q No 2	**Solve any two questions.**			**Marks**
a)	Explain the Working of Stepper motor.	C02	BL-2	2
b)	What is Transient and Steady state response of a control system?	C02	BL-2	2
c)	Explain the Working of Servomotor.	C02	BL-2	2
Q No 3	**Solve any one question.**			**Marks**
a)	For the given Transfer function: $\frac{C(s)}{R(s)} = \frac{1}{S^2+S+1}$ of a control system. Find the Peak Time, % overshoot, settling time and rise time.	C03	BL-3	3
b)	Define the different time domain specification and show on suitable graph.	C02	BL-2	3

15 MAR 2024/TY/MECH/MSE/P2/23-24

TY Mech - Mid Sem

MGM UNIVERSITY

Jawaharlal Nehru Engineering College

Mid Semester Examination – March_2024

Course: B. Tech in Mechanical Engineering Sem: VI

Subject Name: Industrial management **Subject Code: 20UME608D**

Max Marks: 20 **Date: 09/03/2023** **Duration: 1 Hr.**

Instructions to the Students:

1. **Assume suitable data wherever required.**
2. **Draw figure wherever necessary.**
3. **Figure to right indicates full marks.**

		(Level/CO)	Marks
Q.1	**Solve Any Three of the following.**		**3 X 4=12**
(A)	Discuss the various steps undertaken in decision making process briefly.	2/CO1	
(B)	Explain any eight principles of management.	2/CO2	
(C)	Describe the concept of industrial relation and industrial disputes shortly.	2/CO4	
(D)	Discuss the individual and situational variables affecting individual's behaviour.	2/CO4	
(E)	Summarize the concept of job satisfaction in details.	2/CO4	
Q. 3	**Solve Any One of the following.**		**1X 8=8**
(A)	Explain any one form of business organization with its features, advantages, disadvantages and suitability.	3/CO1	
(B)	Describe the various types of industrial disputes. Discuss about the significance of relationship with subordinates, peers and superiors.	3/CO4	
(C)	Which factors affect the motivation of employee? Which methods can be utilized for improving the motivation of employees?	3/CO2	

*** End ***

15 MAR 2024/TY/MSE/MECH/P2/23-24

TY – Mid Sem

MGMU Jawaharlal Nehru Engineering College, Aurangabad
Mid Semester Examination – March-2024

Program: B. Tech.(Mech) (TY-M) SET-1 Sem: II
Course Name: Heat Transfer Subject Code: 20UME602D
Max Marks: 20 Date:- 05-03-2024 Duration:- 1 Hr

Instructions to the students
1. All questions are compulsory
2. Assume suitable data wherever required.

Q. No.		CO	B.L	Marks
Q 1	Answer the following			6*1=6
	1 Name different modes of heat transfer.	CO-1	BL-1	1
	2 Write one example of conduction mode of heat transfer.	CO-1	BL-1	1
	3 Write any two types of fins.	CO-2	BL-1	1
	4 Write any two applications of fins	CO-2	BL-1	1
	5 Write unit of 'Coefficient of Heat Transfer'	CO-3	BL-1	1
	6 Give an example of convection mode of heat transfer.	CO-3	BL-1	1
Q 2	Solve any two of the following			3* 2=6
(A)	A slab is having thickness 60 mm and area of cross section 4 m2. The hot and cold faces of the metal wall are 70 °C and 20 °C respectively. The thermal conductivity of wall material is 15 W/m-°C. Determine the rate of heat transfer through the metal wall.	CO-1	BL-3	
(B)	Classify fins and explain any one with neat diagram.	CO-2	BL-2	
(C)	Differentiate between free & forced convection.	CO-3	BL-2	
Q 3	Solve any one of the following.			8
(A)	Write note on thermal contact resistance. And The hot and cold faces of a solid wall are at 130 °C and 32 °C respectively. The thickness and area of cross section of the solid wall are 25 mm and 3m². The thermal conductivity of wall material is 50 W/m-°C. Determine the temperature gradient if the rate of heat transfer through the solid wall is 70 Kw.	CO-1	BL-3	
(B)	Find the rate of heat flow from a round iron rod of 20 cm length having diameter 2.1 cm. The surface heat conductance is 35 W/m²-K. The base temperature of the rod is 290°C and atmospheric temperature is 28°C. Conductivity of the rod material is 40 W/m-K	CO-2	BL-3	
	END			

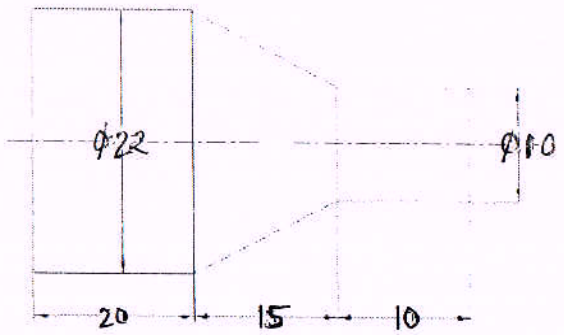
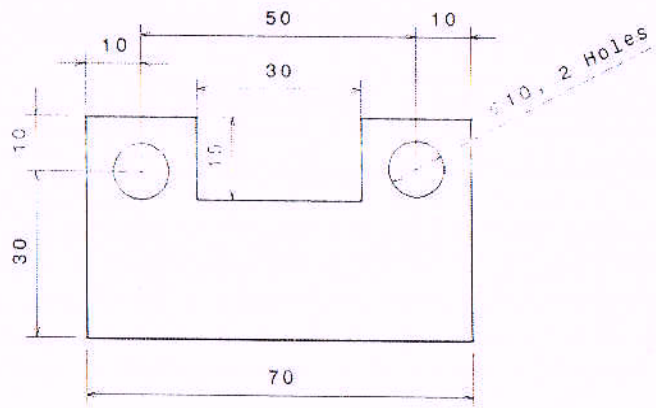
15 MAR 2024/TY/MECH/MSE/P-2/23-24

TY Mid Sem

MGMU Jawaharlal Nehru Engineering College, Aurangabad
MID SEM Examination – MAR 2024

Program: B. Tech in __Mechanical_ (TY)
Course Name: CAD/CAM
Max Marks: 20
Date: - 06/03/2024
Sem: VI
Subject Code: 20UME603D
Duration: - 1 Hr

Instructions to the students
1. All questions are compulsory

Q 1	Solve Any One	C.O	B.L	Marks
1	Explain Briefly Evolution of CAM & Explain advantages of CNC over NC Machine.	3	2	10
2	Explain Closed Loop & Open Loop Systems in CNC.	3	2	
Q 2	Solve any one of the following			
1	Write Manual Part Program for the Fig.1 mentioning Process Plan chart, Tool Path. 	3	3	
2	Write Manual Part Program for the Fig.1 mentioning Process Plan chart, Tool Path. 	3	3	10

15 MAR 2024/TY/MECH/MSE/P2/23-24

TY - Mid Sem

MGM UNIVERSITY

Jawaharlal Nehru Engineering College,

Mid Semester Examination – March. 2024 (AY 2023-24)

Course: T.Y.B.tech Smart M anufacturing) Sem: II

Subject Name: Smart Manufacturing **Subject Code:**

Max Marks: 10 **Date:-08/03/2024** **Time:- 11:00am-12:00 noon** **Duration:- 1 Hr.**

Instructions to the Students:

1. Please check whether you have got the right question paper
2. Assume suitable data wherever necessary.
3. Figures to the right indicate full marks.

Q. 1	**Solve all the following MCQ's.**		**3**
	What is the full form of IoT? a)Internet of Things b) Idea of Things c) Integration of Things d) Institute of Things	**Knowledge/ CO1**	
	What is a Smart Factory? a) Robots who will replace people? (b) Factories and logistic systems that will operate and organise themselves without hu (c) Factories and logistic systems that will organise themselves by human interaction. (d) All of the above	**Knowledge/ CO1**	
	What are the advantages of Industry 4.0? (a) Improved productivity and efficiency (b) Low cost of implementation (c) Creating more vacancies for workers (d) No risk of hacking into the internal network	**Knowledge/ CO1**	
Q2	**Solve Any one of the following**		**3*1**
(A)	.What is smart manufacturing and how it is different from conventional manufacturing?	**Comprehension /CO2**	
(B)	Write a short notes on 1.smart machine tools.2.Smart Cities.	**Comprehension /CO2**	
Q. 3	**Solve Any One of the following.**		**4*1**
(A)	Explain Physical Design of IOT.	**Apply/ CO2**	
(B)	Explain IOT Design Methodology.	**Apply/ CO2**	
(c)	Explain Smart Manufacturing standards.		
	*** End ***		

15 MAR 2024/TY/MSE/MECH/P2-123-24

TY - Midsem

MGM University

Jawaharlal Nehru Engineering College, Chh Sambhajinagar

Mid Semester Examination – March 2024

Program : B. Tech in Mechanical (TY) Sem: IV

Course Name: SCM

Subject Code:20UME605E

Max Marks: 20 Date:- 7/3/24 Duration:- 1 Hr

Instructions to the students

1. All questions are compulsory
2. Draw neat diagrams wherever necessary

Q No	Solve the following questions	C.O	B.L.	Marks
Q 1	**Solve the following**			6
	1 1. A supply chain has _____ key parts. a. two b. three c. four d. five	CO1	1	
	2 Which flow includes moving goods from supplier to consumer, as well as dealing with customer service needs? a. Product flow b. Information flow c. Financial flow d. Materials flow	CO1	1	
	3 Delphi method is _____ method of forecasting a. Quantitative b. Qualitative c. Both a and b d. None of the above	CO2	1	
	4 Regression analysis is _____ method of forecasting a. Quantitative b. Qualitative c. Both a and b d. None of the above	CO2	1	
	5 Trend relate _____ changes a. Long term b. Short term c. Both a and b d. None of the above	CO2	1	
	6 Which of the following cannot be attributed to trend? a. Cyclic Variations b. Random or irregular variations c. Both a and b d. None of the above	CO2	1	
Q 2	**Solve any two of the following**			3 * 2
(A)	Explain general steps in forecasting	CO2	1	
(B)	What is inventory control system?	CO3	1	
(C)	How the Delphi method differs from other qualitative methods?	CO2	1	
Q 3	**Solve any two of the following.**			4 * 2
(A)	Write short note on a. Trend b. Seasonal Variation	CO2	1	
(B)	Enlist and explain functions of supply chain management	CO1	1	
(C)	What is CPRF system in forecasting?	CO2	1	

15 MAR 2024/TY/MECH/MSE/P2/23-24

TY Mid Sem

MGM University, Chh. Sambhajinagar.
Jawaharlal Nehru Engineering College.
Mechanical Engineering
Mid Semester Examination – March- 2024

Course: B. Tech in Mechanical Engineering Sem: VI Subject Name: Machine Design –II
Subject Code: 20UME601D Max Marks: 20 Date:- 04/03/2024 Duration:- 1 Hr

Instructions to the Students:
1. Assume suitable data if required
2. Draw neat sketches wherever needed

		CO	BL	Marks
Q. 1	**Multiple choice questions are given below. Select correct option and write the option in words in answer sheet.**			6
i	The size of gear is usually specified by (a) pressure angle (b) pitch circle diameter (c) circular pitch (d) diametral pitch	CO1	2	
ii	Lewis equation in spur gears is used to find the (a) tensile stress in bending (b) shear stress (c) compressive stress in bending (d) fatigue stress	CO1	1	
iii	The root angle of a bevel gear is equal to (a) pitch angle – addendum angle (b) pitch angle + addendum angle (c) pitch angle – dedendum angle (d) pitch angle + dedendum angle	CO2	2	
iv	The number of starts on the worm for a velocity ratio of 40 should be (a) single (b) double (c) triple (d) quadruple	CO2	2	
V	The material used for lining of friction surfaces of a clutch should have ..... coefficient of friction. (a) low (b) high (c) Medium (d) None	CO3	2	
vi	The torque developed by a disc clutch is given by (a) T = 0.25μ.W.R (b) T = 0.5 μ.W.R (c) T = 0.75 μ.W.R (d) T = μ.W.R	CO3	2	
Q.2	**Solve Any Two of the following.**			3 X 2
(A)	Explain the different causes of gear tooth failures and suggest possible remedies to avoid such failures.	CO1	4	
(B)	Write the expressions for static strength, limiting wear load and dynamic load for helical gears and explain the various terms used therein	CO1	2	
(C)	What are the materials used for lining of friction surfaces	CO2	2	
Q. 3	**Solve Any One of the following.**			8
(A)	A gear drive is required to transmit a maximum power of 22.5 kW. The velocity ratio is 1:2 and r.p.m. of the pinion is 200. The approximate centre distance between the shafts may be taken as 600 mm. The teeth has 20° stub involute profiles. The static stress for the gear material (which is cast iron) may be taken as 60 MPa and face width as 10 times the module. Find the module,face width and number of teeth on each gear. Check the design for dynamic and wear loads. The deformation or dynamic factor in the Buckingham equation may be taken as 80 and the material combination factor for the wear as 1.4.	CO1	3	
(B)	A helical cast steel gear with 30° helix angle has to transmit 35 kW at 1500 r.p.m. If the gear has 24 teeth, determine the necessary module, pitch diameter and face width for 20° full depth teeth. The static stress for cast steel may be taken as 56 MPa. The width of face may be taken as 3 times the normal pitch. What would be the end thrust on the gear? The tooth factor for 20° full depth involute gear may be taken as E . . . 0 912 0 154 / T E – where TE represents the equivalent number of teeth.	CO1	3	
	*** End ***			

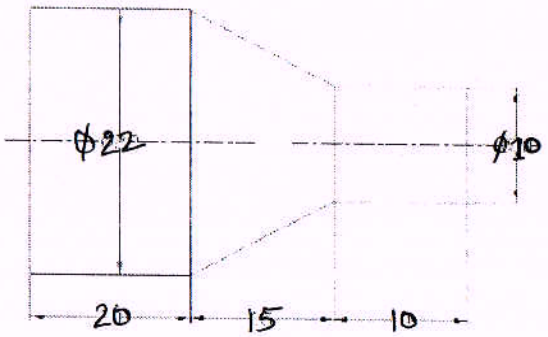
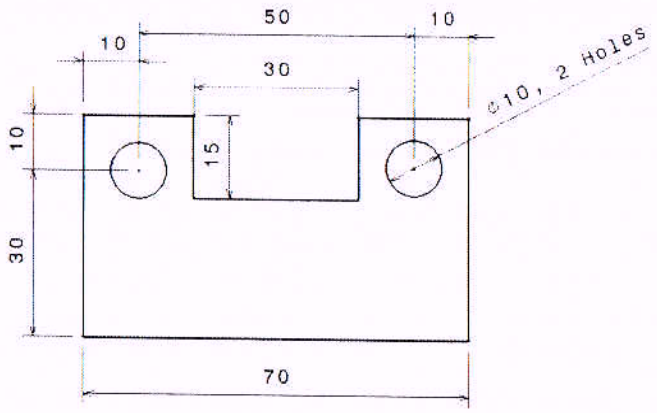
15 MAR 2024/TY/MECH/MSE/P2/23-24

TY Mid Sem

MGMU Jawaharlal Nehru Engineering College, Aurangabad
MID SEM Examination – MAR 2024

Program: B. Tech in __Mechanical_ (TY)
Course Name: CAD/CAM
Max Marks: 20
Date: - 06/03/2024
Sem: VI
Subject Code: 20UME603D
Duration: - 1 Hr

Instructions to the students
1. All questions are compulsory

Q 1	Solve Any One	C.O	B.L	Marks
1	Explain Briefly Evolution of CAM & Explain advantages of CNC over NC Machine.	3	2	10
2	Explain Closed Loop & Open Loop Systems in CNC.	3	2	
Q 2	**Solve any one of the following**			
1	Write Manual Part Program for the Fig.1 mentioning Process Plan chart, Tool Path. 	3	3	
2	Write Manual Part Program for the Fig.1 mentioning Process Plan chart, Tool Path. 	3	3	10

15 MAR 2024/TY/MECH/MSE/P2/23-24

SY – Mid Sem

65

MGM UNIVERSITY

JAWAHARLALA NEHRU ENGINEERING COLLEGE

Department of Mechanical Engineering

Mid Semester Examination – March 2024

Course: SY.B.Tech.(Mech., Mechatronics, R & AI)

Sem: IV

Subject Name: Mechanism of Machines
Subject Code: 20UME403D

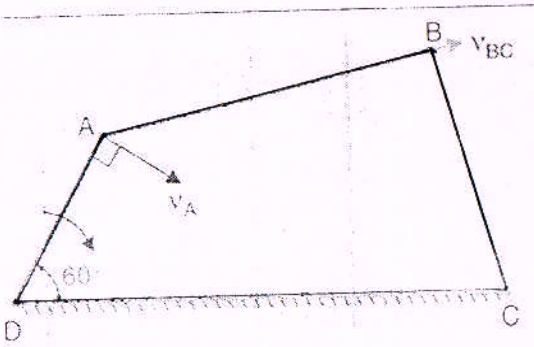
Max Marks: 20 **Date:**06/ 03 / 2024 **Duration:-** 1 Hr.

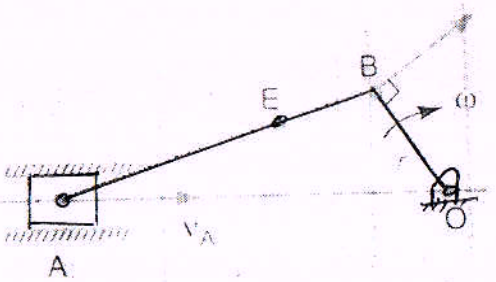
Instructions to the Students:

1. Solve on drawing sheet
2. Draw neat sketches whenever necessary
3. Assume suitable addition data if required
4. Use of non-programmable calculator is allowed

		CO	BL	Marks
Q. 1	**Fill in the blanks**			**6**
(A)	Which of the following best defines a kinematic link in mechanical engineering? a) A flexible element within a mechanism b) A rigid body or element that connects two or more other links c) A component responsible for energy conversion d) A device used for measuring linear motion	CO1	BL3	
(B)	What type of joint allows rotational motion between two kinematic links? a) Prismatic joint b) Cylindrical joint c) Spherical joint d) Revolute joint	CO1	BL1	
(C)	In a mechanical system, what role do kinematic links primarily play? a) Energy generation b) Motion transmission	CO2	BL2	

01/03



(B)	For the slider crank mechanism shown in figure, draw a velocity and acceleration diagrams and determine: (i) Velocity of and acceleration of slider The crank "OB" rotates with uniform angular velocity of 10 rad/s. The dimensions of various links are as follows: OB = 40 mm, AB = 80 mm, the crank OB makes an angle of 30 degree with I.D.C.  	CO2	BL2

*** End ***