DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Semester Examination – Summer 2023

Course: B. Tech. **Branch: Civil Engineering** **Semester: II**

Subject Code & Name: BTES205/BTES205E Energy and Environment Engg.

Max Marks: 60 **Date: 21/7/2023** **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*
4. *Assume suitable data wherever necessary and mention it clearly*

		(Level/CO)	Marks
Q. 1	**Solve the following.**		**12**
A)	Explain the working of a Hydro electric power plant with neat diagram.	**CO1**	**6**
B)	What is the nuclear chain reaction? Explain the importance of moderator and control rods in a nuclear reactor with respect to chain reaction	**CO1**	**6**
C)	What are the fossil fuels used for generation of conventional power? Explain in detail Steam power plant.	**CO1**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	How the wind mills are classified? Sketch the diagram of HAWT, and explain the function of its main components.	**CO2**	**6**
B)	What is Bio-mass? Write construction and working of bio-gas plant, with a neat diagram. Also write down the advantages of it.	**CO2**	**6**
C)	Define solar energy. What is flat plate collector? Describe its components with suitable sketch.	**CO2**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	What do you mean by energy conservation? Explain the measures to be taken to reduce the energy conservation in domestic activities. List any four measures.	**CO2**	**6**
B)	What do you understand by maximum energy efficiency in context with energy conservation principle? Discuss with a suitable example.	**CO1**	**6**
c)	Write down the methods of energy conservation in electrical appliances, forearmers		**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	Define Air Pollution. Write down the different classification of air pollution sources.	**CO3**	**6**
B)	Explain briefly effect of air pollution on human being and vegetation.	**CO1**	**6**
C)	What is radioactive pollution? What are its effects? How we can control Radioactive Pollution?	**CO3**	**6**
Q. 5	**Solve the following.**		**12**
A)	What are the main causes of water pollution? How can water pollution be controlled?		

B) Explain the following terms: CO3 6
a. Thermal pollution
b. Acid rain

C) What are the various methods of safe disposal of solid wastes? CO3 6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Winter 2022

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

Subject Code & Name: BTES105/BTE205E Energy and Environment Engineering

Max Marks: 60 **Date: 29/03/2023** **Duration: 3 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *Illustrate your answers with neat sketches, diagram etc., wherever necessary*
3. *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.*
4. *Use of non-programmable scientific calculators is allowed.*
5. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	What are the advantages of conventional energy sources? Explain with a simple diagram the working of a gas based thermal power plant and list at least two such power plants in India.	Remember/CO1	**6**
B)	Why nuclear power plants are important for the development of the nation? Explain with a neat diagram the function of nuclear reactor and its components in the nuclear power plant.	Remember/CO1	**6**
C)	What are the disadvantages of coal based thermal power plants over the hydroelectric power plant? Write any four. Discuss coal and ash circuit of a coal based thermal power plant.	Remember/CO1	**6**
Q.2	**Solve Any Two of the following.**		
A)	With a neat diagram, explain how wind energy can be converted into electrical energy.	Understand/CO2	**6**
B)	Explain how ocean tides are generated and how the power can be tapped? Discuss the limitations of this method.	Understand/CO2	**6**
C)	What is the main advantage and disadvantage of biogas power? What are the main constituents? What are the factors affecting on the performance of biogas digester?	Remember /CO2	**6**
Q. 3	**Solve Any Two of the following.**		
A)	Why should you look for BEE star labels when buying appliances? How the energy efficiency in industries can be improved?	Remember/CO3	**6**
B)	Define energy conservation. What energy conservation practices can be implemented while transportation by vehicles on roads.	Remember/CO3	**6**
C)	How one can improve the energy conservation in home appliances like refrigerator and Air conditioner? Explain.	Remember/CO3	6
Q.4	**Solve Any Two of the following.**		
A)	Define primary and secondary air pollutants. Give the various causes of air pollution and write their remedies. Any four.	Understand/CO4	**6**
B)	Why deforestation is considered as major reason for air pollution? Explain the measures to be taken to control the air pollution. Any six.	Remember/CO4	**6**

C)	What are the four causes of particulate matter? What are their categories? How does it affect the environment? And how do you reduce the pollution arises due to particulate matter?	Remember/CO4	6

Q. 5 Solve Any Two of the following.

A)	Define Noise pollution. What are the effects of noise pollution on humans and wildlife?	Remember/CO5	6
B)	Explain the concept of BOD and COD used for measuring water pollution.	Remember/CO5	6
C)	What causes the thermal pollution? How can we prevent thermal pollution? How can thermal pollution be prevented?	Remember/CO5	6

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Summer 2023

Date:-14/07/2023

Course: B.Tech. **Sem: II**

Subject: Engineering Chemistry **Subject code: BTBS202**

Marks: 60 **Duration: 3 hr.**

Instructions for students:

1. All the questions are compulsory.
2. Draw a neat labelled diagram wherever necessary.
3. Read question properly

		Level/CO	Marks
Q1	**Solve any TWO of the following:**		
A)	Explain the zeolite process of softening of water with its advantages and disadvantages.	(understanding)	06
B)	Explain in detail Hot-Lime Soda process with its advantages and disadvantages.	(understanding)	06
C)	How does the Hardness of water determine by EDTA complexometric method.	(Apply)	06
Q2.	**Q2. Solve any TWO of the following:**		
A)	State phase rule equation. Explain the term component of phase rule with examples.	(Understanding)	06
B)	Explain phase diagram of one component water system with neat labelled diagram.	(Understanding)	06
C)	What is meant by Eutectic point? Explain silver-lead 2 component alloy system with phase diagram.	(application)	06
Q3.	**Solve any TWO of the following:**		
A)	Write a note on Dry/Chemical corrosion. Explain mechanism of corrosion due to oxygen.	(knowledge)	06
B)	B) Suggest the criteria for selection of metal and role of proper designing for corrosion control.	(understanding)	06
C)	C) Define Anodic protection method and explain the process with the help of neat labelled diagram.	(knowledge)	06
Q4.	**Solve any TWO of the following:**		
A)	Define Calorific value and the concept of Gross and Net calorific value.	(knowledge)	06
B)	What are the conditions under which solid lubricants are used and write a note on Graphite.	(application)	06
C)	Describe Fractional distillation process with neat labelled diagram and give end use of each fraction.	(Understanding)	06
Q5	**Solve any TWO of the following**		
A)	A) Define Ohm's law, Specific conductance, equivalent conductance, molecular conductance, and cell constant with their units.	(Understanding)	06

B)	B) Write a note on Ostwald's theory of acid base indicators.	(knowledge)	06
C)	C)What is conductometric titration? Explain conductometric titration of strong acid versus strong base with graphical representation.	(Application)	06

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Summer 2023

Date:-14/07/2023

Course: B.Tech. **Sem: II**

Subject: Engineering Chemistry **Subject code: BTBS202**

Marks: 60 **Duration: 3 hr.**

Instructions for students:

1. All the questions are compulsory.
2. Draw a neat labelled diagram wherever necessary.
3. Read question properly

		Level/CO	Marks
Q1	**Solve any TWO of the following:**		
A)	Explain the zeolite process of softening of water with its advantages and disadvantages.	(understanding)	06
B)	Explain in detail Hot-Lime Soda process with its advantages and disadvantages.	(understanding)	06
C)	How does the Hardness of water determine by EDTA complexometric method.	(Apply)	06
Q2.	**Q2. Solve any TWO of the following:**		
A)	State phase rule equation. Explain the term component of phase rule with examples.	(Understanding)	06
B)	Explain phase diagram of one component water system with neat labelled diagram.	(Understanding)	06
C)	What is meant by Eutectic point? Explain silver-lead 2 component alloy system with phase diagram.	(application)	06
Q3.	**Solve any TWO of the following:**		
A)	Write a note on Dry/Chemical corrosion. Explain mechanism of corrosion due to oxygen.	(knowledge)	06
B)	B) Suggest the criteria for selection of metal and role of proper designing for corrosion control.	(understanding)	06
C)	C) Define Anodic protection method and explain the process with the help of neat labelled diagram.	(knowledge)	06
Q4.	**Solve any TWO of the following:**		
A)	Define Calorific value and the concept of Gross and Net calorific value.	(knowledge)	06
B)	What are the conditions under which solid lubricants are used and write a note on Graphite.	(application)	06
C)	Describe Fractional distillation process with neat labelled diagram and give end use of each fraction.	(Understanding)	06
Q5	**Solve any TWO of the following**		
A)	A) Define Ohm's law, Specific conductance, equivalent conductance, molecular conductance, and cell constant with their units.	(Understanding)	06

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Summer Examination – 2023

Course: B. Tech. **Branch : FE All** **Semester : II**

Subject Code & Name: Engineering Mathematics-II (BTBS201)

Max Marks: 60 **Date: 12-07-2023** **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)	If $\tan(A+iB) = x+iy$ then show that i) $\tan 2A = \frac{2x}{1-x^2-y^2}$ ii) $\tanh 2B = \frac{2y}{1+x^2+y^2}$	**Understand (CO1)**	**6**
B)	Show that the roots of $x^5 = 1$ are $1, \alpha, \alpha^2, \alpha^3, \alpha^4$ and hence prove that $(1-\alpha)(1-\alpha^2)(1-\alpha^3)(1-\alpha^4) = 5$	**Understand (CO1)**	**6**
C)	Prove that $\tan\left[i\log\left(\frac{a-ib}{a+ib}\right)\right] = \frac{2ab}{a^2-b^2}$	**Understand (CO1)**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	Solve $\frac{dy}{dx} + x\sin 2y = x^3\cos^2 y$	**Understand (CO2)**	**6**
B)	Solve $y\,dx - x\,dy + \log x\,dx = 0$	**Understand (CO2)**	**6**
C)	A constant electromotive force E volts is applied to a current containing a constant resistance R ohm in series and a constant inductance L Henries. If the initial current is zero, show that the current builds up to half its theoretical maximum in $\left(\frac{L}{R}\log 2\right)$ seconds.	**Apply (CO2)**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	Solve $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = e^x + xe^x\cos x$	**Understand (CO3)**	**6**
B)	Solve $(D^2+2D+1)y = e^{-x}\log x$ by method of variation of parameters	**Understand (CO3)**	**6**
C)	Solve $x^2\frac{d^2y}{dx^2} - 2x\frac{dy}{dx} + 2y = x^2$	**Understand (CO3)**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	Find the Fourier series of the function $f(x) = x$ in the interval $(0, 2\pi)$.	**Understand (CO4)**	**6**
B)	Find the Fourier series of $f(x) = x^2$ in the interval $-\pi < x < \pi$ and hence show that $\frac{\pi^2}{6} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots$	**Understand (CO4)**	**6**

C)	If $f(x) = \begin{cases} x & , \ 0 < x < \frac{\pi}{2} \\ \pi - x & , \ \frac{\pi}{2} < x < \pi \end{cases}$ then find half range Fourier sine series Hence show that $f(x) = \frac{4}{\pi}\left(\sin x + \frac{\sin 3x}{3^2} + \frac{\sin 5x}{5^2} + \cdots \right)$	**Understand (CO4)**	**6**
Q. 5	**Solve Any Two of the following.**		**12**
A)	If $\bar{r} = xi + yj + zk$ and $r = \lvert\bar{r}\rvert$ then Find $\nabla \cdot \bar{F}$, where $\bar{F} = \left(\frac{x}{r}\right)i + \left(\frac{y}{r}\right)j + \left(\frac{z}{r}\right)k$	**Understand (CO5)**	**6**
B)	Verify Green's theorem for $\oint_C ((xy + y^2)dx + x^2dy)$ where C is bounded by $y = x$ and $y = x^2$	**Understand (CO5)**	**6**
C)	Verify the Stokes theorem for $\bar{F} = x^2i + xyj$ over the square in the plane $z = 0$ bounded by the lines $x = 0, x = a, y = 0$ and $y = a$	**Apply (CO5)**	**6**

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular Semester Examination – Summer 2023

Course: First Year B. Tech. (Semester II) **Branch: Group A / Group B**

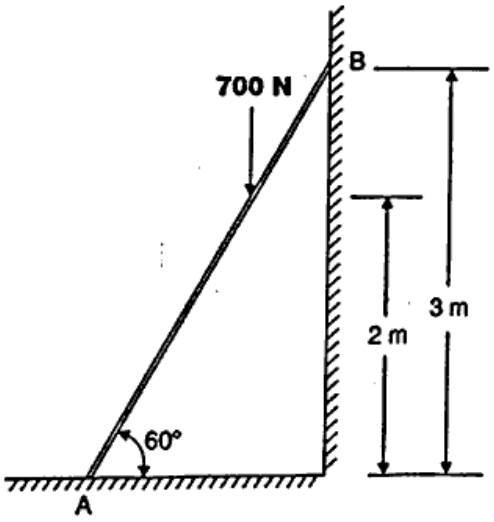
Subject Name: Engineering Mechanics **Subject Code: BTES203**

Max Marks: 60 **Date: 17/07/2023** **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.*
4. *Assume suitable data wherever necessary and mention it clearly.*

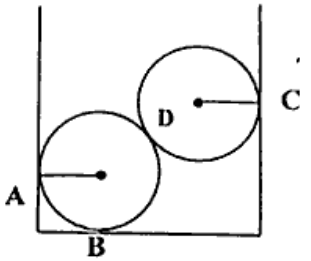
		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	(I) Define following terms: Static, Dynamic, Law of parallelogram, Lami's Theorem. (II) Write down the characteristics of force.	**Remember**	**06**
B)	A ladder weighing 100 N is to be kept in the position shown in figure, resting on a smooth floor and leaning on a smooth wall, also a man weighing 700 N is at 2m above floor level. Determine (i) The horizontal force F required at floor level to prevent it from slipping. (ii) If the horizontal force F is to be applied at a height of 1 m above the ground level, how much should F be?	**CO 1**	**06**



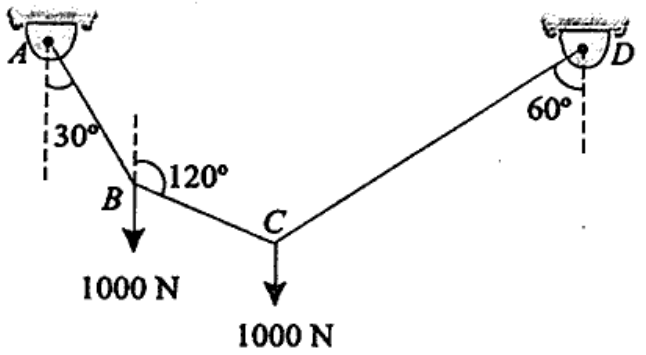
C)	The following forces are acting at a point: (i) 20 N inclined at 30^0 from East to North, (ii) 25 N towards North, (iii) 30 N inclined at 45^0 from North to West, (iv) 35 N inclined at 40^0 from West to South. Find the magnitude and direction of the resultant force.	**CO 1**	**06**

Q. 2 Solve Any Two of the following.

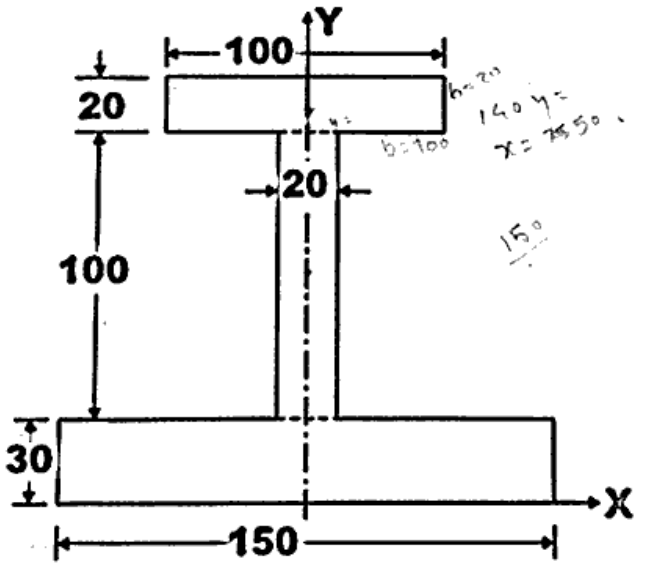
A) The cylindrical rollers of weight 50 N each having radius 0.3 m are placed inside a cup having base width 1 m. Find reactions at points of contact A, B, C and D. **CO 1** **06**



B) A string ABCD, attached to fixed points A and D has two equal weights of 1000 N attached to it at B and C. The weights rest with the portions AB and CD inclined at angles. Find the tensions in the portions AB, BC and CD of the string, if the inclination of the portion BC with the vertical is 120°. **CO2** **06**



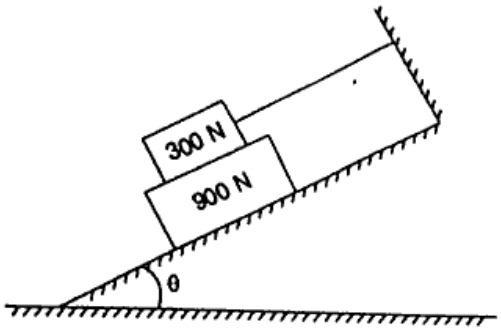
C) Locate the centroid of the I-section shown in figure with respect to the axes shown. (All dimensions are in mm) **Application** **06**



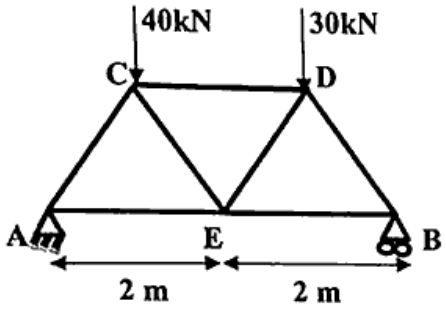
Q. 3 Solve Any Two of the following.

A) Define friction. What are the Coulomb's laws of dry friction? **Remember** **06**

B) What should be the value of θ that will make the motion of 900 N block down the plane to impend? The coefficient of friction for all contact surfaces is 1/3. (Note: Upper block weighs 300 N) CO2 06



C) Find out forces in all the members of truss. (All angles are 60°) CO2 06



Q. 4 Solve Any Two of the following.

A) State and prove work energy principle. Understand 06

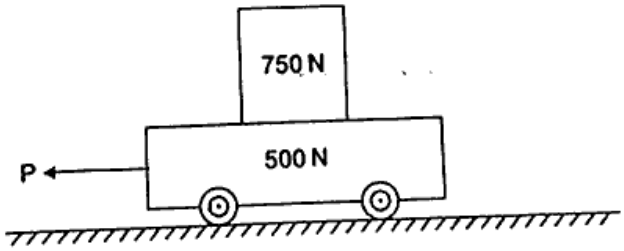
B) A body moves along a straight line and its acceleration 'a' which varies with time is given by $\mathbf{a = 2 - 3t}$. Five seconds after start of the observations, its velocity is found to be 20 m/sec. Ten seconds after start of the observation, the body is at 85 m from the origin. Determine its acceleration, velocity and distance from the origin. CO 4 06

C) If a particle is projected inside a horizontal tunnel which is 5 meters high with velocity of 60 m/s, find the angle of projection and the greatest possible range. CO 4 06

Q. 5 Solve Any Two of the following.

A) State and explain with mathematical equation: (i) Law of conservation of momentum (ii) Coefficient of restitution. Remember 06

B) A 750 N crate rests on a 500 N cart. The coefficient of friction between the crate and the cart is 0.3 and between cart and the road is 0.2. If the cart is to be pulled by a force P such that the crate does not slip. CO 5 06



Using D' Alembert's principle, determine:

(i) the maximum allowable magnitude of P,

(ii) the corresponding acceleration of the cart.

C) A 1500 N block is in contact with a level plane, the coefficient of friction between two contact surfaces being 0.1. If the block is acted upon by a horizontal force of 300 N, what time will elapse before the block reaches a velocity of 16 m/sec starting from rest? If 300 N force is then removed, how much longer will the block continue to move? Solve the problem using impulse momentum equation. CO 5 06

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination - Summer 2023

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

Subject Code & Name: BTBS202P (Engineering Physics)

Max Marks: 60 **Date:14/07/2023** **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.**		
A)	Define Damped Vibrations. Set up differential equation for damped vibrations.	(CO1) (Remember & Understand)	6
B)	Explain the construction, working for production of ultrasonic waves using Piezoelectric oscillator.	(CO1) (Understand)	6
C)	State any two applications of ultrasonic waves. Calculate the length of iron rod which can be used to produce ultrasonic waves of 20 KHz. Density of iron is 7.23×10^3 kg/m^3. Young's modulus is 11.6×10^{10} N/m^2	(CO1) (Remember & Understand)	6
Q.2	**Solve Any Two of the following.**		
A)	In Newton's rings, derive an expression for diameter of n^{th} bright ring and dark ring.	(CO2) (Understand)	6
B)	Explain the construction & working of Ruby laser.	(CO2) (Understand)	6
C)	Explain the structure of optical fiber with suitable diagram. Calculate the numerical aperture of a optical fiber with core index n_1=1.61 and cladding index n_2=1.55	(CO2) (Remember & Understand)	6
Q. 3	**Solve Any Two of the following.**		
A)	With neat diagram, explain the construction & working of Bainbridge mass spectrograph.	(CO3) (Understand)	6
B)	Write short note on Geiger Muller Counter.	(CO3) (Understand)	6
C)	State Heisenberg's Uncertainty Principle with formula.	(CO3)	6

If the uncertainty in position of an electron is 4×10^{-10} m, Calculate the uncertainty in its momentum. ($h=6.62 * 10^{-34}$ J Sec) (Understand)

Q.4 Solve the following questions.

A) Calculate Atomic Packing Fraction for SC, BCC and FCC lattices. (CO4) (Understand) 6

B) Explain Continuous X-ray spectra.

Calculate the wavelength of X-rays when a potential difference of 30 KV is applied between filament and anode. (CO4) (Understand) 6

Q. 5 Solve Any Two of the following.

A) Explain Diamagnetic, Paramagnetic and Ferromagnetic materials with examples and diagram. (Understand) 6

B) Distinguish between Type I and Type II superconductors. (Understand) 6

C) Derive an expression for conductivity of Intrinsic and extrinsic (P Type & N Type) Semiconductors. (Understand) 6

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Regular Summer Examination – 2022-23

Course: B. Tech. **Branch :** **Semester : II**

Subject Code & Name: BTHM204, Communication Skills

Max Marks: 60 **Date:** **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. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve any TWO of the following:**		**12**
A)	Explain the types/forms of communication	**Understand/1**	**6**
B)	Discuss any three barriers to communication?	**Understand/1**	**6**
C)	Write a short note on importance of reading skills.	**Understand/1**	**6**
Q.2	**Solve any TWO of the following:**		**12**
A)	What are the principles of practicing Group Discussion (GD)?	**Remember/3**	**6**
B)	Write a detailed note on non-verbal communication.	**Remember/1**	**6**
C)	Discuss interview techniques.	**Understand/3**	**6**
Q. 3	**Solve any TWO of the following:**		**12**
A)	Write the spelling for the following transcriptions. i. /kəmˈpjuːtə(r)/ ii. /ɪgˌzæmɪˈneɪʃn/ iii. /ˈjestədeɪ/	**Remember/2**	**6**
B)	Draw a diagram of Organs of Speech. Explain any three organs of speech.	**Apply/2**	**6**
C)	What is the role of phonetics in effective English communication?	**Remember/2**	**6**
Q.4	**Solve any TWO of the following:**		**12**
A)	I) Fill in the blanks with the appropriate article/s (a, an and the). i. Vinod wants to join _____university. ii. You are _____honest person. iii. Rahul is _____Mahendra Singh Dhoni of our college.	**Apply/4**	**6**

	II) Fill in the blanks with the appropriate preposition (from, since, up, between, on, under). i. He has been writing _____morning. ii. Sudha sits _____Saroj and Usman. iii. What is the documentary _____?		
B)	I) Rewrite the sentences using the correct tense. i. Simran _____(go) to her village last week. (Simple Past Tense) ii. I _____(teach) this subject for ten years(Present Perfect Continuous Tense) iii. He _____(open) the shop everyday (Simple Present Tense) II) Write the synonyms of the following words: i. Abandon ii. Illiterate iii. Zenith	**Apply/4**	**6**
C)	1) Write the antonyms of the following words: i. Arrogant ii. Ancient iii. Virtue 2) Correct the following sentences: iv. He is my older brother. v. My friend lives in abroad. vi. I love travel.	**Apply/4**	**6**
Q. 5	**Solve any ONE of the following:**		**12**
A)	1) Write a detailed report on an activity arranged by your college. (For example, Blood Donation Camp, Tree Plantation Drive, etc....) 2) Write an application to your H o D requesting three days leave for yours sister's marriage ceremony.	**Remember/4**	**6** **6**
	OR		
B)	Use Full Block Format and write an application for the post of Asst. Engineer in Tata Consultancy Services (TCS), No. 11/2 Palace Road, Bangalore. (The Times of India, 10th July 2023) Attach your CV/Resume.	**Remember/4**	**12**
	***** End *****		

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Winter Examination - 2022

Course: B. Tech. Branch :Computer Engineering Semester :II

Subject Code & Name: BTCOC401 Design and Analysis of Algorithms

Max Marks: 60 Date: 13/07/2023 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)	Write down properties of algorithms.	CO1	6
B)	Explain any three asymptotic notations.	CO2	6
C)	What is max heap? Explain with example.	CO1	6
Q.2	Solve Any Two of the following.		12
A)	Explain Binary Search with its time complexity.	CO2	6
B)	Write down quick sort algorithm with its time complexity.	CO1	6
C)	Explain strassen's matrix multiplication with its performance analysis.	CO2	6
Q. 3	Solve Any Two of the following.		12
A)	Explain four queen problems and draw its state space tree.	CO2	6
B)	What is graph coloring problem? Explain with example.	CO3	6
C)	Differentiate between backtracking and branch and bound.	CO4	6
Q.4	Solve Any Two of the following.		12
A)	What is optimal merge pattern?	CO3	6
B)	Explain Huffman coding with a suitable example.	CO2	6
C)	Solve knapsack problem by greedy method where capacity of knapsack is 15kg, profits of seven object are (P1,P2,P3,P4,P5,P6,P7) (10,5,15,7,6,18,3) and weights (w1,w2,w3,w4,w5,w6,w7)(2,3,5,7,1,4,1).	CO5	6
Q. 5	Solve Any Two of the following.		12
A)	Write down characteristics of dynamic programming.	CO1	6
B)	Explain different applications of dynamic programming.	CO2	6
C)	What is complexity class P?	CO3	6

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular Summer Examination – 2023

Course: B. Tech. **Branch : Civil/Chemical/Petrochemical/Mechanical** **Semester :II**

Subject Code & Name: Computer Programming in C [BTES204]

Max Marks: 60 **Date:** **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.*
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		(Level / CO)	Marks
Q. 1	**Solve Any Two of the following.**		**[12]**
A)	Write note on Program Process Development.		
B)	Write an algorithm and draw a flowchart for a program to print sum and average of 'n' natural numbers.		
C)	Write a short note on the Tokens in C Language		
Q.2	**Solve Any Two of the following.**		**[12]**
A)	Write a program to find the maximum number from 3 numbers enter by user.		
B)	Explain any three types of operators along with it's precedence and associativity.		
C)	Write a program to create simple calculator to perform addition, subtraction, division, and multiplication operations.		
Q. 3	**Solve Any Two of the following.**		**[12]**
A)	Write a program to print area of square using function.		
B)	Write a program to print factorial of a given number using while and also, write the program using do....while loop.		
C)	Differentiate between while and do.... while loop		
Q.4	**Solve Any Two of the following.**		**[12]**
A)	Write a program to perform and to print the addition and subtraction of the two Matrices.		
B)	Write a program to perform the following operations on the string (With and without using library function) 1. find length of string 2. copy 3. concatenation 4. reverse.		

C) Write syntax of following Concepts of C:
1 Array 2 Switch 3. Function

Q. 5 Solve Any Two of the following. **[12]**

A) Write a program in C to create a structure of student with fields such as Student Name, Roll Number and Marks of two subjects as its members. Calculate average of two subjects. Read the details of 'n' students from user and then display the data in this format.

Roll No. Name Sub1 Sub2 Total Average

B) Write a program in C to create a structure having named as Books consists of title, author, subject, book id as its members. Read the details of five books from user and then display the data entered by the user on Screen (Use array of structure)

C) Define structure with suitable example. What is difference between structure and Union?

••• End •••