DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Examination – Winter 2023

Course: B. Tech. **Branch: All Branches** **Semester: I/II**

Subject Code & Name: (BTHM204/ CS1204) Communication Skills

Max Marks: 60 **Date: 30-01-24** **Duration: 3 Hours**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve any TWO of the following:**		
A)	'The non-verbal communication contributes more to an effective communication than the verbal communication does', justify.	**L3/CO2**	6
B)	What elements make the cycle of communication complete? How?	**L3/CO2**	6
C)	According to you, what are the ways to deal with psychological, physical and linguistic barrier to communication?	**L3/CO1**	6
Q.2	**Solve any TWO of the following:**		
A)	According to you, how a presentation can be made effective?	**L3/CO1**	6
B)	Assume you are going to appear for an interview next week; how will you get prepared for this interview?	**L2/CO2**	6
C)	Write your views on the DOs and DON'Ts of Group Discussion?	**L2/CO3**	6
Q. 3	**Solve the following:**		
A)	Transcribe the following: i) Student ii) Cupboard iii) Universal iv) English	**L2/CO3**	4
B)	Spell the following: i) /ten/ ii) /daut/ iii) /dɪkʃən/ iv) /ækʃən/	**L3/CO3**	4
C)	Explain the importance of pitch, rhythm and tone in speaking.	**L3/CO3**	4
Q.4	**Solve the following:**		

A) **Fill in the blanks:** **L3/CO4** 6

i. …. university, where you are graduated from, is one of the best universities in this country. (a, an, the)

ii. The notepad is lied …… the table. (in, between, on)

iii. Mahatma Gandhi was born …… 2nd October 1869. (at, in, on)

iv. They want to visit …… Taj Mahal. (a, an, the)

v. You are advised to go through ….. fifth chapter of *Godan*. (the, a, an)

vi. The students are not restricted to enter …….. the office of Chairperson. (at, for, on, into)

B) **Do as directed:** **L1/CO4** 6

i. You was complete the B Tech course in the upcoming 10 years. (find the common error and rewrite the sentence)

ii. It is the duty of every Indian to follow the Constitution. (Rewrite using appropriate modal auxiliary)

iii. She lived in Mumbai for twenty years. (Rewrite using present perfect continuous tense)

iv. Lingering around the fences is strictly prohibited. (Rewrite using appropriate modal auxiliary)

v. Write the synonym of KNOWLEDGE.

vi. Write the antonym of FAILURE.

Q. 5 Solve the following:

A) Compose a resume and write an application for the post of engineer in Tata Technologies Ltd., Plot No. 25, Hinjawadi Rajiv Gandhi Infotech Park, Hinjawadi, Pune – 411057. **L3/CO5** 12

***** End *****

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE **Regular & Supplementary Winter Examination – 2023** **Course: B. Tech. Branch: All B.tech Branches Semester : I** **Subject Code & Name: BTES105 Energy and Environment Engineering** **Max Marks: 60 Date:10-01-24 Duration: 3 Hr.**		
	Instructions to the Students: 1. All the questions are compulsory. 2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question. 3. Use of non-programmable scientific calculators is allowed. 4. Assume suitable data wherever necessary and mention it clearly.		
		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	**Explain in details Nuclear power plant and write the functions of a) moderator b) fuel rod and c) control rod.**	**Remember/ CO1**	**6**
B)	**Explain working of open cycle gas turbine power plant with neat sketch. Write advantages and limitations of gas turbine power plant.**	**Remember/CO1**	**6**
C)	**What is thermoelectric generator? Explain construction and working of thermionic power generator.**	**Remember/CO1**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	**Compare the relative characteristic of HAWT and VAWT. List the major application of wind power.**	**Understand/CO2**	**6**
B)	**Define solar energy with suitable example. Explain working of parabolic collector. Write advantages of photovoltaic system.**	**Remember/CO2**	**6**
C)	**What is the Biomass? Explain construction and working of biogas plant with neat sketch.** https://www.batuonline.com	**Remember/CO2**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	**What do you mean by energy efficiency? Explain the measures to be taken to reduce the energy conservation in compressor.**	**Remember/CO3**	**6**
B)	**Discuss the scope of energy conservation and principle of energy conservation. How you conserve energy in heat producing equipment with suitable example.**	**Remember/CO3**	**6**
C)	**How will you increase energy efficiency in boiler? Also explain the energy conservation in lightning system.**	**Remember/CO3**	**6**
Q.4	**Solve Any Two of the following.**		**12**

A)	Why TajMahal is turning yellow? Write importance and objectives of National Ambient Air Quality Standards.	Understand/CO4	6
B)	What is a Smog? Explain photochemical smog. Write effect of photochemical smog on human, plant & materials.	Remember/CO4	6
C)	List the control methods of particulate matter. Explain any one with suitable sketch.	Remember/CO4	6
Q. 5	Solve Any Two of the following.		12
A)	Define Noise pollution. What are the effect of noise pollution on human, wildlife and properties?	Remember/CO5	6
B)	What are the main causes of river pollution? How can river pollution to be controlled?	Remember/CO5	6
C)	How soil pollution occurs? Write control measures of soil pollution.	Remember/CO5	6
	*** End ***		

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Winter Examination-2023

Course: B. Tech **Branch: All** **Semester: I**

Course Code & Name: Engineering Mathematics-I (BTBS101)

Max Marks: 60 **Date:01-01-24** **Duration: 3 Hrs**

Instructions to the Students:

1. *All the questions are compulsory.*
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3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	Find the rank of matrix by converting it into Normal Form $A = \begin{bmatrix} 1 & 2 & -1 & 2 \\ 2 & 2 & -1 & 1 \\ -1 & -1 & 1 & -1 \\ 2 & 1 & -1 & 2 \end{bmatrix}$	**Understand (CO1)**	**6**
B)	Find eigen values & eigen vector for largest eigen value for the matrix $A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$	**Understand (CO1)**	**6**
C)	Check the consistency and solve: $2x - 3y + 5z = 1, 3x + y - z = 2, x + 4y - 6z = 1$	**Understand (CO1)**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	If $z(x+y) = x^2 + y^2$, **show that** $\left(\frac{\partial z}{\partial x} - \frac{\partial z}{\partial y}\right)^2 = 4\left(1 - \frac{\partial z}{\partial x} - \frac{\partial z}{\partial y}\right)$	**Understand (CO2)**	**6**
B)	If $u = f(2x - 3y, 3y - 4z, 4z - 2x)$, prove that $\frac{1}{2}\frac{\partial u}{\partial x} + \frac{1}{3}\frac{\partial u}{\partial y} + \frac{1}{4}\frac{\partial u}{\partial z} = 0$	**Understand (CO2)**	**6**
C)	If $u = \tan^{-1}\left(\frac{x^3+y^3}{x-y}\right)$, then find the value of $x^2\frac{\partial^2 u}{\partial x^2} + 2xy\frac{\partial^2 u}{\partial x \partial y} + y^2\frac{\partial^2 u}{\partial y^2}$	**Understand (CO2)**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	If $u = x + 2y^2 - z^3$, $v = 2x^2yz$, $w = 2z^2 - xy$ then evaluate $\frac{\partial(u, v, w)}{\partial(x, y, z)}$ at $(1,-1,0)$	**Understand (CO3)**	**6**
B)	Discuss the maxima and minima for the function $x^2 + y^2 + (30 - x - y)^2$ and hence find the extreme value of the function.	**Understand (CO3)**	**6**
C)	Using Lagrange's undetermined multipliers find the maximum value of $x^2 + y^2 + z^2$ when $x + y + z = 3a$	**Understand (CO3)**	**6**

Q.4	**Solve Any Two of the following.**		12
A)	Evaluate $\int_0^a x^3(a-x)^{\frac{3}{2}}\,dx$	Understand (CO4)	6
B)	Trace the curve $y^2(2a-x)=x^3$.	Understand (CO4)	6
C)	Trace the curve $x=a(\theta-sin\theta)$, $y=a(1-cos\theta)$.	Understand (CO4)	6
Q. 5	**Solve Any Two of the following.**		12
A)	Evaluate $\int_0^1 \int_0^{z^2} \int_0^{z^2-x} xz\,dx\,dy\,dz$	Understand (CO5)	6
B)	Find the area bounded by $y^2=4x$ and $2x-3y=-4$.	Understand (CO5)	6
C)	Change to polar and evaluate $\int_0^\infty \int_0^\infty e^{-(x^2+y^2)}\,dx\,dy$.	Understand (CO5)	6

Dr. Babasaheb Ambedkar Technological University, Lonere

Supplementary Examination Summer 2024

Course: B. Tech. **Branch: Common to All Branches**

Subject Code & Name: Engineering Mechanics BTES103 **Semester: I**

Max Marks: 60 **Date: 04/07/2024** **Duration: 3 Hrs.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question*
3. *Use of non-programmable scientific calculators is allowed.*
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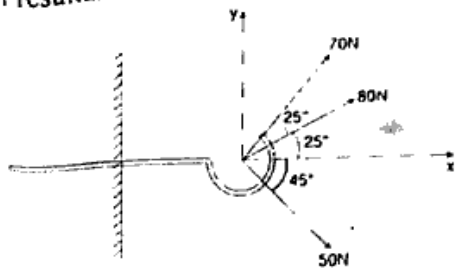
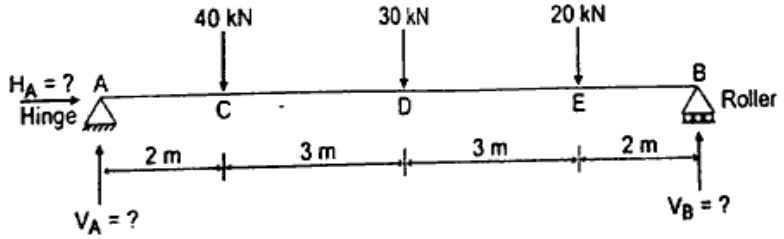
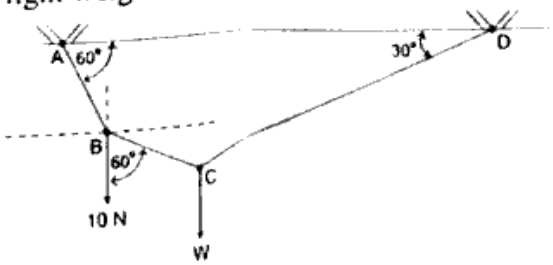
		(Level/CO)	Marks
Q. 1	**Solve <u>any two</u> of the following.**		
A)	Classify the system of forces with neat sketches & explain them in detail?	**Remember**	**06**
B)	Calculate the magnitude and position of resultant of the three forces acting on a hook as shown in figure below. 	**CO2**	**06**
C)	Explain the types loads in detail with neat sketches?	**Remember**	**06**
Q. 2	**Solve <u>any two</u> of the following.**		
A)	A simply supported beam of span 10 m carries three points loads of 40 kN, 30 kN and 20 kN from left hinge support at the distance 2 m, 5 m and 8 m respectively in downward direction. The right-hand support is roller. Find support reaction for the beam. 	**CO3**	**06**
B)	A smooth sphere of radius r 150 mm and weight W 20 N is hung by string whose length equal the radius of sphere with contact to smooth vertical wall. Find inclination and tension in string as well as reaction of wall.	**CO2**	**06**
C)	Find the value of W if a light weight chain ABCD is suspended as shown in below figure below. 	**Application**	**06**

Q. 3 Solve any two of the following.

A) Define: a) Static Friction, b) Dynamic Friction, c) Angle of Friction, d) Angle of repose. — Remember — 06

B) A body is resting on a rough horizontal plane. The coefficient of friction between the body and the plane is 0.2 and the limiting friction force that is acting on the body is 80 N. Given that R is the resultant of the force of friction and the normal reaction force, find the magnitude of R. — CO2 — 06

C) A Warren girder consisting of seven members each of 3 m length freely supported at its end points. The girder is loaded at B and C as shown. Find the forces in all the members of the girder, indicating whether the force is compressive or tensile. Use method of joints. — CO2 — 06

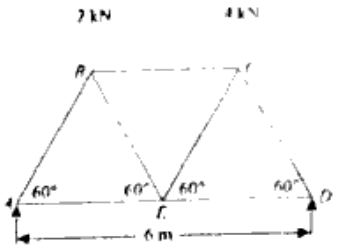


Fig 3.1 (C)

Q. 4 Solve any two of the following.

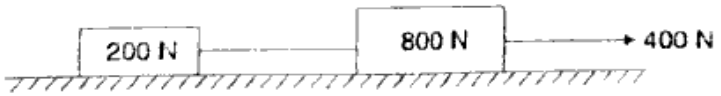
A) The equation of motion of an engine is given by $s = 2t^3 - 6t^2 - 8$, where (s) is in meters and (t) in seconds. Calculate (i) displacement and acceleration when velocity is zero; and (ii) displacement and velocity when acceleration is zero. — CO 5 — 06

B) The horizontal component of the velocity of a projectile is twice its initial vertical component. Find the range on the horizontal plane, if the projectile passes through a point 20 m horizontally and 4 m vertically above the point of projection. — CO 4 — 06

C) A Passenger train 500 m long, moving with a velocity of 108 kmph, overtakes a goods train moving on a parallel path in the same direction, completely in 45 seconds. If the length of the goods train is 250 m, Determine the speed of the goods train? — CO 4 — 06

Q. 5 Solve any two of the following.

A) Two weights 800 N and 200 N are connected by a thread and they move along a rough horizontal plane under the action of a force of 400 N applied to the 800 N weight as shown in Fig. below. The coefficient of friction between the sliding surface of the weights and the plane is 0.3. Using D' Alembert's principle determines the acceleration of the weight and tension in the thread. — CO 5 — 06



(a)

B) A man wishes to move wooden box of 1 meter cube to a distance of 5 m with the least amount of work. If the block weighs 10 kN and the coefficient of friction is 0.3, find whether he should tip it or slide it. — CO 5 — 06

C) A ball of mass 100 kg moving with a velocity of 20 m/s impinges directly on a ball of mass 200 kg at rest. The first ball, after impinging, comes to rest. Find the velocity of the second ball after the impact and the coefficient of restitution. — CO 5 — 06

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Examination – Winter 2023

Course: B. Tech. **Branch: All** **Semester: I**

Subject Code & Name: BTBS102P (Engineering Physics)

Max Marks: 60 **Date: 03-01-24** **Duration: 3 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	Define free oscillations. Derive an expression for differential equation of free oscillations.	(CO1) (Remember & Understand)	6
B)	Explain the construction, working for production of ultrasonic waves using Magnetostriction method.	(CO1) (Understand)	6
C)	State properties of ultrasonic waves. A quartz crystal having 03 mm thickness is vibrating at resonance. Calculate the fundamental frequency of vibrations for which ultrasonic waves are generated. Given for quartz, Young's Modulus is 7.9×10^{10} N/m^2, Density is 2650 Kg/m^3	(CO1) (Remember & Understand)	6
Q.2	**Solve Any Two of the following.**		**12**
A)	Derive an expression for the optical path difference for the reflected rays in a thin film of constant thickness and hence find the conditions for maxima and minima.	(CO2) (Understand)	6
B)	Explain the construction & working of Helium-Neon Laser with neat & labeled diagram.	(CO2) (Understand)	6
C)	Explain the structure of optical fiber with suitable diagram. Refractive index of the core is 1.48 and that of cladding is 1.47 in an optical fiber. Calculate numerical aperture.	(CO2) (Remember & understand)	6
Q. 3	**Solve Any Two of the following.**		**12**
A)	With neat diagram, explain the construction & working of Bainbridge mass spectrograph.	(CO3) (Understand)	6
B)	With graph and suitable diagram explain the construction & working of Geiger Muller Counter.	(CO3) (Understand)	6
C)	Derive Schrodinger's time independent wave equation.	(CO3) (Understand)	6
Q.4	**Solve the following questions.**		**12**
A)	Calculate Atomic Packing Fraction for SC, BCC and FCC structures.	(CO4) (Understand)	6

B)	Explain Characteristics X-ray spectra. Calculate the wavelength of X-rays when a potential difference of 20 KV is applied between filament and anode.	(CO4) (Understand)	6
Q. 5	**Solve Any Two of the following.**		**12**
A)	Explain B-H curve for ferromagnetic materials.	(Remember & Understand)	6
B)	What is Superconductivity? Explain Meissner effect in Superconductors.	(Remember & Understand)	6
C)	What is Hall effect? Derive an expression for Hall Voltage and Hall coefficient.	(Remember & Understand)	6
	***** End *****		