Code No.: **40E01**

MR 14

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)

Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad.

I B.Tech I Sem Supplementary Examinations, DECMBER-2017

SUBJECT: **ENGLISH**

Branch: **CE**

Time: 3 hours **Max. Marks: 75**

PART – A

I. Answer All Questions **5x1Mark=5Marks**

1. Manisha's father works in ----- Indian army (use appropriate article).
2. I was given _____ one rupee note by my father (use appropriate article).
3. The thief was killed_____ a knife (use appropriate preposition).
4. She prefers coffee _____ tea (use proper preposition).
5. She is not so tall as her brother (…into Comparative Degree).

II. Answer All Questions **10x2Marks=20Marks**

1. *The Last Supper* was painted by Leonardo da Vinci (…into Active Voice).
   Ernest Hemingway wrote a novel *The Old Man and the Sea* (…into Passive Voice).
2. Correct the following sentences:
   We will grow tomatoes and carrots, will we?
   Mala could not run, can she?
3. Give the synonyms of the following:
   Euphemism
   Stash
4. Give the meanings of the following homophones:
   Key – Quay
   Sun – Son
5. Give the antonyms of the following:
   Opulent
   Progeny
6. Use the following phrasal verbs in your own sentences:
   Follow on
   Put off

7Correct the following sentences, if necessary:

The bowl of nuts are on the table.
Rana has known Sumit since three years.
The earth is rotating on its axis.

8. Use the following idiomatic expressions in own sentences:
   Bleed White
   Red Carpet

9. Change the following sentences into **Indirect Speech.**
   TC said, "Have you bought the ticket."
   My friend said, "Where were you all these days?"

10. Change into **Direct Speech.**
   He asked me whether I played cards.
   The girl told her brother that they were late for the meeting.

PART – B

Answer all Questions **5x10=50M**

1. "Any failure is a stepping stone to success," how do you explain this statement from the perspective of your lesson?

(OR)

2. "If environment is protected in return it protects us." Justify.

3. "Courage is a must in life." Combine the author's views with your own ideas.

(OR)

4. How do you understand the lesson The *Eternal Pilgrim* from the writer's perspective?

5. 'Hi-tech equipment' is a boon or bane on the part of human life.

(OR)

6. What did you understand through the story by Mulk Raj Anand? Explain.

7. How does the title, A *Special Kind of Blessing* justify its text?

(OR)

8. "Arguments should be assertive but not aggressive." Discuss.

9. Write your opinions on "Food, Family and Culture."

(OR)

10. Write a letter to the Superintendent of Police of your district, requesting him/her to take a serious action on antisocial elements taking place in your locality.

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I B.Tech I Sem Supplementary Examinations, DECEMBER-2017

SUBJECT: **Engineering Physics – I**

Branch: **Common to CE, ME, MINING, EEE & CSE**

Time: 3 hours **Max. Marks: 75**

PART – A

I. Answer All Questions **5x1Mark=5Marks**

1. Define Basis?
2. What do you understand by critical damping?
3. What is a wave function?
4. How does the Fermi level lie in case of an intrinsic semi conductors?
5. Is Lenz's law a consequence of conservation of energy?

II. Answer All Questions **10x2Marks=20Marks**

1. What is Bravais lattice?
2. Comment on Burger's vector in case of edge and screw dislocation?
3. Draw displacement and velocity graphs in SHM?
4. Explain the terms the resonance and sharpness of resonance?
5. Explain matter waves properties?
6. State and explain Heisenberg uncertainty principle?
7. Distinguish between p-type and n-type semiconductors?
8. Explain the difference between intrinsic and extrinsic semiconductors?
9. What is electromagnetic wave equation?
10. What is electromagnetic induction?

PART-B

Answer all questions **5x10 Marks= 50Marks**

1. a) Describe the seven crystal systems with neat diagrams? [5+5]
   b) Obtain expression for inter planar distance in cubic system?

(OR)

2. a) Write note on point defects and define coordination number? [5+5]
   b) Calculate the equilibrium number of vacancies per unit volume at a temperature 1000^0c, the energy for the formation of vacancy in copper is 0.90ev. What is the vacancy fraction at 500^0c?
3. a) Explain the physical characteristics of the simple harmonic equations? [5+5]
   b) Discuss forced oscillation and deduce the condition for resonance?

(OR)

4. a) Explain the function of all electrical oscillator containing capacitor, inductor and resistor Qualitatively? [5+5]
   b) Deduce simple harmonic motion wave equation and find its solution?

5. a) Explain physical significance of wave function? [4+6]

b) Describe G.P. Thomson experiment?

(OR)

6. a) Explain energy of a particle in a one dimensional infinite potential well? [6+4]

b) Calculate the De-Brogile wave length of α particle accelerated through a potential difference of 320 volts?

7. a) Deduce the expression for Hall coefficient? [4+6]

b) Draw the energy bank diagram of P-N junction diode and explain the working of diode?

(OR)

8. a) Explain the classification of semi conductors? [5+5]

b) Write brief note on Zener break-down and Avalanche break-down?

9. Explain the significance of Gradient and scalar field vectors? Evaluate the div F where $F= 2x^3zi+xy^2zj+3y^2xk$? [10]

(OR)

10. a) State and explain Lenz's law ?What are the applications of Lenz's law? [5+5]

b) What are integral and differential forms of Faraday law?

Code No.: **40C01**

MR 14

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Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad.

I B.Tech I Semester Supplementary Examinations, DECEMBER-2017

SUBJECT: **Engineering Chemistry-1**

Branch: **Common to CE, ME, EEE, CSE & Mining**

Time: 3 hours **Max. Marks: 75**

PART – A

I. Answer All Questions **5x1Mark=5Marks**

1) Which salts can cause scale formation in boilers?
2) What is zeolite?
3) The oxidation potential of an electrode is -0.5v. What is its reduction potential?
4) Write one example for galvanic corrosion?
5) Define flash point?

II. Answer All Questions **10x2Marks=20Marks**

1) A water sample contains the following in ppm: $Ca(HCO_3)_2$: 16.2, $MgCl_2$: 9.5, $CaCl_2$: 11.1. Calculate total hardness of water interms of $CaCO_3$ equivalent?
2) Explain calgon conditioning?
3) Explain coagulation?
4) What is cation exchanger resin and anion exchanger resin? Give one example for each?
5) Write any two applications of electrochemical series?
6) Differentiate primary and secondary cell?
7) Write about cementation?
8) Discuss pilling bed worth rule?
9) Define nanomaterials with its classification?
10) What are functionalities of a lubricant?

PART-B

Answer all questions **5x10 Marks= 50Marks**

1) Write a brief account on the following a) Caustic embrittlement b) priming & foaming **(4M+6M)**

(OR)

2) a) A sample of water contains 150 ppm temporary hardness and 200 ppm permanent hardness. Express the above hardness in terms of degrees of Clarks and degrees of French **3M**
   b) How do you estimate the total hardness of water by EDTA method? **7M**

3) Explain ion exchange process in detail with all necessary chemical reactions **10M**

(OR)

4) A sample of water contains the following impurities per litre: $Mg(HCO_3)_2$ = 73 mg;$CaCl_2$=222mg;$MgSO_4$=120mg;Calculate the amounts of lime and soda required for 50,000 litres of water if lime is 70% pure and soda is 85% pure and 10% excess chemicals are to be added **10M**

5) a) Calculate the emf the cell at 25°C when the concentration of $ZnSO_4$ and $CuSO_4$ are 0.01 and 0.1M respectively. The standard potential of the cell is 1.2V. **5M**

b) Derive Nernst equation to calculate electrode potential of a single electrode? **5M**

(OR)

6) a) Explain the working of lead-acid battery? **6M**

b) Write briefly about concentration cells? **4M**

7) Write a brief note on the following

- sacrificial anodic method **4M**
- water line corrosion **3M**
- Tinning **3M**

(OR)

8) a) Discuss various factors that influence the rate of corrosion **5M**

b) Explain Electro plating **5M**

9) a) Define refractory material and discuss RUL test of refractory material **5M**

b) How nanomaterials are prepared by chemical vapour deposition method **5M**

(OR)

10) Write a brief note on the following

a) fire point b) cloud point c) characteristics of a good refractory material

d) boundary film lubrication **(2M + 2M + 3M + 3M)**

Code No.: **40M01**

MR 14

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I B.Tech I Semester Supplementary Examinations, DECEMBER-2017

SUBJECT: **Mathematics – I**

Branch: **Common to CE, ME, EEE, ECE, CSE & Mining**

Time: 3 hours **Max. Marks: 75**

PART – A

I. Answer All Questions **5x1Mark=5Marks**

1. Reduce the matrix $\begin{bmatrix} 1 & -6 & 4 & 3 \\ 0 & 1 & 3 & 2 \end{bmatrix}$ into normal form hence find the rank.

2. Show that matrix $\begin{bmatrix} cos\emptyset & -sin\emptyset \\ sin\emptyset & cos\emptyset \end{bmatrix}$ is orthogonal.

3. Find the Eigen values of A^3 where A = $\begin{bmatrix} -1 & 1 & 2 \\ 0 & -2 & 3 \\ 0 & 0 & -3 \end{bmatrix}$.

4. State Newton's Law of cooling.

5. Find L$\{sin^3 t\}$.

II. Answer All Questions **10x2Marks=20Marks**

1. Show that the vectors (1, 0, 0), (0, 1, 0), (0, 0, 1) are linearly independent.
2. Solve the system of equations x+ y+ 2z = 9, 2x + 4y – 3z = 1.
3. Find the Eigen values and Eigen vectors of the matrix $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$.
4. Show that the matrix $\begin{bmatrix} 1 & 2+3i & 3-4i \\ 2-3i & 0 & 2-7i \\ 3+4i & 2+7i & 2 \end{bmatrix}$ is Hermit ion.
5. Write the real symmetric matrix corresponding to the quadratic form $x^2 + 2y^2 + 3z^2 + w^2 - 2xy + 4xz - 2xw + 4yz - 6yw - 8zw$.
6. Find the orthogonal trajectories of y^2= 4ax.
7. Solve $(D^2 + 9)y = sin4x$ where D $=\frac{d}{dx}$.
8. Find the linearly independent solutions of $(D^2 - 2D + 2)y = 0$ where D $=\frac{d}{dx}$.
9. Find$L^{-1}\left\{tan^{-1}\frac{2}{s}\right\}$.
10. Find$\left\{\int_0^t e^{-2t}t^3\, dt\right\}$

PART-B

Answer all questions **5x10 Marks= 50Marks**

1. For what value of α does the following system of equations possess a nontrivial solution? Obtain the solution for real values ofα. x+2y+3z = αx, 3x+y+2z = αy, 2x+3y+z = αz.

(OR)

2. Find two non singular matrices P and Q such that PAQ is in the normal form where A $=\begin{bmatrix} 2 & 1 & 1 & 3 \\ 1 & 0 & 1 & 2 \\ 3 & 1 & 2 & 5 \end{bmatrix}$.
3. Verify Cayley-Hamilton theorem for the matrix and hence find A^{-1} and A^4 where A = $\begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$

(OR)

4. Show that the matrix $\begin{bmatrix} i & 0 & 0 \\ 0 & 0 & i \\ 0 & i & 0 \end{bmatrix}$ is Skew-Hermitian and unitary also find the Eigen values and Eigen vectors.
5. Reduce the quadratic form 2xy + 2yz + 2zx into canonical form by applying orthogonal linear transformation hence find its rank ,index, signature and nature.

(OR)

6. Solve x e^x(dx – dy) +$e^x dx + ye^y dy$.
7. Solve $(D^2 + 3D + 2)y = xe^x sinx$ where D =$\frac{d}{dx}$.

(OR)

8. Solve $(D^2 + 1)y = x - cotx$ where D =$\frac{d}{dx}$.
9. Find L$\left\{\frac{sin^2 t}{t}\right\}$.

(OR)

10. Find $L^{-1}\left\{\frac{1}{(s^2+a^2)(s^2+b^2)}\right\}$ by convolution theorem.

Code No.: **40501**

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I B.Tech I Semester Supplementary Examinations, DECEMBER-2017

SUBJECT: **Computer Programming**

Branch: **Common to CE, ME, CSE & Mining**

Time: 3 hours **Max. Marks: 75**

PART – A

I. Answer All Questions **5x1Mark=5Marks**

1. What is meant by enumerated data types?
2. Define array.
3. What is static storage class in C?
4. Write any two pre-processor directives in C
5. List any two basic commands in UNIX

II. Answer All Questions **10x2Marks=20Marks**

1. Give an example for any two user defined data types with syntax
2. Write two characteristics of pseudo code
3. Write a for loop statement to print numbers 1 to 10
4. Give an example for initialization of string array
5. Differentiate between structure and union
6. What is bit field and write the syntax to define it
7. State the significance of pointers
8. What is the use of pointers?
9. What are the advantages of open source software?
10. Write any two features of PHP

PART-B

Answer all questions **5x10 Marks= 50Marks**

1. a) What is pseudo code? Write a pseudo code for swapping of two numbers without using temporary storage
   b) Explain different types of operators available in C **[5M+5M]**

OR

2. a) What are constants? Explain the various types of constants in C **[5M+5M]**
   b) Define software. Explain steps involved in software development

3. a) Write short note on branching statements in C **[5M+5M]**
   b) Write a C program to reverse a string

OR

4. Write in detail about the various looping statements with suitable examples **[10M]**
5. a) What are the advantages of using recursion? Demonstrate with example **[5M+5M]**
   b) Write short note on structure declaration

OR

6. What are the storage classes available in C? Demonstrate the working of each storage class **[10M]**

7. Write a C program using pointers to read in array of integers and prints elements in reverse order **[10M]**

OR

8. a) Write functions in C using pointers that would get an input string and computes its length **[5M+5M]**
   b) What are file I/O functions? Explain command line arguments with suitable example

9. a) Explain open standards model and its applications **[5M+5M]**
   b) What are various basic commands in Linux? Explain shell programming in C

OR

10. a) Explain features and functions of PHP **[5M+5M]**
    b) What is shell in Linux? Write a Shell script to check whether a given number is Armstrong

Code No.: **40P02** MR 14

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I B.Tech I Semester Supplementary Examinations, DECEMBER-2017

SUBJECT: **ENGINEERING DRAWING-I**

Branch: **Common to CE, ME, EEE, ECE, CSE & Mining**

Time: 3 hours **Max. Marks: 75**

Answer all questions **5x15 Marks= 75Marks**

Q1. Draw the conic curve, if the distance of focus from the directrix is 70 mm and the eccentricity is 3/4. Also draw a tangent and a normal at any point on the curve

(OR)

Q2. Draw the involute of a circle of diameter 50mm when a string is unwound in the clockwise direction. Draw a tangent and normal at a point located on the involute.

Q3.A straight line AB 70mm long has one of its ends 25 mm behind VP and 20 mm below HP. The line is inclined at 30° to HP and 50° to VP. Draw its projections.

(OR)

Q4.A line CD, inclined at 25° to the HP, measures 80 mm in top view. The end C is in the first quadrant and 25 mm and 15 mm from the HP and the VP respectively. The end D is at equal distances from both the reference planes. Draw the projections, find true length and true inclinations with the VP

Q5.A pentagon of side 30 mm rests on the ground on one of its comers with the sides containing the comer being equally inclined to the ground. The side opposite to the comer on which it rests is inclined at 30° to the VP and is parallel to the HP. The surface of the pentagon makes 50° with the ground. Draw the top and front views of the pentagon.

(OR)

Q6.A hexagonal lamina of side 30mm rests on one of its edges on HP. This edge is parallel to VP. The surface of the lamina is inclined 60° to HP. Draw its projections.

Q7.A pentagonal prism of side of base equal to 40 mm and axis height 110 mm rests on one of its corner of its base on H.P. such that the axis is inclined at an angle of 40° with H.P. and 60° with the V.P. Draw its projection.

(OR)

Q8.A cone of diameter of base 60 mm and axis length equal to 100 mm rests on one of its slant generators on H.P. such that its axis is inclined at an angle of 65° with the V.P. Keep its apex near to the V.P. and draw the projections.

Q9. Draw an isometric projection of a frustum of a Hexagonal pyramid with top base edges = 30 mm and bottom face edges = 15 mm, axis perpendicular to H.P. Two of its base edges parallel to V.P. The height of frustum of the Hexagonal pyramid is 60 mm standing on H.P.

(OR)

Q10. Draw the isometric view of the object from the following top and front view of an object shown in figure.1.