

SHRI SHANKARACHARYA INSTITUTE OF PROFESSIONAL MANAGEMENT AND TECHNOLOGY**DEPARTMENT OF MECHANICAL ENGINEERING**

Class Test – I

Session- January – June 2020

Month- February

Semester- 8th (A+B)

Subject- Technology Management

Code – 300853(76)

Time Allowed: 2 hrs

Max Marks: 40

Note: - Students are required to focus on question and marks columns only.

Q. No	Questions	Marks	Levels of Bloom's taxonomy	CO
Part – I (Q.1 A is compulsory, attempt any two out of B, C and D)				
1.A	Define Technology.	04	Remembering	CO1
1.B	Classify and explain different types of Technology.	08	Understanding	CO1
1.C	Explain in detail Management of Technology.	08	Understanding	CO1
1.D	Compare (i) Knowledge and Technology (ii) Technology and Business	08	Analyzing	CO1

Part – II (Q. 2 A is compulsory, attempt any two out of B, C and D)

2.A	Define Management.	04	Remembering	CO2
2.B	What is Technological Environment? Explain with suitable example.	08	Understanding	CO2
2.C	Differentiate between Invention and Innovation.	08	Analyzing	CO2
2.D	Write short note on evolution of Production technology.	08	Understanding	CO2

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DEPARTMENT OF MECHANICAL ENGINEERING

Class Test – I	Session- Jan – June 2020	Month- February
Sem- 8 th (A+B)	Subject- Robotics	
Code - 337831(37)	Time Allowed: 2 hrs	Max Marks: 40

**Note: - 1. Students are Required to focus on question and marks columns only.
2. In Unit I & II, Question A is compulsory and attempt any two from B, C & D.**

Q. No	Questions	Marks	Levels of Bloom's taxonomy	CO
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Unit – I

1.A	Define Robot and Robotics.	4	Understanding	CO1
1.B	What are the various types of robot configuration? Explain with neat sketch.	8	Understanding	CO1
1.C	What is the importance of automation in industry? Also explain the type of automation.	8	Understanding	CO1
1.D	'End effectors design is very important in robot'. Explain the statement	8	Understanding	CO1

Unit – II

2.A	Explain mapping between rotated frames.	4	Understanding	CO2
2.B	The two coordinate frames {1} and {2} are initially coincident. Frame {2} is rotated by 45° about a vector $k = [0.5 \ 0.866 \ 0.707]^T$ passing through the origin. Determine the new description of the frame {2}.	8	Applying	CO2
2.C	Frame {2} is rotated with respect to frame {1} about x-axis by an angle of 60°. The position of the origin frame {2} as seen from frame {1} is ${}^1D_2 = [7.0 \ 5.0 \ 7.0]^T$. Obtain the transformation matrix 1T_2 , which describes frame {2} relative to frame {1} if ${}^2P = [2.0 \ 4.0 \ 6.0]^T$.	8	Applying	CO2
2.D	Determine the rotation matrix for a rotation of 45° about y-axis, followed by a rotation of 120° about z-axis, and a final rotation of 90° about x-axis.	8	Applying	CO2

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Class Test – I	Session- Jan – June 2020	Month- February
Sem- 8 th (A + B)	Subject- FEM	
Code - 337832(37)	Time Allowed: 2 hrs	Max Marks: 40

Note: -1. In Unit I & II, Question A is compulsory and attempt any two from B, C & D.

Q. No	Questions	Marks	Levels of Bloom's taxonomy	CO
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Unit – I

1.A	Explain the general steps of FEM.	4	Remember	CO1
1.B	For simply supported beam under uniformly distributed load q , find the solution for deflection of beam using minimization of domain residual method. The governing differential equation and boundary conditions are $EI \frac{d^4 v}{dx^4} - q = 0$ With $v(0) = 0, v(L) = 0, \frac{d^2 v}{dx^2}(0) = 0, \frac{d^2 v}{dx^2}(L) = 0$	8	Applying	CO1
1.C	For a uniform bar subjected to linearly distributed load $q = ax$ find the weak form of weighted residual statement and solve. The governing differential equation and boundary conditions are $AE \frac{d^2 u}{dx^2} + ax = 0$ with $u(0) = 0, du/dx(L) = 0$	8	Applying	CO1
1.D	Solve the differential equation by Galerkins weighted residual method $y'' - y = x, 0 < x < 1$ and $y(0) = 0, y(1) = 0$	8	Applying	CO1

Unit – II

2.A	With an example explain the Principle of stationary total potential	4	Remember	CO2
2.B	Explain the Rayleigh Ritz method.	8	Remember	CO2
2.C	For a simply supported beam under uniform load q find the equation of deformation using Rayleigh Ritz method.	8	Applying	CO2
2.D	A pin fin 1 mm dia and 50 mm long used to enhance heat transfer from a surface at 300 C . If $K = 200 \text{ W/m C}$ $h = 20 \text{ W/m}^2\text{C}$ ambient temperature = 30 C. The governing differential equation is $K \frac{d^2 T}{dx^2} - \frac{ph}{Ac} (T - T_a) = 0$ If fin is insulated at tip find temperature distribution using Rayleigh Ritz method	8	Applying	CO2

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Class Test - I	Session- Jan - June 2020	Month- February
Sem- 8 th (A+B)	Subject- IEM	
Code -337833(37)	Time Allowed: 2 hrs	Max Marks: 40

Note: Part A and B Question 1 is compulsory of 4 marks. Answer any two from part B each carries 8 marks

Q. No	Questions	Marks	Levels of Bloom's taxonomy	CO
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Unit - I

1.A	Define industrial engineering and explain different techniques of Industrial engineering	4	U	CO1
1.B	Explain contributions to industrial engineering by Adam smith, Frederick Taylor, Charles Babbage and Henry L. Gantt.	8	U	CO1
1.C	Define plant location and compare urban and rural locations.	8	U	CO1
1.D	Explain the place of industrial engineering in an organization with diagram.	8	U	CO1

Unit - II

2.A	Define work study. What are the components of work study?	4	U	CO2
2.B	Write short notes on i) work study and the management ii) Work study and the workers	8	U	CO2
2.C	Define Micromotion study. Explain therblings with symbol and coding.	8	U	CO2
2.D	explain the procedure or step for Method study	8	U	CO2