MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Engineering Chemistry
(ME & AE)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE
Question from each SECTION and each Question carries 14 marks.
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SECTION-I

1	A)	What is conductometry? Explain the Conductometric titration of strong acid vs. strong base with a neatly labeled graph.	[7M]
	B)	What is ion selective electrode? Explain the determination of pH of an acid using glass electrode.	[7M]

OR

2	A)	What is the principle of potentiometry? With a neatly labeled graph explain potentiometric redox titration.	[7M]
	B)	Define fuel cell. Explain the construction, functioning and applications of methanol – oxygen fuel cell.	[7M]

SECTION-II

3	A)	Define Galvanic corrosion. Write factors affecting rate of corrosion	[7M]
	B)	What is the principle involved in cathodic protection? Explain impressed current cathodic protection method.	[7M]

OR

4	A)	Define electroplating. Explain the electroplating of copper.	[7M]
	B)	Discuss the following factors influencing the rate of corrosion.	
		(i) Temperature	[7M]
		(ii) Passivity	
		(iii) Relative areas of anode and cathode	

SECTION-III

5	A)	Differentiate thermoplastic and thermosets.	[4M]
	B)	Write preparation and applications of Nylon-6,6 and PVC	[10M]

OR

6	A)	Write a note on characteristics of a good lubricant.	[3M]
	B)	What are refractories? Explain the classification of refractories with suitable example.	[4M]
	C)	Write a note on preparation, properties and applications of phenol-formaldehyde resin.	[7M]

SECTION-IV

7	A)	Appraise the use of ion exchange resins in demineralization of water with a neat diagram. Enumerate the merits and demerits.	[7M]
	B)	Define caustic embrittlement.	[2M]

| | C) | Explain disinfectant of water by chlorination and ozonisation | [5M] |

<div align="center">OR</div>

8	A)	Define Priming and foaming. How they are formed in boilers? Explain the consequences of formation of Priming and foaming in boiler.	[7M]
	B)	A sample of water contains 43.8mg/lt of $Mg(HCO_3)_2$ and 272ppm of $CaSO_4$. Calculate its total hardness.	[2M]
	C)	Write a note on colloidal and phosphate conditioning.	[5M]

<div align="center"><u>SECTION-V</u></div>

| 9 | A) | Explain refining of petrol by fractional distillation method. | [7M] |
| | B) | Define knocking of petrol write note on octane number and cetane number. | [7M] |

<div align="center">OR</div>

10	A)	Define cracking and give its significance.	[2M]
	B)	Explain the Fischer-Tropsch's process.	[5M]
	C)	Write a note on ultimate analysis and give its significance.	[7M]

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Engineering Drawing
(AE & ME)

Roll No									

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

Q.No.1 Draw a parabola that has a distance of 50 mm between the focus and the directrix. Draw a normal and a tangent to the parabola at a point 35 mm from the focus. **[14M]**

(OR)

Q.No.2 Draw a hypocycloid where the diameters of the rolling and the directing circles are equal to 50 mm and 150 mm respectively. Draw a normal and a tangent to the curve at the convenient point.

[14M]

SECTION-II

Q.No.3 a) Draw the projections of the following points on the same ground line, keeping the distance between projectors equal to 25 mm.

    i) Point A, 20 mm above the H.P., 25 mm behind the V.P.
    ii) Point B, 25 mm below the H.P., 20 mm behind the V.P.
    iii) Point C, 20 mm below the H.P., 30 mm in front of the V.P.
    iv) Point D, 20 mm above the H.P., 25 mm in front of the V.P.
    v) Point E, on the H.P., 25 mm behind the V.P.
    vi) Point F, on the V.P., 30 mm above the H.P. **[7M]**

    b) A straight line PQ is in the VP and inclined at 60^0 to the HP. Its end Q is farthest from the HP and is 55 mm above it. Draw its projections. **[7M]**

(OR)

Q.No.4 A straight line PQ of 50 mm length has its end point P 15 mm above the H.P. and 10 mm in front of the V.P. . Draw the projections of the line if it is inclined at 30^0 to the V.P. while its front view is inclined at 45^0 to the XY line. Find the angle made by the line with the H.P. **[14M]**

SECTION-III

Q.No.5 A thin circular metal plate of 48 mm diameter, having its plane vertical and inclined at 40^0 to V.P. Its center is 38 mm above H.P. and 25 mm in front of V.P. Draw its projection. **[14M]**

(OR)

Q.No.6 A hexagonal prism side of base 20 mm and axis 60 mm long lies with one of its longer edges on H.P. and its axis is parallel to both H.P. and V.P. Draw its projections. **[14M]**

SECTION-IV

Q.No.7 Draw the isometric drawing of a cone of diameter 40 mm and length of the axis 55 mm, when it is resting on its base. **[14M]**

(OR)

Q.No.8 Draw the isometric view of the pentagonal pyramid of base side 30 mm and height 50 mm. Resting on its base edge on HP. **[14M]**
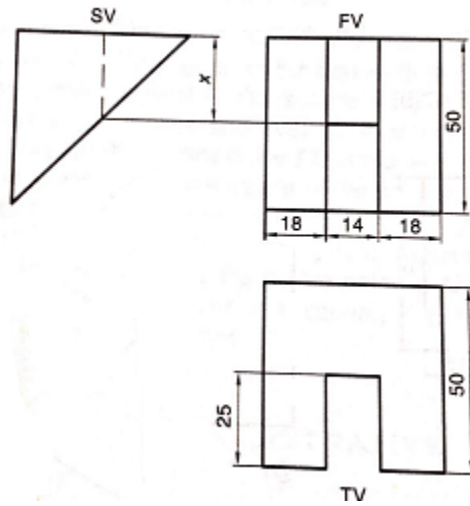
SECTION-V

Q.No.9 Draw the orthographic projections for the given isometric view in below figure. All dimensions are in mm. **[14M]**
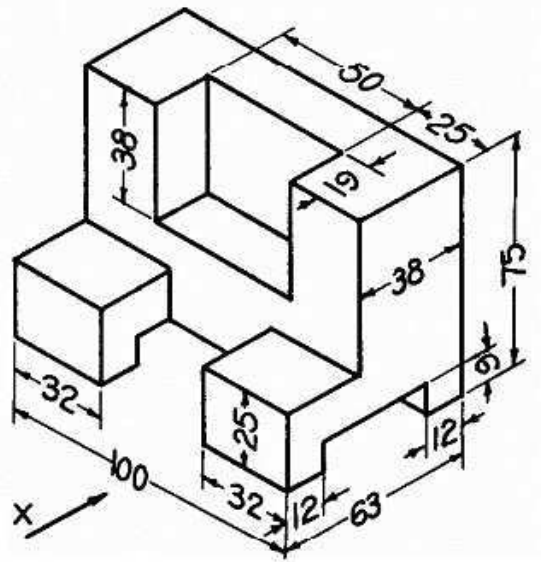
(OR)

Q.No.10 Draw the isometric view of the object whose orthographic projections are given in below figure. All dimensions are in mm. **[14M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Professional English
(Common to all branches)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION – I

1. a) What are the major qualities of a gracious son or daughter?   **[7M]**
   b) We should care our parents when they are old – Explain   **[7M]**

(OR)

2. a) "A wise son rejoiceth the father, but an ungracious son shames the mother " – Justify**[7M]**
   b) Fill in the blanks with '*a*', '*an*' or '*the*' where necessary.   **[7M]**

   i. I was in _____Japanese restaurant. _____ restaurant served good food.

   ii. _____love is such _____beautiful thing.

   iii. Being loved is_____ universal need among all _____ children.

   iv. I want to open an account in _____ bank where you work.

SECTION – II

3. a) What was the incident that happened early in his career that proved that Sachin had immense physical stamina as well as the ability to bear pain, both necessary qualities in a sportsperson?

                                                                                           [7M]

   b) How did his relationship with his fans affect Sachin's life as a brilliant cricketer?   **[7M]**

(OR)

4. a) What are the three of sachin's many achievements mentioned in the article?   **[7M]**
   b) Correct the following sentences if necessary.   **[7M]**
      i.   I prefer coffee than tea.
      ii.   If he invite me I will give him a gift.
      iii. If I went to Agra I would visited the Tajmahal.
      iv.   It is a good habit to refer the book.
      v.   Tonsillitis is among those diseases that is curable.
      vi.   My friend is having a nice idea.
      vii. The question arises as to who should go out today - you or me.

SECTION – III

5. a) What are some do's and don'ts of resume writing?   **[7M]**
   b) What are the features of a formal letter?   **[7M]**

(OR)

6. Wanted an experienced Marketing Manager with good knowledge of English, Hindi and Telugu. Contact: Post Box No. 2244, C/o The Times of India, Hyderabad-500032. Write a Covering Letter and a CV.   **[14M]**

SECTION – IV

7. a) Why is the attitude of Indians to variety of such great importance in the present day world?

    [7M]

    b) What is the lesson on spiritual activity that Indians must teach the rest of the world?   **[7M]**

                                    (OR)

8. You are Kiran Mehta, a graduate in Aeronautical Engineering from the IIT Bombay. You have a year's experience as a trainee maintenance engineer with Tata Aerospace, manufacturers of small aircraft for the Indian general aviation market. Write an email application letter in response to an advertisement for the post of Assistant Structural Design Engineer in Hindustan Aeronautics Limited, Bengaluru.   Refer only briefly to your educational qualifications and work experience in the body of the email letter and say that you are attaching your CV and testimonials for the company's reference.   **[14M]**

SECTION – V

9. a) According to Rowling, why 'Imagination' is crucial in one's life?   **[7M]**

    b) Why 'Failures' have become as a part of life and what message that the speaker is giving to the Harvard graduates on 'Failure'?   **[7M]**

                                    (OR)

10. a) Write the summary of the speech "The Fringe Benefits Of Failure And The Importance Of Imagination" by JK Rowlings.   **[7M]**

    b) Describe the following picture in about 250 words and suggest the suitable title.   **[7M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Engineering Physics-II
(Common to All Branches)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1   (a). What is bonding in solids? Write the list of different types of bonding in solids.   **[7M+7M]**
      (b) Describe detail the structure of Diamond.

OR

2   (a) Define Miller indices of a crystal plane and write its important features   **[7M+7M]**
      (b) Describe the SC crystal structure.

SECTION-II

3   (a) Describe in detail, Powder method to determine the crystal parameters.   **[7M+7M]**
      (b) What is Burger's vector? What is Burger circuit? Explain.

OR

4   (a) State and explain Bragg's law.   **[7M+7M]**
      (b) Write a note on edge and screw dislocations.

SECTION-III

5   (a) Describe Lorentz method to calculate the internal field of a cubic structure.   **[7M+7M]**
      (b) Derive an expression for electronic polarizability.

OR

6   (a) Explain clearly the phenomenon of Piezo electricity.   **[6M+8M]**
      (b) Derive an expression for Ionic polarizability.

SECTION-IV

7   (a) Explain the origin of magnetic moment. Find the magnetic dipole moments due to orbital and spin motion of an electron.   **[8M+6M]**
      (b) Distinguish between Soft and Hard magnetic materials.

OR

8   (a) Explain Hysteresis loop on the basis of domain theory of ferromagnetism.   **[7M+7M]**
      (b) Describe the difference between Type-I and Type-II superconductors.

SECTION-V

9   (a) Describe the processes of Sol-gel in the fabrication of nanomaterials.   **[7M+7M]**
      (b) Write a note on Physical Vapour Deposition method.

OR

10   (a) What is the principle behind the SEM.   **[7M+7M]**
      (b) Write the applications of nanotechnology in industrial field.

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R17

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Environmental Studies
(EEE, ECE ,CSE & IT)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1   a) Define Environment. Explain structure of ecosystem   **[8M]**

       b) Define ecosystem. Explain how the energy flows through an ecosystem.   **[6M]**

OR

2   a) What are biogeochemical cycles? Explain carbon cycle with the help of a   **[5M]**
            diagram.
       b) What are ecological pyramids? Explain why some of these pyramids are   **[7M]**
            upright while others are inverted in different ecosystem.
       c) What is bioaccumulation?   **[2M]**

SECTION-II

3   a) What are renewable and non-renewable resources? Give examples. State   **[6M]**
            any two reasons that why should we conserve natural resources.
       b) List out alternate energy sources. Explain their merits and demerits.   **[8M]**

OR

4   a) What are the benefits and problems of dams to the society and   **[10M]**
            environment?
       b) What is the impact of deforestation on the environment?   **[4M]**

SECTION-III

5   a) Explain major threats to biodiversity.   **[10M]**

       b) Define biodiversity. Differentiate between genetic and species diversity.   **[4M]**

OR

6   a) Explain values of biodiversity in detail.   **[7M]**
       b) Write a short note on in situ and ex situ conservation of biodiversity.   **[7M]**

SECTION-IV

7   a) Define air pollution. What are primary and secondary air pollutants?   **[10M]**
            Enumerate various methods to control air pollution.
       b) Write a short note on green house effect.   **[4M]**

OR

8   a) Explain climate change and global warming. How are they related and   **[10M]**
            what is the evidence that proves climate is changing?
       b) Discuss how e-waste can be managed to prevent environmental pollution.   **[4M]**

9   a) Write a short note on EIA.   **[4M]**
         b) What is environmental education? Write its importance.   **[4M]**
         c) Explain some salient features of biomedical waste management and   **[6M]**
             handling rules, 1998.

                                          OR

10   a) Discuss Kyoto protocol. What can it do to curb climate change?   **[6M]**
         b) Discuss the salient features of Air (Prevention and Control of Pollution)   **[8M]**
             Act, 1981.

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Mathematics-II
(Common to All Branches)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 a) Use the method of iteration to find a positive root of the equation $xe^x = 1$, Given that a root lies between 0 and 1   **[7M]**

b) Find a real root of the equation $x \log_{10}(x) = 1.2$ using false position method   **[7M]**

OR

2 The population of a town in the decimal census was given below

Year x	1891	1901	1911	1921	1931
Population y	46	66	81	93	101

Estimate the population for the year 1895
Estimate the population for the year 1925   **[14M]**

SECTION-II

3 a) Evaluate $\int_0^1 \frac{1}{1+x} dx$ by Simpson's $\frac{1}{3}$ rule   **[4M]**

b) Find $y(0.02)$ and $y(0.04)$ Using modified Euler's method given that $\frac{dy}{dx} = x^2 + y, \ y(0) = 1$ **[10M]**

OR

4 Find $y(0.1)$ and $y(0.2)$ by using Runga-Kutta fourth order formula, Given that $\frac{dy}{dx} = y - x, \ y(0) = 2$ **[14M]**

SECTION-III

5a) Find a Fourier series for $f(x) = e^{-ax}$ for $-\pi < x < \pi$ **[7M]**

b) Find a Fourier cosine series for $f(x) = x$ in $(0, \pi)$ **[7M]**

OR

6 Expand $f(x) = x \sin x$ as a Fourier series in the interval $0 < x < 2\pi$ **[14M]**

SECTION-IV

7a) Form the partial differential equation of $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$ where a,b,c are arbitrary constants   **[6M]**

b) Using the method of separation of variable, Solve $\dfrac{\partial u}{\partial x} = 4\dfrac{\partial u}{\partial y}$ where **[8M]**

$u\,(0, y) = 8e^{-3y}$

OR

8a) Solve $p\sqrt{x} + q\sqrt{y} = \sqrt{z}$ **[7M]**

b) Solve $z = px + qy + pq$ **[7M**

SECTION-V

9a) Find the Laplace transform of $e^{4t}\sin 2t\,\cos t$ **[4M]**

b) Find the Laplace transform of $\dfrac{e^{-at} - e^{-bt}}{t}$ **[4M]**

c) Using Convolution theorem, find $L^{-1}\left\{\dfrac{1}{(s^2+1)(s^2+9)}\right\}$ **[6M]**

OR

10a) Find the Inverse Laplace transform of $\log\left(\dfrac{s+1}{s-1}\right)$ **[6M]**

b) Solve the differential equation $\dfrac{d^2x}{dt^2} + 9x = \cos 2t$ using Laplace Transforms **[8M]**

given that $x(0) = 1,\ x\left(\dfrac{\pi}{2}\right) = -1$

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Object Oriented Programming through C++
(Common to All Branches)

Roll No [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

Time: 3 hours   **Max. Marks: 70**
Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.
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SECTION-I

1 **a)** Compare and contrast procedure oriented programming and object oriented Programming? **[7M]**

   b) Describe about Iteration Statements with an example? **[7M]**

OR

2 **a)** Discuss the important features of OOPS. Explain the organization of data and Functions in OOP. **[7M]**

   b) How do variable declare and initialization performed in C++? Explain with one example **[7M]**

SECTION-II

3 **a)** What are classes? Create a class with the following data members? **[7M]**
Name of the class: Vehicle, Data members: name, model, company, Price, and variants, Member functions: putdetails() and getdetails() to set and display Vehicle details respectively?

   b) Differentiate among Pass by value, pass by reference and pass by address with the help of a suitable program? **[7M]**

OR

4 **a)** Define inline function? Write a program for finding the area of a triangle using inline functions? **[7M]**

   b) Write a program for calculating the total marks and Grade of the 60 students in a Class? **[7M]**

SECTION-III

5 **a)** What is constructor? Write about different types of constructors? **[7M]**

   b) How to pass default arguments for Constructors? Give examples. **[7M]**

OR

6 Explain about the multiple Inheritance with an example program. **[14M]**

SECTION-IV

7 Write a c++ Program to overload + operator to add two matrices using friend functions **[14M]**

OR

8 What is virtual function? Write a C++ program illustrating virtual function? **[14M]**

SECTION-V

9 What is generic programming? Explain in detail about function templates? **[14M]**

OR

10 What is an exception?Explain about try,throw and catch with example? **[14M]**

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