LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.
B. Tech. I Semester Regular/Supplementary Examinations

APPLIED MATHEMATICS-I   1 3 FEB 2014
(Common to All Branches)

Time : 3 hours   Max. Marks: 75

Answer all the questions
All Questions carry equal marks
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1(a) Solve: $\sec^2 y \dfrac{dy}{dx} + x \tan y = x^3$ [8M]

(b) Find the orthogonal trajectories of the cardioids r = a(1 – cos θ)   [7M]

(OR)

(c) Solve: (y log y) dx + (x – log y) dy = 0   [8M]

(d) If the air is maintained at 30⁰C and the temperature of the body cools from 80⁰C to 60⁰C in 12 minutes, determine the temperature of the body after 24 minutes.   [7M]

2(a) Solve $\dfrac{d^2 y}{dx^2} - 2\dfrac{dy}{dx} + y = x\,e^x \sin x$ [7M]

(b) Apply the variation of parameters method to solve $\dfrac{d^2 y}{dx^2} + y = x \sin x$ [8M]

(OR)

(c) Solve (D² – 4 D + 3) y = sin 3x cos 2x   [7M]

(d) Solve x²y¹¹ – 4 xy¹ + 4 y = 4 x² – 6 x³, with y (2) = 4 and y¹(2) = -1   [8M]

3(a) Expand logₑ x in powers of (x-1) and hence evaluate logₑ 1.1 correct to 4 decimal places.   [8M]

(b) Find the shortest distance from origin to the surface x y z² = 2   [7M]

(OR)

(c) A rectangular box open at the top is to have volume of 32 cubic feet. Find the dimensions of the box requiring least material for its construction using Lagrange's multipliers method.   [8M]

(d) If μ = *ln* (x³ + y³ + z³ – 3 x y z) prove that $\left(\dfrac{\partial}{\partial x} + \dfrac{\partial}{\partial y} + \dfrac{\partial}{\partial z} \right)^2 \mu = \dfrac{-9}{(x+y+z)^2}$ [7M]

4(a) Trace the curve $r^2 = a^2 \cos 2\theta$ [7M]
 (b) Find the entire length of cardioid $a(1 + \cos \theta) = r$ and show that the upper half of the curve is bisected by $\theta = \pi/3$ [8M]

(OR)

 (c) Change the order of integration in $I = \int_0^1 \int_{x^2}^{2-x} x\, y\, dx\, dy$ and hence evaluate the same [7M]
 (d) Find the volume bounded by the cylinder $x^2 + y^2 = 4$ and the planes $y + z = 4$ and $z = 0$ [8M]

5(a) Find the directional derivative of $\Phi = x\, y^2 + y\, z^3$ at the point $(2, -1, 1)$ in the direction of the normal to the surface $x \log z - y^2 = -4$ at $(-1, 2, 1)$ [8M]

 (b) If $\bar{F}$ and $\bar{G}$ are two vector point functions, then show that
$$\nabla \times \left(\bar{F} \times \bar{G} \right) = \bar{F}\left(\nabla . \bar{G} \right) - \bar{G}\left(\nabla . \bar{F} \right) + \left(\bar{G} . \nabla \right)\bar{F} - \left(\bar{F} . \nabla \right)\bar{G}$$ [7M]

(OR)

 (c) Verify greens theorem for $\int_c \left[(3x - 8y^2)dx + (4y - 6xy)dy \right]$ where C is the boundary of the region bounded by $x = 0$, $y = 0$ and $x + y = 1$ [7M]

 (d) Using stokes theorem evaluate $\int_c (x+y)dx + (2x-z)dy + (y+z)dz$ where C is the boundary of the triangle with vertices $(2,0,0)$, $(0,3,0)$ and $(0,0,6)$ [8M]

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.

B.Tech. I Semester Regular/Supplementary Examinations

C PROGRAMMING
(Common to All Branches)   1 5 FEB 2014

Time : 3 hours   Max. Marks: 75

Answer all the questions
All Questions carry equal marks
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1(a) Explain the switch case with suitable example   [5M]
 (b) Write a 'C' program using switch case to execute one of the arithmetic operation depending up on the given value   [10M]
(OR)
 (c)   Define variable and constant with example.   [5M]
 (d) Define conditional operator? And how do you compare conditional operator with IF structure. Write small 'C' program on it   [10M]

2(a) Explain parameter passing techniques in 'C' language with example.
                                                                         [15M]
(OR)
 (b) Define Recursion with example   [3M]
 (c) Explain C preprocessors with example   [6M]
 (d) Explain Block structure   [6M]

3(a) Explain dynamic memory management with suitable examples and their advantages.   [15M]
(OR)
 (b) Define pointer   [3M]
 (c) Explain address arithmetic in pointers with suitable examples   [6M]
 (d) What are the advantages and disadvantages using pointers.   [6M]

4(a) Explain Array of structures with suitable examples.   [5M]
 (b) Explain differences between nested structure and array of structures with suitable examples.   [5M]
 (c) Write a 'C' program for swapping of variables using pointers   [5M]
(OR)
 (d) Write a 'C' program using structures to store N employees details and display N employees information as a report.   [15M]

5(a) Write a 'C' program to merge two files.   [10M]
 (b) Explain error handling in C files   [5M]
(OR)
 (c) Write a 'C' program to create and count the number of characters in a file   [10M]
 (d) Explain streams in 'C' files.   [5M]

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.

B. Tech. I Semester Regular/Supplementary Examinations

ENGLISH-I

(Common to All Branches)

Time : 3 hours   Max. Marks: 75

Answer all the questions
All Questions carry equal marks   **17 FEB 2014**
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1 (a) Read the following passage and answer the questions given below: [8 M]

Have you ever heard someone use the phrase "once in a blue moon?" People use this expression to describe something that they do not do very often. For example, someone might say that he tries to avoid eating sweets because they are unhealthy, but will eat chocolate "once in a blue moon." Or someone who does not usually like to go to the beach might say "I visit the shore once in a blue moon." While many people use this phrase, not everyone knows the meaning behind it.

The first thing to know is that the moon itself is never actually blue. This is just an expression. The phrase "blue moon" actually has to do with the shape of the moon, not the color.

As the moon travels around the earth, it appears to change shape. We associate certain names with certain shapes of the moon. For example, when we can see a small part of the moon, it is called a crescent moon. A crescent is a shape that looks like the tip of a fingernail. When we cannot see the moon at all, it is called a new moon. When we can see the entire moon, it is called a full moon. Usually, there is only one full moon every month. Sometimes, however, there will be two full moons in one month. When this happens, the second full moon is called a "blue moon."

Over the next 20 years, there will only be 15 blue moons. As you can see, a blue moon is a very rare event. This fact has led people to use the expression "once in a blue moon" to describe other very rare events in their lives

1. Which of the following would be a good example of someone doing something "once in a blue moon"?

a. Mary likes to go to the mountains every weekend. Mary goes to the mountains once in a blue moon.

b. Tom rarely remembers to take out the trash. Tom takes out the trash once in a blue moon.

c. Cindy hates to wash the dishes. Nevertheless, she does it every day. Cindy washes the dishes once in a blue moon.

d. Ming sometimes forgets to do his homework. Ming forgets to do his homework once in a blue moon.

2. When does a blue moon happen in nature?

a. when there are two full moons in one month   b. when the moon has a blue color
c. when we cannot see the moon at all   d. when we can only see a small part of the moon

3. As described in paragraph 3, what is another example of something that has a crescent shape?
   a. your thumb   b. a distant star
   c. the letter "C"   d. the letter "H"

4.In the final paragraph, the author states: "Over the next 20 years, there will only be 15 blue moons." This means that over the next 20 years, a blue moon will happen
   a. once a year   b. less than once a year
   c. more than once a year   d. not enough information is provided

(b) Write a paragraph on 'Each man's belief is right in his own eyes.'   [7 M]
                                (OR)
(c) Write an essay on 'The Solar System'.   [15 M]

2 (a) Elaborate on the services rendered to India by Shanthi Swaroop Bhatnagar   [15 M]
                                (OR)
(b) Sir CV Raman has contributed a great deal to Indian Science, Explain?   [15 M]

3 (a) Write an e-mail to your local newspaper requesting them to publish your article on 'bad roads' in your locality.   [8M]

(b) Add question tags to the following.   [4 M]
    1) She is collecting stickers_____?
    2) We often watch TV in the afternoon_____?
    3) You have cleaned your bike_____?
    4) John and Max don't like Maths, _____?

(c) Change the word order to make meaningful sentences.   [3 M]
    1) tea I usually take.
    2) generous is Raju is very.
    3) pianist good is a Tom.
                                (OR)
(d) Draft a covering letter along with a Resume for the post of software engineer in Wipro Technologies Pvt Ltd, Hyderabad.   [15 M]

4 (a) Write dialogues between an official and customer at the post office.   [8 M]
   (b) Rearrange the following sentences to make a meaningful paragraph   [7 M]
(i) Because it represents their love for one another.
(ii) To raise the funds, she has her long hair cut off and sold to make a wig.
(iii) Jim Dillingham Young and his wife Della are a young couple who are very much in love with each other.
(iv) But can barely afford their one-room apartment due to their very bad economic situation.
(v) For Christmas, Della decides to buy Jim a chain which costs twenty-one dollars for his prized pocket watch given to him by his father.
(vi) Meanwhile, Jim decides to sell his watch to buy Della a beautiful set of combs made out of tortoise shell for her lovely, knee-length brown hair.
(vii) Although each is disappointed to find the gift they chose rendered useless, each is pleased with the gift they received.
                                (OR)

(c) As the HR Manager, draft a memo to your staff regarding power conservation at office. [8 M]
(d) Fill in the following blanks choosing the suitable word. [7 M]

1. I have three winter coats, but _____ of them are new.
a) neither b) none c) all d) final
2. There are two umbrellas here, but _____ of them is mine.
a) neither b)some c)few d) none
3. He owns twelve cows. _____ of them are Jerseys.
a) final b) ever c) all d) both
4. She has painted dozens of pictures. Have you seen _____ of them?
a) mistake b) great c) any d) either
5. Amy and Beth are twins. They _____ play the guitar.
a) some b) got c) all d) both
6. Two people said "Hello" to me, but I did not recognize _____ of them.
a) mob b) every c)any d) either)
7. My wife and I _____ enjoy classical music.
a) played b) all c) got d) both

5(a) Fill in the blanks choosing the appropriate word from the two words given against each blank.

1. She sang _____ soothing lullabies that the baby was soon asleep. (such/much)
2. He owned _____ many books that his walls were lined with bookcases. (so/together)
3. The boys were _____ excited to sit still. (too/to)

(b) Write the synonyms of the following words: [3 M]
   1) customer 2) gallantry 3) end
(c) Write the antonyms of the following words: [3 M]
   1) encourage 2) dangerous 3) comfortable
(d) Give the meaning of the following idioms: [3 M]
   1) to turn coat 2) to bury the hatchet 3)

(e) Identify the correct pair which shares the relationship similar to the given pair of words: [3M]
1. SPRING : RING
A) bound: band B) coil: loop C) formation: border D) give: call E) outflow: halo
2. ELBOW : NERVE
A) sharp: cheek B) joint: brass C) hinge: wire D) part: face E) turn: steel
3. HOMOPHONE : SYNONYMN
A) sound: meaning B) word: equal c) human: context d) man: relation e) being: equivalent.

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)
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B.Tech. ..1.. Regular/Supplementary Examinations

2 1 FEB 2014

ENVIRONMENTAL STUDIES

Time: 3 hours   CSE, IT   Max. Marks: 75

Answer all the questions.
All Questions carry equal marks

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1(a) What is the application of wind energy?
 (b) Write a note on Geo-Thermal energy
(OR)
 (c) Mention the advantages and disadvantages modern agriculture
 (d) Differentiate between organic and synthetic fertilizers

2(a) Bring out functional features of an ecosystem
 (b) Discuss the prime characteristics of Forest and Desert ecosystem
(OR)
 (c) What are endangered species? Give examples
 (d) What are the threats faced by biodiversity. What are the solutions for the threat

3(a) What are the various types of natural disaster
 (b) What are the roles of a citizen in reducing pollution.
(OR)
 (c) Classify solid wastes
 (d) What are the sources of urban and industrial wastes

4(a) Name few Green-House gases. What are the effects of global warming
 (b) Mention few practices to reduce global warming.
(OR)
 (c) Enlist the factors affecting the sustainable society
 (d) Differentiate between Re-habilitation and Re-settlement of people

5(a) State how environment and human health are related?
 (b) What are the objectives and elements of value-education.
(OR)
 (c) Bring out the activities of NGO's on environmental protection
 (d) State the important provisions in Environment protection act, water act.

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Code: T195

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.
B.Tech. II Semester Regular/Supplementary Examinations

ENGINEERING PHYSICS
(Common to ECE, EEE, EIE)

2 1 FEB 2014

Time : 3 hours   Max. Marks: 75

Answer all the questions
All Questions carry equal Marks
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(1) (a) What are the types of diffraction and give the difference between them?
    (b) Explain with theory fraunhoffer diffraction due to " n "slits .   (6M+9M)

(Or)

    (c) Explain in detail the terms : (1) Double refraction
                                       (2) Optic axis
    (d) Discuss the method of detecting the different types of polarized lights .

    (e) A beam of linearly polarized light is changed into circularly polarized by passing
        it through 30 μm thick birefringent crystal. Assuming its thickness is minimum and
        for a light of wave length 589.3nm incident on it normally, find the difference of
        refractive indices of the ordinary and extra- ordinary rays.

                                                                                            (4M+7M+4M)

(2) (a) Define coordination number and atomic radius.
    (b) Show that FCC crystals are closely packed than SC and BCC.   (6M+9M)

(Or)

    (c) What are Miller indices ? Explain.
    (d) Describe Laue's method of determination of crystal structure.   (5M+10M)

(3) (a) Describe how population inversion is more important in laser .
   (b) Derive the relation between the probability of spontaneous emission and stimulated emission in terms of Einstein's coefficients .
   (c) Mention four important applications of lasers   (3M+8M+4M)

(Or)

(d) Derive an expression for acceptance angle in optical fibre communication .
(e) What is the principle of optical fibre .   (10M+5M)

(4) (a) Define the terms in super conductors : (1) critical temperature
                                                 (2) critical magnetic field
                                                 (3) critical current
    (b) What is super conductivity ? Describe the BCS theory of superconductivity ?
                                                             (6M+9M)

(Or)

(c) Distinguish between the type 1 and type 2 superconductors with neat diagrams .
(d) Discuss the important applications of superconductors.   (10M+5M)

(5) (a) Explain production of ultrasonic waves using piezo electric effect .
    (b) What are the medical applications of ultrasonic waves?   (9M+6M)

(Or)

(c) Describe ultrasonic flaw detector .
(d) Explain the three most commonly used display formats ?   (6M+9M)

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L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.

B.Tech. 1. Semester Regular/Supplementary Examinations

ENGINEERING GRAPHICS
(ME, CE & AE)

Time : 3 hours   Max. Marks: 75

Answer all the questions
All Questions carry equal marks
***********   21 FEB 2014

1. (a). A fixed point is at 50mm from a fixed straight line. Draw the curves when eccentricity is (i) 1 and (ii) 3/2. Name the curves. Draw tangent and normal to the curves through a point P 60mm from the straight line.
(15m)

(or)

(b).(i) Construct a Cycloid having a rolling circle diameter as 50 mm for one revolution. Draw a normal and tangent to the curve at a point 35 mm above the directing line
(9m)

(ii). Draw Involute of a pentagon of side 25mm
(6m)

2. (a). Draw the projections of the following points on the same ground line, keeping the projectors 20mm apart.

   L, 40mm above the H.P. and 25mm in front of the V.P.
   B, in the V.P. and 40mm above the H.P.
   R, in both H.P. and V.P.
   C, 25mm below the H.P. and 25mm behind the V.P.
   E, 15mm above the H.P. and 50mm behind the V.P.
(10m)

(b). Two points A & B are in the HP. The point A is 30mm in front of V, while the point B is behind the VP. The distance between their projectors is 75mm and the line joining their top views makes an angle of 45^0 with xy. Find the distance of the point B from the VP. (5m)

(or)

(c). The front view of a 7.5cm long line measures 5.5cm. The line is parallel to the HP and one of its ends is in the VP and 2.5 cm above the HP. Draw the projections of the line and determine its inclination With VP.
(5m)

(d). The distance between the end projectors of a line AB is 50 mm. Point A is 15 mm above HP and 10 mm in front of VP. Point B is 40 mm above HP and 40 mm in front of VP. Find the true length of the line AB, the inclinations of the line AB with HP and VP. Locate HT and VT of the line.
(10m)

3. (a). Draw a rhombus of diagonals 100 mm and 60 mm long , with the longer diagonal horizontal. The figure is the top view of a square of 100 mm long diagonals, with a corner on the ground. Draw its front view and determine the angle which its surface makes with the ground. (15m)

(or)

(b). A thin $30^0 - 60^0$ set square has its longest edge in the VP and inclined at 30^0 the HP. Its surface makes an angle of 45^0 to the VP. Draw its projections. (15 m)

4. (a). A hexagonal prism, base 30 mm side and axis 75 mm long has an edge of the base parallel to the HP and inclined at 45^0 to the VP. Its axis makes an angle of 60^0 with the HP. Draw its projections. (15m)

(or)

(b). A pentagonal pyramid, base 25 mm side and axis 55 mm long, has one of its triangular faces on the ground and the edge containing that face makes an angle of 45^0 to the VP. Draw its projections when the apex is nearer to VP than the base. (15m)

5. (a). A cone, base 45 mm diameter and axis 65 mm long is resting on the HP on its base. It is cut by a section plane, perpendicular to both the HP and the VP and 6 mm away from the axis. Draw its front view, top view and sectional side view. (15m)

(or)

(b) A cylinder of 40 mm diameter, 60 mm height and having its axis vertical, is cut by a section plane, perpendicular to the VP, inclined at 45^0 to the HP and intersecting the axis 32 mm above the base. Draw its front view, sectional top view, and true shape of the section. (15m)

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B.Tech.1.. Semester Regular/Supplementary Examinations

NUMERICAL METHODS   **2 4 FEB 2014**

AE, CSE, IT & ME

Time: 3 hours   Max. Marks: 75

Answer all the questions.
All Questions carry equal marks

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1(a)   Define rank of the matrix. Find the rank of the matrix $\begin{pmatrix} 1 & 2 & 3 & 0 \\ 2 & 4 & 3 & 2 \\ 3 & 2 & 1 & 3 \\ 6 & 8 & 7 & 5 \end{pmatrix}$ by reducing

to normal form.   [7M]

(b)   Solve the system of equations $3x+3y+2z=1; x+2y=4; 10y+3z=-2; 2x-3y-z=5$ by Gauss elimination method.   [8M]

OR

(c)   Find the inverse of the matrix $\begin{bmatrix} 6 & -2 & -2 \\ 10 & -3 & 1 \\ -10 & 5 & 1 \end{bmatrix}$ using Caley -Hamilton theorem.

[7M]

(d)   Find the Eigen values & Eigen vectors of $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$ [8M]

2(a)   Reduce the following Quadratic form to canonical form and find its rank and signature of
$7x^2 + 6y^2 + 5z^2 - 4xy - 4yz$ [7M]

(b)   Find a positive root of $x^3 - x - 1 = 0$ correct to two decimal places by method of False position.   [8M]

OR

(c)   Using Newton-Raphson method find approximate value of $\dfrac{1}{22}$ [7M]

(d)   Reduce the quadratic form $3x^2 + 5y^2 + 3z^2 - 2yz + 2zx - 2xy$ to the canonical form. Also specify the matrix of transformation   [8M]

3(a)   From the following data of x,y construct the difference table and express y as a function   of x   [7M]

x	0	1	2	3	4
y	3	6	11	18	27

(b) Using Lagrange formula, Calculate y (10) from the following table. [8M]

x	5	6	9	11
y(x)	12	13	14	16

OR

(c) Using Lagrange formula, Calculate f (3) from the following table. [7M]

X	0	1	2	4	5	6
f(x)	1	14	15	5	6	19

(d) From the following data of x,y interpolate values of y when x=1.91 [8M]

X	1.7	1.8	1.9	2	2.1	2.2
y	5.4739	6.0496	6.6859	7.3891	8.1662	9.0250

4(a) Derive Sipson's 1/3rd rule and Evaluate $\int_0^6 \dfrac{dx}{1+x}$ using Simpson's 1/3rd rule.

Compare the result by evaluating the definite integral [7M]

(b) From The following table obtain $\dfrac{dy}{dx}$ and $\dfrac{d^2y}{dx^2}$ at x=1.2 [8M]

x	1	1.2	1.4	1.6	1.8	2.0	2.2
y	2.7183	3.3201	4.0552	4.9530	6.0496	7.3891	9.0250

OR

(c) Evaluate $\int_0^1 \dfrac{dx}{1+x^2}$ using Simpson's 3/8th rule, to find approximate value of [7M]

(d) Using Trapezoidal rule, find the area bounded by the curve y=f(x) ,x-axis , and the lines
x=7.47,x=7.52, given that the curve passes through the points(7.47,1.93), (7.48,1.95), (7.49,1.98),
(7.50,2.01), (7.51,2.03),(7.52,2.06) [8M]

5(a) Use Modified Euler's method to find y(0.2)for the given I V P$\dfrac{dy}{dx} = y + e^x, y(0) = 0$.

[7M]

(b) Given differential equation$\dfrac{dy}{dx} = \dfrac{y-x}{y+x}, y(0) = 1$.By Runge-Kutta method compute y (0.02). [8M]

OR

(c) Use Runge –Kutta method to find y(0.1) for the equation [7M]
$\dfrac{dy}{dx} = xy, y(0) = 1, \left(\dfrac{dy}{dx}\right)_{x=0} = 0$

(d) Obtain a relation of the form $y = ab^x$ for the following data. [8M]

X	2	3	4	5	6
y	8.3	15.4	33.1	65.2	127.4

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B.Tech.I... Semester Regular/Supplementary Examinations

ENGINEERING CHEMISTRY
(EEE,CE, ECE, EIE)

Time: 3 hours   **24 FEB 2014**   Max. Marks: 75

Answer all the questions.
All Questions carry equal marks
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1. (a) Explain the Scales and Sludge formation in boilers? Describe the different internal treatment
    methods which prevent the scale formation.   [7M]
    (b) Calculate the quantity of Lime and Soda required for softening of 50,000 liters of water
    containing the following salts per liter.
    (a) $Ca(HCO_3)_2 = 8.1$ mg   (b) $Mg(HCO_3)_2 = 7.5$ mg (c) $CaSO_4 = 13.6$ mg
    (d) $MgSO_4 = 12.0$ mg   (e) $MgCl_2 = 2.0$ mg   (f) NaCl = 4.7 mg.   [8M]

(OR)

    (c) What is the principle of EDTA method? Describe the estimation of hardness of
    water by EDTA method.   [7M]
    d) A sample of water on analysis has been found to contain impurities in ppm
    $Ca(HCO_3)_2 = 4.86$, $Mg(HCO_3)_2 = 5.84$, $CaSO4 = 6.80$, $MgSO_4 = 8.40$ and $SiO_2 = 2.32$.
    Calculate the temporary and permanent hardness of water.   [8M]

2. (a) What is meant by cracking of petroleum? Explain the fluid bed catalytic method of
    obtaining gasoline.   [7M]
    (b) Explain the Proximate analysis of coal and write its significance?   [8M]

(OR)

    (c) Describe in detail the Bergius Process for manufacture of Synthetic petrol?   [7M]
    (d) Explain the analysis of Flue gases by Orsat apparatus and write its significance. [8M]

3. (a) Explain the principle involved in electrochemical corrosion.   [7M]
    (b) What is Cathodic protection? Explain sacrificial anodic method?   [8M]

(OR)

    c) What is Galvanic Series? Write the mechanism for galvanic corrosion.   [7M]
    d) Discuss the important factors affecting rate of corrosion?   [8M]

4. (a) Distinguish between thermoplastic and thermosetting plastics.   [7M]
    (b) Write short notes on
    i) Natural rubber ii) Fiber reinforced plastics   [8M]

(OR)

    (c) What are conducting polymers? Write their classification and applications. [7M]
    (d) Write the preparation properties and uses of PVC and Bakelite.   [8M]

5 (a) Explain the factors and write the reactions involved in caustic embrittlement in boilers. [7M]
  (b) How are metals protected by impressed current method?   [8M]
(OR)
  (c) Write the preparation properties and uses of Nylon and Thiokol.   [7M]
  (d) What is meant by knocking? Explain octane number and cetane number.   [8M]

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