S.Y. B.Tech (Mech) Sem III

Bharatiya Vidya Bhavan's

Sardar Patel College of Engineering

(A Government Aided Autonomous Institute)

Munshi Nagar, Andheri (West), Mumbai – 400058

DSY END SEMESTER EXAMINATION, March-2022

19/3/22

Program: **B. Tech. in Mechanical Engineering**

Class: **Second Year B. Tech. (Mechanical)**

Course code: **PCC-BTM305**

Name of the Course: **Thermodynamics**

Date: **19/03/2022**

Duration: **3 Hr.**

Max. Points: **100**

Semester: **III**

Instructions:

- **Attempt ANY 05 questions.**
- Assume suitable data wherever necessary and state the same.
- **Draw _neat_ and well labelled system diagram _and/or_ process diagram wherever necessary / expected as they carry weightage.**
- **Use Steam Tables and Mollier Diagram** provided by **Exam Section ONLY.**
- Writing/ Labelling must be legible.

Q. No.	Question	Points	CO	BL	PI	Module
Q.1	a) **Explain:** i) Quasi-static Process ii) Thermodynamic Equilibrium.	(10)	1	II	1.4.1	1
	b) **Explain:** Thermodynamic Work Transfer. For a non-flow thermodynamic system undergoing a process, **Prove:** i) Energy (E) is a state function ii) Work Transfer W is a patch function.	(10)	1	II, III	1.4.1	1
Q.2	a) Starting from general steady flow energy equation, **Derive:** Steady flow energy equation for i) Turbine, ii) Nozzle. **State:** Assumptions made in derivation of SFEE of each flow sytem.	(10)	1	I, III	1.4.1	2
	b) Air enters an air compressor at 8 m/s velocity, 100 kPa pressure and volume of 0.95 m^3/kg. It flows steadily at the rate of 0.6 kg/s and leaves the compressor at 6 m/s, 700 kPa pressure and volume of 0.19 m^3/kg. The internal energy of the air leaving the compressor is 90 kJ/kg more than that of the air entering the compressor. Cooling water in the compressor jacket absorbs heat from the air in the compressor at the rate of 60 kW. **Evaluate:-** i) Ratio of inlet pipe diameter to outlet pipe diameter ii) Rate of shaft work input to air in kW.	(10)	1,2	V	1.4.1	2
Q.3	a) **Explain:** Kelvin-Plank and Claussius statements of Second Law of Thermodynamics. **Justify:** Equivalence of both the statements.	(10)	2	II, III	1.4.1	3
	b) **Explain:** i) PMM-2 ii) Cyclic refrigerator and iii) Cyclic heat pump with neat sketches. **Prove:** $CoP_{Ref} = CoP_{HP} + 1$.	(10)	2	II, III	1.4.1	3

Q.4	a) **Explain:** i) Quality of steam ii) Sub-cooled liquid and iii) Superheated vapour.	(10)	3	II	1.4.1	5
	b) Steam enters a steam turbine at a *15 bar* and *350°C* with a velocity of *60 m/s*. The steam leaves the turbine after its reversible adiabatic expansion in the turbine at a pressure of *1.2 bar* with a velocity of *180 m/s*. Considering no change in P.E., **Evaluate:** i) Work produced by turbine per kg of steam, ii) Quality of steam at turbine exit. **Draw:** System diagram and T-s diagram for the process.	(10)	2,3	II	1.4.1	2,5
Q.5	a) **Explain:** Working of Ideal Rankine cycle for a steam power plant and **Derive:** Expression for its thermal efficiency. **Draw:** System diagram, T-s and h-s diagrams for the cycle.	(10)	3	II, III	1.4.1	5
	b) A Steam power plant operates on an Ideal Rankine cycle between boiler pressure of *80 bar* and condenser pressure of *0.1 bar*. Steam from boiler is at *600°C*. **Evaluate:** i) Thermal efficiency of cycle ii) Heat Rate iii) Steam Rate **Draw:** System diagram, T-s and h-s diagrams for the cycle.	(10)	3	V	1.4.1	5
Q.6	a) **Derive:** Expression for thermal efficiency of an air standard Otto cycle. **Draw:** p-V and T-s diagrams for the cycle. **Explain:** Why Otto cycle engines are not recommended for large compression ratio?	(10)	3	II, III	1.4.	6
	b) An engine working on the Otto cycle is supplied with air at 0.1 MPa and 35°C. The compression ratio is 8. Heat supplied in the is cycle 2100 kJ/kg (For air, c_v = 0.718 kJ/kg. K, R = 0.287 kJ/kg. K). **Evaluate:** i) Cycle efficiency ii) Maximum pressure and temperature in the cycle and ii) Mean effective pressure. **Draw:** p-V and T-s diagrams for the cycle.	(10)	3	V	1.4.1	6
Q.7	**Explain: ANY THREE** with neat sketches as applicable.	(20)		II	1.4.1	
	a) Principle of increase of entropy		2			4
	b) Types of Thermodynamic properties		1			1
	c) Zeroth Law and IPTS		2			2
	d) Joule's Experiment		2			2
	e) Mollier Diagram		2			5

SARDAR PATEL COLLEGE OF ENGINEERING

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END SEMESTER EXAMINATION MARCH 2022

S. Y. S. Tech (Mech) Sem III

Program: Mechanical Engineering **Duration: 3 Hours**

Course Code: BS-BTM301 **Maximum Points: 100**

Course Name: Applied Mathematics III **Semester: III**

Note:

1. **Attempt Any Five Questions**
2. **Answers to the sub questions should be grouped together**

		Questions	Marks	CO	BL	PI
1	a	Find the analytic function $f(z) = u + iv$, whose real part is $u = e^{-x}(x\sin y - y\cos y)$	6	CO3	BL3	1.1.2
	b	Evaluate $\int_0^\infty e^{-4t} t \sin t \, dt$	6	CO1	BL5	1.1.1
	c	Find the Eigen Values and Eigen Vectors of $A = \begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$	8	CO4	BL4	1.2.1
2	a	If $L\{f(t)\} = \dfrac{2s+3}{s^2+3s+4}$, find $L\{e^{-3t} f(2t)\}$	6	CO1	BL3	1.1.1
	b	If complex functions $f(z)$ and $\overline{f(z)}$ are analytic, then prove that $f(z)$ is constant.	6	CO3	BL1	1.1.1
	c	Find Fourier series of $f(x) = x^2$, $0 \le x \le 2\pi$	8	CO2	BL2	1.1.2

3	a	If $f(z)=u(x,y)+iv(x,y)$ is analytic function, then prove that $u(x,y)$ and $v(x,y)$ are harmonic.	6	CO3	BL5	1.1.1
	b	Using Convolution Theorem, Evaluate $L^{-1}\left\{\dfrac{1}{s^2(s^2+4)}\right\}$	6	CO1	BL5	1.1.1
	c	For the following matrix find two non-singular matrices P and Q such that PAQ is in the normal form, where $A=\begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$. Hence find A^{-1}	8	CO4	BL2	1.1.3
4	a	Test the consistency of the following system of equations and solve them if they are consistent $x+y+z=-3$ $3x+y-2z=-2$ $2x+4y+7z=7$	6	CO4	BL4	1.1.1
	b	If $f(z)=u(x,y)+iv(x,y)$ is analytic, then prove that $\left[\dfrac{\partial^2}{\partial x^2}+\dfrac{\partial^2}{\partial y^2}\right]\left|f(z)\right|^2 = 4\left|f'(z)\right|^2$	6	CO3	BL4	1.1.1
	c	Find Fourier series of $f(x)=x-x^2,\ -1<x<1$	8	CO2	BL3	1.1.2
5	a	Prove that there doesn't exist an analytic function whose real part is $u(x,y)=e^x\sin y+x^2+3xy$	6	CO3	BL5	1.1.3
	b	Evaluate $L\left\{\dfrac{e^{-at}-e^{-bt}}{t}\right\}$	6	CO1	BL3	1.1.1
	c	Verify Cayley Hamilton Theorem for the matrix $A=\begin{bmatrix} 2 & -1 & 1 \\ 1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$	8	CO4	BL4	1.1.1

		and hence find A^{-1}				
6	a	Find the sum and product of the Eigen Values of the matrix A, where $A = \begin{bmatrix} 6 & 1 & 2 \\ 1 & -1 & -3 \\ -2 & 0 & 4 \end{bmatrix}$	6	CO4	BL5	1.1.1
	b	Evaluate $L^{-1} \left\{ \dfrac{5s+3}{(s-1)(s^2+2s+5)} \right\}$	6	CO1	BL3	1.1.2
	c	Reduce the following matrix to normal form and hence find its rank $A = \begin{bmatrix} 2 & 1 & 4 & -1 \\ 1 & 2 & 1 & 3 \\ 4 & 5 & -1 & 2 \\ 8 & 7 & 7 & 3 \end{bmatrix}$	8	CO4	BL4	1.1.3
7	a	Obtain Half Range Fourier Cosine Series of $f(x) = x(\pi - x), \quad 0 < x < \pi$	6	CO2	BL4	1.2.1
	b	If the complex function $f(z) = \left(ax^4 + bx^2y^2 + cy^4 + dx^2 - 2y^2 \right) + i\left(4x^3y - exy^3 + 4xy \right)$ is analytic, find the constants a,b,c,d,e.	6	CO3	BL1	1.3.2
	c	Using Laplace Transform, Solve the following Ordinary Differential Equation $\dfrac{d^2y}{dt^2} - 3\dfrac{dy}{dt} + 2y = 4e^{2t}$ where $y(0) = -3, \ y'(0) = 5$	8	CO1	BL2	1.1.3

S. Y. B. Tech (Mech) Sem III

RE- EXAMINATION MARCH 2022   *7/3/22*

Program: MECHANICAL

Course Code: BS-BTM301

Course Name: APPLIED MATHEMATICS-III

Duration: 03 Hours

Maximum Points: 100

Semester: III

- Attempt any five out of seven questions

- Use of scientific calculator is allowed.

QNO.	QUESTION	POINTS	CO	BL	PI
QI a)	Test the analyticity of the function $w = \sin z$ and hence derive that: $\frac{d}{dz}(\sin z) = \cos z$	06	3	2	1.1.1
QI b)	Express the matrix $A = \begin{bmatrix} 1+i & 2 & 5-5i \\ 2i & 2+i & 4+2i \\ -1+i & -4 & 7 \end{bmatrix}$ as the sum of Hermitian matrix and skew – Hermitian matrix.	06	4	3	2.1.3
QI c)	Using convolution theorem evaluate $L^{-1}\left\{\dfrac{s}{\left(s^2+4\right)\left(s^2+1\right)}\right\}$	08	1	1	2.1.4
QII a)	Using Laplace Transform Evaluate $\int_0^\infty \frac{\cos 6t - \cos 4t}{t}\,dt$	06	1	2	1.1.2
QII b)	Determine values of P, Q, R when $\begin{bmatrix} 0 & 2Q & R \\ P & Q & -R \\ P & -Q & R \end{bmatrix}$ is orthogonal	06	4	2	2.1.3
QII c)	Find the eigen values and eigenvectors of the matrix $A = \begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$	08	4	3	2.1.4

RE- EXAMINATION MARCH 2022

QIII a)	Evaluate : $L\{t\sin 2t\cosh t\}$	06	1	2	1.1.2
QIII b)	If $f(x)=\sin x \qquad 0\le x\le\pi$ Find half range cosine series Hence deduce that $\dfrac{1}{1.3}+\dfrac{1}{3.5}+\dfrac{1}{5.7}+--------=\dfrac{1}{2}$	06	2	2	1.1.2
QIII c)	Find the characteristic equation of the matrix $A=\begin{bmatrix}2&1&1\\0&1&0\\1&1&2\end{bmatrix}$. Verify Cayley – Hamilton theorem and hence evaluate the matrix equation. $A^8-5A^7+7A^6-3A^5+A^4-5A^3-8A^2+2A-I$	08	4	1	2.1.4
QIV a)	Find the bilinear transformation which maps $z=2$, 1, 0 onto $w=1, 0, i$	06	3	3	2.3.1
QIV b)	Find the rank of $\begin{bmatrix}2&3&-1&-1\\1&-1&-2&-4\\3&1&3&-2\\6&3&0&-7\end{bmatrix}$	06	4	2	1.1.3
QIV c)	Find the Fourier Series for function $f(x)$ defined by $f(x)=\begin{cases}0 & -5<x<0\\3 & 0<x<5\end{cases}$	08	2	1	2.3.4
QV a)	Given $f(t)=\begin{cases}t+1, & 0\le t\le 2\\ 3, & t>2\end{cases}$ find $L[f(t)]$, L $[f'(t)]$	06	1	1	2.3.1
QV b)	Find Laplace transforms of $f(t)=\begin{cases}1, 0\le t<a\\-1, a<t<2a\end{cases}$ where f(t) is a periodic function with period 2a	06	1	2	1.1.2

RE- EXAMINATION MARCH 2022

QV c)	Find the analytic function whose real part is $u = e^x \left(x \cos y - y \sin y \right)$	08	3	2	2.3.4
QVI a)	Find the image of $\left| z - 3i \right| = 3$ under the mapping $w = \dfrac{1}{z}$.	06	3	1	1.1.3
QVI b)	Find P and Q such that P F Q is in normal form hence find rank of F $$F = \begin{bmatrix} 2 & 1 & 4 \\ 3 & 2 & 2 \\ 7 & 4 & 10 \\ 1 & 0 & 6 \end{bmatrix}$$	06	4	3	2.1.4
QVI c)	Solve $y'' + y = t$ Given $y(0) = 1$ $y'(0) = -2$	08	1	1	1.1.1
QVIIa)	Obtain the Fourier Series for $f(x) = \sqrt{1 - \cos x}$ $0 \le x \le 2\pi$ & hence show that $\sum_{n=1}^{\infty} \dfrac{1}{n^2 - 1} = \dfrac{1}{2}$	06	2	3	2.1.3
QVIIb)	Evaluate: $L^{-1} \left\{ \tan^{-1} \left(\dfrac{2}{s^2} \right) \right\}$	06	1	2	1.1.2
QVIIc)	Test for consistency and solve: $5x + 3y + 7z = 4, 3x + 26y + 2z = 9, 7x + 2y + 10z = 5$	08	4	2	2.3.4

RE-EXAMINATION MAY 2022

4/5/22

S. Y. B. Tech (Mech) Sem III

Program: Mechanical Engineering   **Duration: 3 Hours**

Course Code: BS-BTM301   **Maximum Points: 100**

Course Name: Applied Mathematics III   **Semester: III**

Note:

1. **Attempt Any Five Questions**
2. **Answers to the sub questions should be grouped together**

		Questions	Marks	CO	BL	PI
1	a	Find the analytic function $f(z) = u + iv$, whose real part is $u = x^2 - y^2 - 2xy - 2x + 3y$	6	CO3	BL3	1.1.2
	b	Evaluate $\int_0^\infty e^{-2t} t^5 \cosh t \, dt$	6	CO1	BL5	1.1.1
	c	Find the Eigen Values and Eigen Vectors of $A = \begin{bmatrix} 4 & 6 & 6 \\ 1 & 3 & 2 \\ -1 & -5 & -2 \end{bmatrix}$	8	CO4	BL4	1.2.1
2	a	Evaluate $L\{t \cos(\omega t - \alpha)\}$, where ω and α are constants.	6	CO1	BL3	1.1.1
	b	If complex functions $f(z)$ and $\overline{f(z)}$ are analytic, then prove that $f(z)$ is constant.	6	CO3	BL1	1.1.1
	c	Find Fourier series of $f(x) = x^3$, $0 \le x \le 2\pi$	8	CO2	BL2	1.1.2

3	a	Show that the transformation $w = \dfrac{1}{z}$ maps the circle $\lvert z-3 \rvert = 5$ into the circle $\left\lvert w + \dfrac{3}{16} \right\rvert = \dfrac{5}{16}$	6	CO3	BL5	1.1.1
	b	Using Convolution Theorem, Evaluate $L^{-1}\left\{ \dfrac{1}{(s+1)(s^2+4)} \right\}$	6	CO1	BL5	1.1.1
	c	For the following matrix A, find two non-singular matrices P and Q such that PAQ is in the normal form, where $A = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 2 & 1 & 4 & 3 \\ 3 & 0 & 5 & -10 \end{bmatrix}$	8	CO4	BL2	1.1.3
4	a	Test the consistency of the following system of equations and solve them if they are consistent $4x - 2y + 6z = 8$ $x + y - 3z = -1$ $15x - 3y + 9z = 21$	6	CO4	BL4	1.1.1
	b	If function $f(z) = \left(x^2 + axy + by^2\right) + i\left(cx^2 + dxy + y^2\right)$ is analytic, find real constants a, b, c, d	6	CO3	BL4	1.1.1
	c	Find Fourier series of $f(x) = 2x - x^2,\ 0 \le x \le 3$	8	CO2	BL3	1.1.2
5	a	Find fixed points of the bilinear transformation $w = \dfrac{3z-5}{z+1}$	6	CO3	BL5	1.1.3
	b	Evaluate $L\left\{ \dfrac{\cos at - \cos bt}{t} \right\}$	6	CO1	BL3	1.1.1
	c	Verify Cayley Hamilton Theorem for the matrix $A = \begin{bmatrix} 0 & c & -b \\ -c & 0 & a \\ b & -a & 0 \end{bmatrix}$ and hence find A^{-1}	8	CO4	BL4	1.1.1

6	a	Find the Eigen Values and Eigen Vectors of the matrix A^3, where $\begin{bmatrix} 1 & 2 \\ 4 & 3 \end{bmatrix}$	6	CO4	BL5	1.1.1
	b	Evaluate $L^{-1}\left\{ \dfrac{s}{\left(s^2+a^2\right)\left(s^2+b^2\right)} \right\}$	6	CO1	BL3	1.1.2
	c	Reduce the following matrix to normal form and hence find its rank $A = \begin{bmatrix} 2 & 3 & 4 & 5 \\ 3 & 4 & 5 & 6 \\ 4 & 5 & 6 & 7 \\ 9 & 10 & 11 & 12 \end{bmatrix}$	8	CO4	BL4	1.1.3
7	a	Obtain Half Range Fourier sine Series of $f(x) = x(\pi - x),\quad 0 < x < \pi$	6	CO2	BL4	1.2.1
	b	If $f(z) = u(x, y) + v(x, y)$ is analytic, then prove that $\left[\dfrac{\partial}{\partial x}\lvert f(z)\rvert\right]^2 + \left[\dfrac{\partial}{\partial y}\lvert f(z)\rvert\right]^2 = \lvert f'(z)\rvert^2$	6	CO3	BL1	1.3.2
	c	Using Laplace Transform, Solve the following Ordinary Differential Equation $\dfrac{d^2 y}{dt^2} + 2\dfrac{dy}{dt} + 5y = e^{-t}\sin t$, where $y(0) = 0,\ y'(0) = 1$	8	CO1	BL2	1.1.3

END SEMESTER EXAMINATION MARCH 2022

J. Y. B. Tech (Mech) Sem III

(For DSY)

Program: BTech (Mech)

Course Code: BTM 302
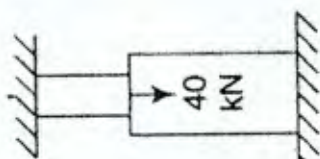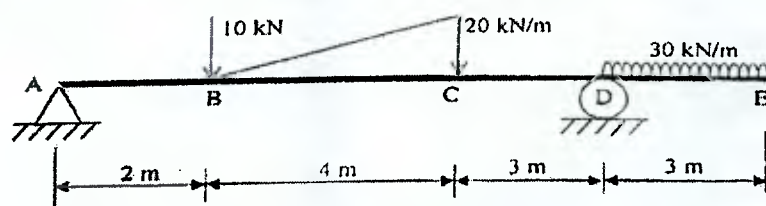
Course Name: Strength of Material

Duration: 3 hr

Maximum Points: 100

Semester: III

Notes:

1. **Q. no.1** compulsory.
2. Solve any four questions out of remaining six questions.
3. Answer to the sub-questions should be grouped together.
4. Assume suitable data if necessary.

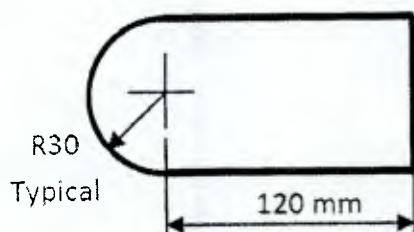| Q. No.	Questions	Pts	CO	BL	PI
1	a) Define the following: i)Young's Modulus, ii) Modulus of rigidity, iii) Bulk Modulus; Write the relation between them.	5			
	b) Derive the expression for relationship between rate of loading w , shear force V and bending moment M at any point on a transversely loaded beam.	5	1,2		
	c) A 3mm x 3mm copper bar 3.0 m long is bent in to circle and held with its ends just in contact. Find the maximum bending stress in the bar. Also calculate bending moment applied at the ends. Take E = 90 GPa.	5			
	d) For the figure as shown find the support reaction and stress in each section (having equal length of 750 mm each) of the bar having diameters 20 mm and 30 mm respectively. Take E = 205 GPa.	5			
2	Develop the SFD and BMD for beam ABCDE as shown in	20	2		
3	a) A square prism of wood 50 mm x 50 mm in cross section and 350 mm long is subjected to tensile stress of 25 MPa along its longitudinal axis, a 15 MPa compressive stress and 10 MPa tensile stress acts on remaining sets of lateral surfaces respectively. Find change in dimensions and	5	2,3		

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END SEMESTER EXAMINATION MARCH 2022

	change in volume. Take poisson's ratio =0.4 and modulus of elasticity = 15 GPa.	10			
	b) In a two-dimensional stress system, two mutually perpendicular planes at a point carry tensile and compressive stresses σ_x, σ_y and shearing stress of 30 MPa. If principal stresses 30 MPa tensile and 70 MPa compressive, determine stresses σ_x, σ_y. Also give location a plane with respective to the maximum principal stress plane on which the normal and shear stresses are equal in magnitude and both are positive in sign.				
	c) Briefly outline the steps involved during the tensile test of material. Draw neat sketch of a typical tensile test specimen. Explain role of extensometer in the test. Which material properties are obtained from the tensile test?	5			
4	a) State assumption made during development of classical bending equation. Write the bending equation.	6			
	b) Fig. shows a simply supported 200 mm wide, 300 mm deep and 10 m long beam. Calculate the maximum bending stress induced in the beam.	14			
			3		
5	a) An I-section 280 mm x 120 mm having flange thickness 10 mm and web thickness 6 mm is part of a simply supported beam structure. At certain location it is subjected to shear force of 200 kN acting perpendicular to flange surface. Determine the maximum and minimum value of shear stress in the web at this location.	10	4		
	b) A cantilever beam of length 'L' is subjected to point load 'P' acting at its free end. Develop the expression for deflection curve of the beam. The beam has area moment of inertia 'I' and modulus of elasticity 'E.	10			
6	a) A cylindrical shell, 1200 mm inside diameter, 20 mm thick and 2.4 m long, is subjected to internal pressure of 1.25 MPa. Calculate the hoop stress, longitudinal stress, maximum shear stress and change in diameter, length and volume of shell. E=200 GPa, Poisson's ratio = 0.3.	10	4		
	b) A hollow circular shaft, 300 mm external diameter, thickness of metal 30 mm, is transmitting power at 1000 rpm. The angle of twist on a length of 4 meters was found to be 0.10°. Calculate the power transmitted and the maximum shear stress induced in the section. Determine the strain energy per unit volume on the surface of the shaft. Take G = 0.8 x 10^5 N/mm2.	10			

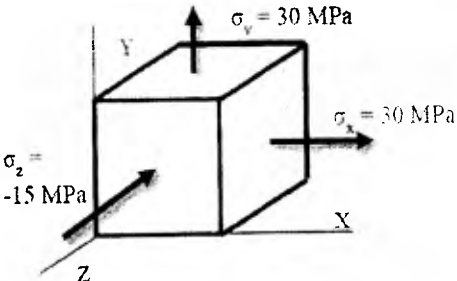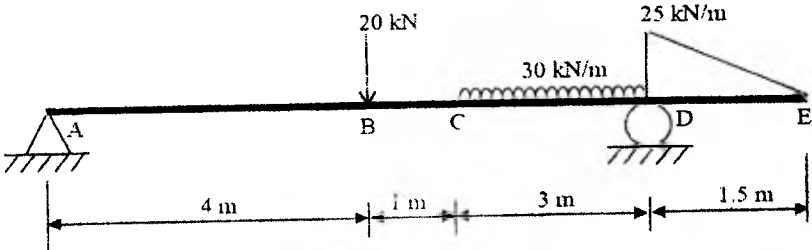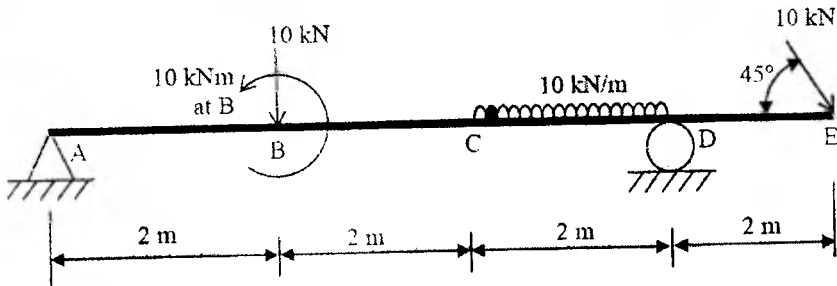| 7			1,2,3		
	a) Formulate the expression for deflection and slope at the free end of a cantilever beam (length l and area moment of inertia I) subjected to uniformly distributed load w. Use integration method.	8			
	b) What is a strut? What is meant by crippling or buckling load?	4			
	c) State the limitations of Euler's equation.	4			
	d) A 4 mm thick plate is to be punched of a shape shown in figure. Determine the minimum punching force to be applied on a punch. The ultimate shear strength of plate is 400 MPa. What is the corresponding compressive stress in the punch?	4			

R30
Typical

120 mm

3/3

S. Y. B. Tech (Mech) Sem III

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(Government Aided Autonomous Institute)

Munshi Nagar, Andheri (W) Mumbai – 400058   5/5/22

Re- EXAMINATION MAY 2022

(For DSY)

Program:	BTech (Mech)	Duration: 3 hr

Course Code: PC-BTM302   Maximum Points: 100

Course Name: Strength of Materials   Semester: III

Notes:

1. **Q. no.1** compulsory.
2. Solve any four questions out of remaining six questions.
3. Answer to the sub-questions should be grouped together.
4. Assume suitable data if necessary.

Q. No.	Questions	Pts	CO	BL	PI
1	a) A solid square bar of size 30x30 mm and 500 mm long is joined to a hollow tube of 25 mm inside diameter, 400 mm long to make a total length of 900 mm. The assembly is subjected to an axial load of 90 kN. Determine the external diameter of the tube so that the stress in both the segments is the same. Calculate value of the stress.	5	1,2	2,3	
	b) A beam has rectangular cross section as shown in figure. It is subjected to sagging bending moment of 20 kN-m about its x-axis. Find the tensile force on the shaded area 'A1' below mid-plane. 60 mm 30 mm 30 mm A1 35 mm 70 mm	5			
	c) A 3 mm thick plate is to be punched-of as per shape shown in figure. Determine the minimum punching force to be applied on a punch. The ultimate shear strength of plate is 250 MPa. What is the corresponding compressive stress in the punch? R50 150 mm	5			

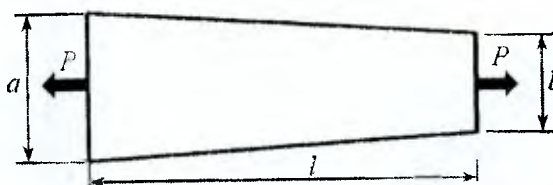|			5			
	d)	A solid cube of side 150 mm is subjected to tri-axial stresses as shown in the figure. Calculate the strain and change in lengths in all directions. E = 200 GPa, ν = 0.3.	5			
2		Develop the SFD and BMD for beam ABCDE as shown in the fig. below	20	2	3	
3		Calculate the transverse deflection of beam ABCDE shown in the figure at location 'E' using Macaulay's method. E =200 GPa and I = 4.6x10^{-5} m^4 a)	20	2	3	
4	a)	In a two-dimensional stress system, two mutually perpendicular planes at a point carry tensile and compressive stresses σ_x, σ_y and shearing stress of 40 MPa. If principal stresses 65.9 MPa tensile and 50.9 MPa compressive, determine stresses σ_x, σ_y and orientation of this plane wrt major principal plane. Also calculate maximum shear stress value and normal stress on the plane of maximum shear stress. Construct Mohr circle (free hand sketch) for the stress state.	10			
	b)	A hollow circular shaft, 250 mm external diameter, thickness of metal 15 mm, is transmitting power at 960 rpm. The angle of twist on a length of 5 meters was found to be 0.14°. Calculate the power transmitted and the maximum shear stress induced in the section. Determine the strain energy per unit volume on the surface of the shaft. Take G = 0.8 x 10^5 N/mm2	10			
				2,3	2,3	

5	a) A cantilever beam of length 'L' is subjected to point load 'P' acting at its free end. Develop the expression for deflection curve of the beam. The beam has area moment of inertia 'I' and modulus of elasticity 'E.	10			
	b) A beam of *I-section* (225 mm x 100 mm having flange thickness 8 mm and web thickness 6 mm) is simply supported over a span of 9 meter. If the maximum permissible stress is 75 N/mm², find the concentrated load that can be carried at a distance of 3 meter from one support.	10	3	3	
6	a) An I-section beam has flanges 200 mm x 20 mm and web 300 mm x 10mm. It carries a shear force of 150 kN. Calculate and sketch the shear stress distribution across the section.	12	4	3	
	b) A cylindrical shell, 1300 mm inside diameter, 25 mm thick and 2.5 m long, is subjected to internal pressure of 1. 5 MPa. Calculate the hoop stress, longitudinal stress, maximum shear stress and change in diameter, length and volume of shell. E=205 GPa, Poisson's ratio = 0.3.	8			
7	a) Prove that volumetric strain is given by the sum of linear strains measured along three orthogonal directions of a coordinate system.	5	1,2,3	1,2	
	b) A flat bar of length *l*, thickness *t* and having linearly varying width from *b* to *a* where *b<a* is subjected to axial pull *P*. Derive expression for extension of bar. Modulus of elasticity is E.	7			
	c) The stress-strain data of a tensile test carried on a material is tabulated below.	8			

σ (MPa)	200	400	505	590	640	655	665	675
ε (mm/mm)	0.0012	0.0024	0.003	0.004	0.006	0.007	0.0085	0.0100

Plot the stress-strain data on graph paper and obtain the value of 0.2% offset proof stress. Determine graphically the modulus of elasticity and stress corresponding to 0.5% strain.

SARDAR PATEL COLLEGE OF ENGINEERING

(Government Aided Autonomous Institute)

Munshi Nagar, Andheri (W) Mumbai – 400058

End Semester (DSY) Examination - March 2022

S. Y. & Tech (Mech) Sem III

Program: Mechanical Engineering   Duration: 03 hour

Course Code: PC-BTM306   Maximum Points: 100 marks

Course Name: **Manufacturing Science**   Semester: III
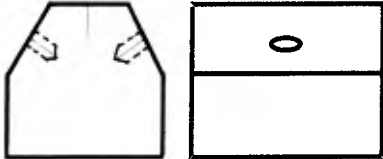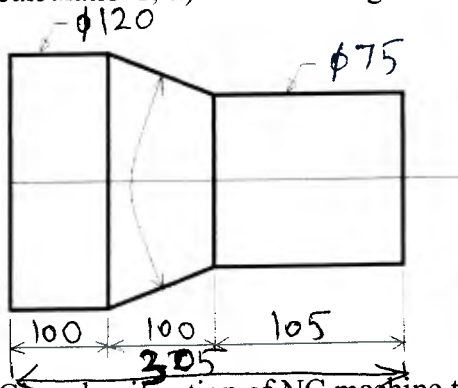
Notes: 1. Questions number **01** is compulsory.
2. Solve any FOUR questions out of remaining SIX main questions.
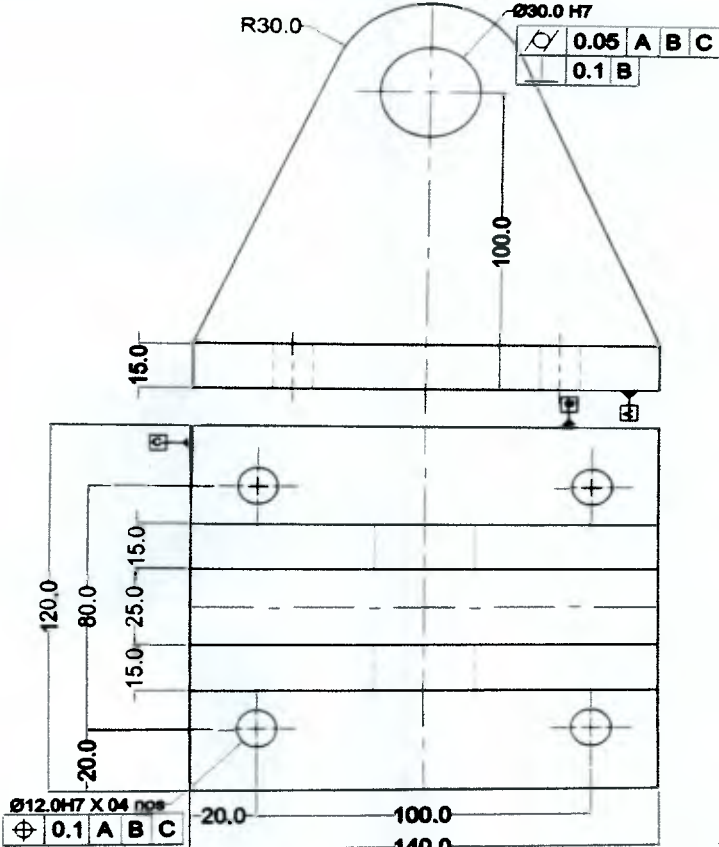2. Draw neat schematic diagrams wherever is necessary, **highlight** important points.
3. Answer should be **point-wise** and assume suitable data if necessary and mention it.

Q. No.	Questions	Pts	CO	BL	PI

Q1	Which of the following abrasive grit material grinding wheel can be applied for precision grinding of heat sensitive ferrous material? Justify the reason? [3M]
	  a) White Al_2O_3 b) Brown Al_2O_3
	  c) Black SiC d) Green SiC
	
	Explain in specific operational applications about Plain Centre type cylindrical grinding machine along with its neat schematic sketch? [5M]
	
	Match the following [6M] for selection of suitable grinding wheel for a *good finish* and *close tolerance* in given workpiece materials; Justify points of matched pairs;
	
		Workpiece material	Grit size	Bond grade	Abrasive material

---	---	---	---
A. **Aluminium**	1. Fine	3. Soft	5. Si C
B. **HSS**	2. Coarse	4. Hard	6. CBN | 1. A-2-4-5, B-1-3-6 2. A-1-4-6, B-2-3-5 3. A-2-3-5, B-2-4-6 4. A-1-3-6, B-1-4-5	14	2, 4	3, 2	2. 1. 2
Q2	Explain material removal *mechanism* [2M] and *characteristics* [3M] of "Ultrasonic machining" process? With the help of neat *sketch* explain Thermit welding process [5M]? Justify using one of the solid state welding process, how solid state welding process is better compare to other joining processes? [4M]	14	2, 4	4, 5	3. 4. 1/ 3. 1. 6
Q3	For manufacturing spur gear having 347 numbers teeth's, suggest a work holding device having indexing mechanism, calculate the characteristics of accessories	14	4	2	1. 4. 1

1

required if reduction ratio up to 45:1 available in indexing mechanism of work holding device? [5M]

The finished part shown in figure no 01 needs to be manufactured in one setup, desired geometric tolerances have to be satisfied by each part. Which milling machine you will prefer to satisfy above mentioned points [2M]. Explain any four important features of that machine which differentiate it from other milling machine [3M]?

Fig. no 01

Enlist any 3 components of milling/lathe/CNC machine tools which can be manufactured using a particular set of milling machine tool- work holding device # set. Give 3 different set data? [4M]

Q4	With the help of neat schematic sketch give one of specific application (in terms of product geometry only) of Vertical turret lathe machine (no theory explanation required)? [3M], Calculate total machining time to turn "Annealed steel" solid cylindrical rod of diameter ⌀25 mm X length mm into finish component as shown in figure 2? Finish component has dimensions as shown in figure 02. For, straight O.D. turning and face turning - Cutting velocity is 10 m/min, feed is 0.15 mm/rev & depth of cut is 0.5 mm for both outer diameter (O.D) turning and face turning operation. For, taper O.D. turning - Cutting velocity is 25 m/min, feed is 0.2 mm/rev & depth of cut is 0.5 mm for outer diameter (O.D) turning. [Note – i) For calculating machining time of each next pass of outer diameter (O.D) turning, consider existing diameter of work piece at that instant for cutting speed (N_i rpm) calculations, ii) Work holding device will require 25 mm as grip length]	14	4	1, 2	1. 3. 1

$-\phi 120$

$-\phi 75$

Raw Matl ÷ $\phi 125 \times 325$ mm

$100 \quad 100 \quad 105$

325

Figure no. 02 [7M]

Give classification of NC machine tools based on different criteria's? [4M]

Q 5	A manufacturer receives a purchase order to manufacture the components as shown in figure no.3. Given data-Batch size: 1100 no's, material: cast metal, raw material: sand cast metal component with machining allowance of 1 mm on each surfaces. To finish this raw material into finish component shown in figure no.01, solve/explain the following points; i) State pre-machining sequence of machining process (machine tool used, cutting tool used and accuracy maintained in brief)? ii) Draw the assembly view of jig plate, jig bush and workpiece component for performing final drilling operation. iii) Define *selection, design* and *manufacturing* aspects for jig plate, jig bush system and other miscellaneous elements. State probable accuracy of jig plate surfaces and jig bush surfaces to be maintained (geometric tolerance). iv) Bill of materials required for one set.	20	3	2	1. 3. 1

Figure no. 03

Q6	Give three important *differences* between Multi-spindle and Gang drilling machine? [5M] Discuss the problem existing during deep hole drilling operation using	10	2, 4	1, 2	1. 4. 1

	conventional drill tool? [5M]				
Q7	i) A manufacturing industry wants to manufacture 6 meters length of 6 inch X 6 inch cross section, 10 inch diametric cross section steel material in mass production. Suggest a manufacturing process [1M] and explain the basic steps involved [2M] with the help of well labelled schematic sketch [3M]? ii) Match the following [4M] 1. Dry sand core A. Moisture 2. Collapsibility of core B. High strength 3. Core print C. Hot tears 4. Green sand core D. Seat to position the core [4M] Draw well labelled *Sketch* [3M] and give product *applications* of *Injection molding process* [1M].	14	2, 4	1, 2	1. 4. 1

Bharatiya Vidya Bhavan's

SARDAR PATEL COLLEGE OF ENGINEERING

(Government Aided Autonomous Institute)

Munshi Nagar, Andheri (W) Mumbai – 400058

Previous End Semester July 2022

S. Y. B. Tech (Mech) Sem III

Program: Mechanical Engineering

Course Code: PCC-BTM306

Course Name: **Manufacturing Science**

Duration: 03 hour

Maximum Points: 100 marks

Semester: III

25/7/22

Notes: 1. Questions number **01** is compulsory.
2. Solve any FOUR questions out of remaining SIX main questions.
2. Draw neat schematic diagrams wherever necessary, **highlight** important points.
3. Answer should be **point-wise** and assume suitable data if necessary and mention it.

Q. No.	Questions	Pts	CO	BL	PI
Q1	Give significance of following terms related to grinding wheel a) Grade of hardness, b) Structure [5M] Write short note on Vertical spindle rotary table grinder machine along with its neat schematic sketch? [5M] Match the following [10M] for selection of suitable grinding wheel for a *good finish* and *close tolerance* in given workpiece materials; Justify points of matched pairs; <table><tr><td>Workpiece material</td><td>Grit size</td><td>Bond grade</td><td>Abrasive material</td></tr><tr><td>A. Aluminium</td><td>1. Fine</td><td>3. Soft</td><td>5. Si C</td></tr><tr><td>B. HSS</td><td>2. Coarse</td><td>4. Hard</td><td>6. CBN</td></tr></table> 1. A-2-4-5, B-1-3-6 2. A-1-4-6, B-2-3-5 3. A-2-3-5, B-2-4-6 4. A-1-3-6, B-1-4-5	20	2, 4	3, 2	2.1.2
Q2	With the help of neat sketch [3M] Explain material removal mechanism [2M] and characteristics [3M] of electro discharge machining (EDM) process? Specify what different materials and geometries can be machined using this process [2M]? Compare brazing and braze welding technique? [5M] Explain [2M] submerged arc welding process with the help of its set up neat schematic sketch [2M]? Give its application [1M]?	20	2, 4	4, 5	3.4.1/3.1.6

Q3	What are different types of milling machines? Explain with neat schematic sketch vertical milling machine and its important components? [12M] Draw a neat sketch of universal swivel vice? Compare how it is different from compound machine vice? [8M]	20	4	2	1. 4. 1
Q4	Explain how CNC machine tool system superior compare to NC machine tool system [4M]. Draw the block diagram of CNC control system (which explains its working principle)[4M]. Explain the tool room lathe and draw its block diagram of its different parts? [12M]	20	4	1, 2	1. 3. 1
Q5	Compare shaper & planar machine with reference to its construction, relative feature in kinematic mechanism/ feed movement provided to certain machine tool part and its ability to manufacture certain kind job?[10M] Draw neat schematic sketch of slotting machine and also draw geometry of products it can manufacture and where it is used? [10M]	20	3	2	1. 3. 1
Q6	Draw a neat sketch of helical flute drill tool and show helix angle, cutting lip angle, lip length? [10M] Draw a neat schematic sketch & explain the Radial drilling machine? Explain specific applications of it? What are different types of radial drilling machines, explained in brief? [10M]	20	2, 4	1, 2	1. 4. 1
Q7	Explain the process of thermoforming along with its neat sketch? Give its product application [10M]? Describe in brief steps involved "Investment casting process"? [10M]	20	2, 4	1, 2	1. 4. 1

Bharatiya Vidya Bhavan's

Sardar Patel College of Engineering

(A Government Aided Autonomous Institute)

Munshi Nagar, Andheri (West), Mumbai – 400058.

End Semester Exam

March 2022

S. Y. A. Tech (Mech) Sem III

Max. Marks: 100   Duration: 03 Hours

Class: SY B.Tech (DSY)   Semester: III   Program: Mechanical/ Electrical

Name of the Course: OCIS   Course Code: HSM 307/ HSM BTE 307

Organisation of Communication & Interpersonal Skill

Instruction: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is for their use.

1) Question No. 1 and 2 is compulsory.
2) Out of remaining questions, attempt any 3
3) In all 5 questions to be attempted.
4) Answer to each new question to be started on a fresh page.
5) Figures in brackets on the right-hand side indicate full marks.
6) Assume suitable data if necessary.
7) Please write answers to the point. Vague answers will not get marks

	Questions	Maximum Marks	Course Outcome Number	Module No.
Q1. a.	What is the difference between business and social etiquette?	20	1, 2, 5,	1,2,3,4,5
b.	Define a Resume. What role does it play in getting you an interview for a Job?	05 Marks for each question		
c.	What are the steps you should keep in mind while planning and writing an Email?			
d.	Explain the difference between a boss and a leader.			
Q.2	Imagine you are the Sales Manager of a medium sized company, which produces electronic toys, and is facing a strike by the sales representatives of the Mumbai region who are demanding a 40 % hike in their sales incentive. The back ground information to the case is as below • Most of the sales representative are very senior • Sales representatives work 40 hours week, with one hour lunch break. • Travelling in Mumbai is difficult due to traffic • The salary structure is linked to their sales performance • There is an increasing competition due to new players in the market • Sales representatives have a strong union • The quality of the product is also deteriorating	(20)	1, 2,5	4

1

	• There is a lack of incentives to sales representatives. The managing Director at the company headquarters in Delhi has asked you to investigate the causes of poor sales and offer recommendations. Write a **Memo report** taking into consideration the above problems.			
Q.3	Wanted a quality Assurance manager at our manufacturing unit in Mumbai. Applicants should have a degree in Mechanical/ Electrical Engineering, and should have two years working experience in an engineering organization, preferably with exposure to software in six sigma, IOT, Python, Deep analysis. The candidate should possess excellent Communication skills and interpersonal skills. Candidate should also have a certification course in German I and II. Please send your detailed **resume** with a cover letter to Corporate HRD, JBM group, Neel House, Lado Sarai, New Delhi-110030.	20	3,4,	02
Q.4	Anand, Vice-President, systems, ground his cigarette into the ashtray and thought, 'Here go those save-the Earth people again, ' he had just read the copy of memo that Savitri, Vice- President Finance, had sent to Rajiv, CEO, asking that smoking be prohibited throughout the premises of Salient Technologies- both in their Gurgaon and Pune offices. Savitri cited health dangers, reduced productivity, rights of non-smokers and damage to the company property. Anand knew he could cite some arguments also- the right of smokers, the unfairness of imposing new restrictions that were not in place when the workers were hired, the reduced productivity due to stress from not smoking and the fact that other health-related productivity hazards (such as gross obesity) were not banned. He felt that he could easily get the support of Raghu, the Vice-President, and Marketing. And Vinay, General Manager, Utilities, the other two smokers in the management. Following these developments, the CEO decides to hold a special meeting of the executive committee, made up of himself and the three vice-presidents (which includes Anand and Savitri) the following week to discuss and resolve the issue. Regular parliamentary procedures were then followed at these meetings. Questions: 1. Assume the role of Rajiv, the CEO. Compose a Notice to the executive committee announcing the meeting and outlining the agenda. 2. Assume the roles of other participants in the meeting and write the minutes of the meeting from your own point.	20	01, 04	01,03
Q.5	Here is a first- hand account of a very good public speaker who trains professionals in public speaking. I train business professionals in public speaking and also in preparing their project proposals and presentations. One day, my friend Mohan called and asked if I could help his boss, Mr. Andrew's who had to speak at the convocation ceremony of an engineering institute in Mumbai. I asked if his boss knew what he wanted to say, and Mohan said yes, but the talk was not developed yet and his boss wouldn't have time to devote to it until the weekend. I learnt from Mohan that Mr. Andrews was really smart but not experienced in speaking to large groups.	(20)	4, 5	5

We set up two meetings with Mr. Andrews- the first to discuss what the message would be; the second to practice it. I asked for a general summary of what would be said. Mohan replied, 'He is going to say something about today's job market for Engineering graduates due to the impact of pandemic and about its future as well. I was expecting to be briefed by Mohan on the content of his talk.

When I walked for the meeting, the receptionist escorted me into a meeting room off the lobby. Mohan too arrived, handed me his business card, and briefed me on the status of the scripts and slides (a work in progress). Shortly, Mr. Andrews arrived with a handful of wrinkled papers in his hand. They were his notes. He did not know how to connect his computer to the projector, or how to use power point well enough to re-sequencing the slides and add appropriate designs, insert tables and animate the slides where needed. However, his knowledge of contemporary job market was encyclopedic and the rate at which he spoke was supersonic. When I asked questions about his topic so that he could clarify what he wanted to say, and in what order, he was wonderfully patient with my modest understanding of his discipline, and used analogies and metaphors to explain his point-a sign, I think, of a good communicator.

In addition to speaking very fast he did not look me in the eye, and also did not relate what he said to the bar charts on the screen. But he spoke with visceral passion and emphatic verve about the way multinational companies are working these days – and that made up for his other flaws as a speaker. He could lift up his whole body and jump into a keyword with both feet-giving it real meaning and significance.

The challenge, however, was to develop his topic so that the audience would think they were hearing a standard talk about globalization and job markets for fresher's in particular and further developing to talk to strategies to get placed in good companies.

After two meetings, we cut the slides down to 40 and the timing down to One hour. He had no time to rehearse. He promised he would work on it in his hotel room when he arrived in Mumbai. I continued to email him suggestions over the weekend.

I learned from Andrews that he did not rehearse until he was on the plane, and then he stayed up most of the night in a panic working on it. Two days after the event, he called to say it went well, and that me emails helped. I called Mohan to get his assessment, who said it was a little short- much shorter than the presentations made by other speakers. I pointed out that short presentations are not a bad thing-'For a speech to be immortal, it not be interminable'.

The points Andrews needed to remember were as follows:
1. Get attention of his audience
2. Sustain the attention
3. Make a clear point in a memorable way
4. Be unique in his own way
5. Persuade people to come to talk to him

His job was to generate trust and curiosity among his audience and sustain their interest in his convocation address.

	Questions:			

Questions:

1. 'Mr. Andrews had not adequately planned and prepared his presentation'. Do you agree or disagree with this statement? Explain in detail the steps that Mr. Andrews needs to work on for planning the presentation.
2. What are the factors that Mr. Andrews need to keep in mind regarding the designing of his power point slides his body language, time and word budgeting during presentation.

Prepare an Introduction to Mr. Andrews's presentation keeping the Delivering effective presentations syllabus topic in mind.

Q.6	Case Study:	(20)	1,2	02,01

A job seeker's true story.

The following is the sad-but-true story of what went wrong in a case interview. The narrator was a liberal arts graduate in political science who worked for a short and unhappy time after graduation as a financial consultant and aspired to a position in management consulting. He was interviewed at McKinsey and Company. The names in the story have been changed.

It was the third week in February on a gloomy gray morning, and I sneaked out of the office and away from the phones, to which I was chained, under the guise of a personal business appointment. I raced to my car, trying perhaps to create a physical excuse for my rapid pulse. Carefully maneuvering around the droop in the ceiling, I shut myself in my dingy car and with a tentative glance at my leaking sunroof; I was off to be interviewed at what felt like my only salvation from the life-sucking, money-ruled treadmill that had become my existence. I scrambled in the mist from my parking lot to the third tallest building in Atlanta, and headed for the top floor. As I was greeted by the recruiter, I had condensation or perspiration- I'm not sure which-trickling down my temple. She led me back to an area with two sofas already accommodating three other interviewees. That caught me off guard slightly. For some reason I figured I would be alone since it was end of recruiting season. Seating myself, I realized I had not really had a chance to contemplate what to expect. I waited there in the morgue.

All three of my companions looked like the antithesis of at-ease. Had I realized at the time that this was the job? I would have been nervous too, perhaps. I was anxious all right, but it had little to do with the company. If I had been interviewing for a similar paying job at Bob's Wholesome Hardware, I would have felt the same. I considered a few common questions and was mentally preparing for their answers. I had decided that I will simple say what I believed, and probably that was my biggest mistake.

I was surprised at how tight-lipped everyone seemed to be during those few anxious minutes on the couches. I casually sparked up a little conversation and learned that each person was there for a final-day-long round of interviews. They kept looking at me with a strange tilt, as if they were sending me telepathic messages saying, 'what are you doing!? Don't you know this is MCKINSEY???!!! They could hold this stuff against us!' One by one, they were led off, leaving me alone on the couch for a few uncertain minutes. Finally, I was greeted by a young woman in her late 20's and pregnant. I will call her Mandy for the sake of this anecdote. She was welcoming, and we chatted as she led me to a narrow little station where we could talk. I found Mandy to be

warm, personable, and helpful. She put me at ease in what I realized was a completely unknown environment. She asked me several 'interview-type' questions, but her tone was always helpful and inquisitive.

I think I made three mistakes during this interview; a. I felt as though I was always trying to give some nebulous right answer and falling short. I had difficulty being concise because my nerves were so shot, and I think my stammering did not help. B. When she asked a question about where I saw myself in 10 years, I gave a very honest answer about how people create stress for themselves trying to plan and not being able to be flexible. I instead gave goals but probably was not as concrete as I should have been. I wondered if my honesty was appreciated less than a strong goal-oriented statement. C. Although I was vaguely familiar with case questions, I was not well versed or practiced. When she asked me about how to figure out how many quarters were in a mall, I knew she would want to hear how I structured my analysis, but I probably focused too much on that and also got myself caught in my own thoroughness. Had I been more practiced, I could have been more systematic in my approach and then stuck to my answer instead of feeling the need to add something I may have left out.

Walking out of the room back to the sofas, I felt that it had gone fairly well. I had shown some strength, found some connections with her (she was human). I was not sure whether I had done well or poorly on the case question, but could not think of anything I left out. With hindsight, I could have been a little more efficient and structured but I still think I did all right. Back on the couch we waited and one by one, my 'friends' were whisked away. Again, I was the last one on the couch and really beginning to believe that I was an afterthought, at best. Maybe, looking back, I should have been flattered, but at the time and under the circumstances, I tried hard to be amused, primarily to keep at bay the doubt that kept creeping in. When my final inquisitor- I will call him Ken-finally arrived, I heard the hammer hit the nail.

Nothing Ken did or said put me at ease or made me feel like the interview was anything other than adversarial. I also knew that the moment I became confrontational, I would lose. He started out with a series of questions that were harmless enough, but sent me scrounging. ' What was your most rewarding leadership experience?'. I told him about how I started at the age of 15, playing ice-hockey, without knowing which way to hold my stick or how to skate backwards, and the next year I was chosen captain, and the next again when I led our team to the playoffs. Ken's enthusiastic response, 'that's nice, but how about something you did?' Maybe I chose the wrong thing by giving a heartfelt answer as opposed to an ideal answer, or perhaps I just was not clear in my point of leadership by example. Either way, I felt his response to be colder than the February air.

HE then asked me a case question: 'How much does a Boeing 757 weigh?' Again, I knew he was less concerned about the number I came up with as opposed to my process, but he was no help. I asked him all sorts of questions, and he just shrugged his shoulders and sat tight-lipped until after the fifth attempt he finally said, 'To answer your one question, you can assume that the seats are empty and the tank is full. He corrected me a few times too. 'Now I heard recently that the concorde that they mounted atop a building near Times Square weighs 25,000 tons....'

'Tons or Pounds?' asks ken

'I THOUGHT TONS...RIGHT????' I asked as I felt the last bead of self-esteem

trickle down the small of my back.

'Well I figure the Concorde seats about 300 people so the 757 probably somewhere around 350 -375.'

'Actually, it's more like 500,' helped Ken again, 'and you have two more minutes.'

I could barely stand up after our time was up; my legs were weak. Ken started down some stairs, and I mentioned, 'I need to pick my umbrella and briefcase from the waiting area,' and he said 'Ok, meet me at the door afterwards.' I did now know what to make of it all, but I was scared. I could hardly keep the tears back as I headed for the job I so desperately wanted out of. I had a bad feeling in my stomach. Two weeks later I received a voice message from Ken, and over the next week and half a phone tag. I could scarcely wonder whether I was nixed, or they wanted to take another look. When we finally connected, he seemed to be friendlier than I remembered. It hurt all the more when he said, I've got some bad news....'. I asked why they felt they were not interested, and he said I took too long to answer some questions and seemed to be unsure with numbers. That hurt. All day long, I rapid-fire numbers and calculations on the spot as a financial consultant, always one of the first with an answer. And I have been told time and time again that my biggest strength is being able to communicate a point quickly. Yes, I stumbled in the interview, but it still seemed ironic.

I bombed out in this interview because of a. innocent naiveté' about the big players in consulting and what that really meant; b. unfamiliarity with their process and what it is they look for in a first interview-I just had no clue; c. emotional turmoil; d. lack of confidence and certainty about what I was doing and why; and e. some general bad luck.

Questions:

1. What were the biggest mistakes that the author made? Do you really think these are mistakes or do you believe that the author is being too under estimative? Discuss. 05

2. What are some necessary mental preparations that the author missed and for which he paid heavily? 05

3. What are some of the advice and suggestions about interview techniques that you would like to give to the author. 10

Q.7	**Multiple Choice Questions:**	20 One marks each		

1. You're attending a conference and you'd like to have the card of a senior executive you meet. How do you get it?

a. You offer them your card and ask them for theirs.

b. You tell them you need their card so you can remember their name.

c. You create an opportunity and establish rapport with them and develop a specific reason for *them* to ask you for *your* card in hopes they will offer you theirs.

2. When making an entrance into an office with people working at their desks, it's always best to:

a. Do your best to not draw attention to yourself.

b. Appear pleasant and greet people by saying hello to those at the desks.

c. Walk in a room and stand there and wait patiently for someone to look up and

6

recognize that you need help.

3. If you want to make a good impression on a senior executive when you meet them for the first time, it's best to:

a. Greet them and tell them about the project you're working on so they'll know what you are doing for the company.

b. Appear genuinely sincere and ask them questions about the company and how they became an executive for the company.

c. Appear pleasant and make brief short sentences that focus on them and wait for them to reply.

4. When making a business introduction between two people, the most important rule to remember is:

a. Say your own name before introducing the two people

b. Use the name of the most important person first in the introduction.

c. Repeat the names of the people involved in the introduction twice so they'll remember each other's names and their proper pronunciation of those names.

5. The main key to manage stress are:

a. Recognizing and understanding the signs of stress

b. Identifying sources of stress

c. Identifying what we can and can't control

d. All of the above

6. Chronic stress is:

a. A stage of stress

b. Pleasant or unpleasant , real or imagined

c. Caused by prolonged physical or emotional stress, more than an individual can cope with or control

d. None of the above.

7. The symptoms of stress can be divided in to the following categories

a. Cognitive

b. Emotional

c. Physical

d. Behavioural

e. All of the above

8. Which of the following are the methods by which employers search for new talent?
a. References from employees
b. online job portals
c. Recruitment agencies
d. Job fairs

i. a, b, and c   ii. a, c and d.   iii. All of these   iv. None of these

9. Which of the following statements is true

a. Moodiness is a cognitive symptom of stress
b. Moodiness is an emotional symptom of stress
c. Poor judgement is an emotional symptom of stress
d. Agitation is cognitive symptom of stress

10. **When you are preparing visual you need not**
   a. Worry about the balance
   b. Use multiple colors
   c. Use Multiple fonts
   d. Put labels or captions.

   i. a, b, and d   ii. a , c, and d.   iii. b, and c.   iv. None of these.

11. **Using spare time wisely includes limiting the time you spend on the internet using a cell phone etc.**
   a. True
   b. False

12. **The 80:20 rule in Time management says:**
   a. 80% of results are achieved with only 20% the effort
   b. Typically 80% of unfocused effort generates 20% of results
   c. Both the above are true
   d. None of the above

13. **Time management is a priority in college because:**
   a. Since you are in classless time, you have to learn to manage your extra time more efficiently
   b. You are responsible for how you spend your time.
   c. There is no " A"s for effort".
   d. All the above are true.

14. **You feel like you rarely get a chance to contribute during team meetings. How do you remedy this?**

   a. Make more of an effort to interrupt and interject your thoughts.
   b. Ask your manager if you can kick off or lead a meeting when you have important points to convey.
   c. Call an additional meeting.
   d. If you do not get a chance to speak during the meeting, then you can email your teammates afterwards.

15. **You and your team leader do not mesh well. While he or she does not act unfairly or unkindly, you do not feel particularly close or friendly with your leader. What do you do?**
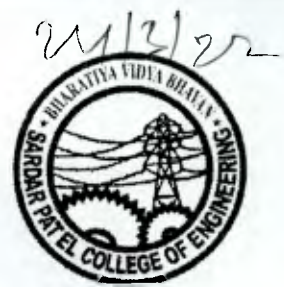
   a. Look for opportunities to learn more about each other, such as casual conversations before or after meetings or team building events.
   b. Hunt for your team leader's social profiles, perform a Google search, and fish for personal information from colleagues
   c. Report your leader to his or her boss
   d. Confront your leader and ask, "why don't you like me"?

8

16. At the workplace, which of the following would be treated as poor etiquettes?
a. Not following the culture of the company
b. Critically evaluating your companies policies
c. Indulging in gossip during working hours
d. Getting delayed for a meeting
e. All the above.

17. Which of the following is likely to be in the back matter of the report?
a. Transmittal Letter
b. Index
c. Executive summary
d. List of illustrations.

18. Regarding leadership, which statement is false?
a. Leadership does not necessarily take place within a hierarchical structure of an organization.
b. When people operate as leaders their role is always clearly established and defined.
c. Not every leader is a manager
d. All of the above.

19. The basic quality of dominant leadership is
a. aggressive, rigid and skillful
b. easy, sympathetic and popular
c. order and action- oriented
d. adaptability according to conditions

20. Leadership is a socio-psychological assumption which is related with
a. the development of social values
b. the development religious values
c. the preservation of cultural heritage
d. the guidance of the society

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DSY END SEMESTER EXAMINATION MARCH-2022

Program: **B.Tech. in Mechanical Engineering**   Date: **24/03/2022**

Class: **Second Year B.Tech. (Mech.)**   Duration: **3Hr.**

Course code:**MC-BTM 002**   Max.Points:**100**

Name of the Course: **Indian Traditional Knowledge**   Semester: **III**

Instructions: Solve **ANY FIVE** Questions.

Q. No.	Question	Points	CO	BL	PI	Module
Q.1	a) **Explain:**"*India is the Richest Prize in the World in all respects.*"**Justify:** withsuitable examples.	(10)	1	V	6.1.1	1
	b) **Discuss:** Fundamnetal unity of India since ancient times giving suitable examples.	(10)	1	VI	6.1.1	1
Q.2	a) **List:** Names of The Vedas and Upvedas. **Justify:**"*Vedas are the oldest and most valuable treasure of knowledge in the library of mankid*".	(10)	1	I,V	6.1.1	2
	b) **Explain:** Importance of upvedas in indian tradition and knowledge system.	(10)	1	VI	6.1.1	2
Q.3	a) **Discuss:** Valuable work and contribution of ancient Indian scholar Maharshi Kanad.	(10)	1,2	VI	6.1.1	3
	b) **Discuss:** Contribution and work of any two ancient Indian scholars in various knowledge domains such as mathematics, astronomy, medicine, metallurgy etc.	(10)	1,4	VI	6.1.1	3
Q.4	a) **Explain:** Any two significant medical practices followed in ancient India.	(10)	2	II	6.1.1	4
	b) **Justify:**"*Yoga is the key for long life with good health*" in context of ancient as well as modern India.	(10)	2	V	6.1.1	4
Q.5	a) **Name:** Various classical dances of India. **Explain;** Any two of them,	(10)	3	I, II	6.1.1	5
	b) **Justify:** *Indian tradition, practices, customs and lifestyle proved more suitable, reliable and effective in the wake of Covid-19 epidemic.*	(10)	2,3	V	6.1.1	5
Q.6	a) **Explain:** Rich heritage of any two Indian Traditional Languages since ancient times.	(10)	3	II	6.1.1	6
	b) **Discuss:** Life, Work and contribution of Saint Dnyaneshwar.	(10)	2,3	VI	6.1.1	6,7
Q.7	a) **Discuss:** Teachings of Bhagwan Gautam Buddha	(10)	3,4	V, VI	6.1.1	7
	b) **Discuss:** Teachings of Bhagwan Mahavir Vardhaman.	(10)	3	V	6.1.1	7

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