Sub- Engineering Chemistry
Branch - Civil & Elect. Engg.

1. **Answer any four questions.** **[4X5]**

a) Write the Postulates of Ruther ford's atomic model.

b) Write the limitations of Bohi's atomic model.

c) State the Bohr-Burry principle.

d) Define covalent bond and lonic bond ? Give examples.

e) Describe Arrhenius Theory of acids and bases.

Sub- Computer Application
Branch - Civil & Elect. Engg.

1. **Answer all the questions.** **[5X4]**

a) Describe the evalution of computer system.

b) Write the algorithm along the flow chart of computation of factorial of a number.

c) Write the algorithm along the flow chart of calculating the area of a triangle.

d) Explain different categories of memory system.

Sub- Basic Electronic Engg.
Branch -Civil & Elect. Engg.

1.   Answer all the questions.   [10X2]

a)   Explain insulator, conductor and semi conductor on the basis of band theory.

b)   Explain the forward and reverse bias of PN junction diode and draw the characterstic graph.

Sub- Communicative English
Branch - All Branch

1.   Define communication ? Discuss the various factors responsible for process of communication.   **[10]**

2.   Answer the following questions. (Any Five)   [5X4]

a)   Define 'Feedback' ?

b)   Give one example of 'Auditory channel' in the process of communication.

c)   What do you mean by 'ideation' ?

d)   Define 'Barriers to communication' ?

e)   Analyse the word 'Audience' in the process of communication.

f)   What do you mean by 'Horizontal communication' in an organization ?

Sub- Engineering Physics
Branch - Mech. & Auto. Engg.

1. Answer all the questions.　　　　　　　　**[1x5]**

a) Write down the relation between angle of friction and co-efficient of friction.

b) Sliding friction < Rolling friction.　　　(True / False)

c) Give one example of a lubricant.

d) Dimensional formula for force is _____.

e) Write down the dimensional equation for area.

2. Answer any four questions.　　　　　　　**[2x4]**

a) Write three properties of cross product of vectors.

b) Define equation of trajectory for a projectile.

c) Differentiate between static and dynamic friction.

d) A force of 1000N is applied to a 1200Kg car. If the co-efficient of rolling friction is 0.04, what is the car's acceleration ?

e) Find out the angle between two vectors $\vec{A}$ & ＿, if their dot product & cross product are equal.

3. Answer any one question.　　　　　　　　**[7]**

Derive the expression for the variation of 'g' with altitude.

Or

Derive the expression for the variation of 'g' with depth.

Sub- Engineering Math-II
Branch - All Branch

1. Answer any two questions.　　　　　　　**[5x2]**

a) Evaluate $x \to 0$

b) Evaluate $\begin{array}{c} \lim \\ x \to 0 \end{array}$

c) Evaluate $\lim\limits_{x \to \infty} \sqrt{x}\left(\sqrt{x+1} - \sqrt{x}\right)$

2. Answer any one questions.　　　　　　　**[10]**

a) Examine the continuity of the function

$$f(x) = \begin{cases} 2x+1 & if \ x \leq 0 \\ x \\ 2x-1 & if \ x \geq 1 \end{cases}$$

of $x = 0$

b) Examine the continuity of the function

$$f(x) = \begin{cases} \dfrac{|x|}{x}, & x \neq 0 \\ 0, & x = 0 \end{cases}$$

of $x = 0$

Sub- Engg. Mechanics
Branch - Mech. & Auto. Engg.

ANSWER ANY FIVE FROM QUESTION NO. 1 AND ANY TWO FROM QUESTION NO. 2.

1.a)   Define engineering mechanics and classify it.   [2x5]

b)   Define 'force' and write its unit in gravitational system.

c)   Differentiate between kinematics and kinetics.

d)   Define one joule of work. What is the work done by a coolie carrying a luggage of 50kg over his head and walking along the platform ?

e)   Find the potential energy of mass 2kg raised through a height of 1m from the ground.

2.a)   A constant retarding force of 100N is applied on a body of mass 50kg at rest. Find the distance travelled by it in 12 sec.   [5]

b)   A trolley of mass 200kg moves on a level track for a distance of 500m. If the resistance of truck is 100N, find the W.D. is moving the trolley.   [5]

c)   A bullet of mass 10g is fired horizontally with a velocity of 1000m/s from a gun of mass 50kg. Calculate the force necessary to bring the gun to rest is 250mm.   [5]