MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)

B.Tech I Year I & II Semester (R14) Supplementary End Semester Examinations – FEB 2021

TECHNICAL REPORT WRITING
(Common to All)

Time: 3Hrs   Max Marks: 60

> Attempt all the questions. All parts of the question must be answered in one place only.
> **All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only**

Q.1	i.	Define communication?	1M
	ii.	What is semantic gap?	1M
	iii.	List out any two differences between Technical Writing and Business Writing?	1M
	iv	Provide the significance of proof reading.	1M
	v.	What is a questionnaire?	1M
	vi	List out a few elements of writing.	1M
	vii.	Define the term critical writing.	1M
	viii.	What are the differences between primary and secondary data?	1M
	ix.	What is grapevine communication?	1M
	x.	List the difference between oral and written report.	1M

Q.2(A) Discuss communication barriers with suitable illustrations.   10M

OR

Q.2(B) Why communication is important and write the differences between 'General and Technical Communication'?   10M

Q.3(A) Explain the various effective reading strategies with examples.   10M

OR

Q.3(B) Write in detail about the sources and methods that you can use for collecting data for your report.   10M

Q.4(A) Draft a report on your college day celebrations.   10M

OR

Q.4(B) Enlist the characteristics of a good report?   10M

Q.5(A) Assume that you have been given the responsibility of collecting data to improve facilities for students of MITS Madanapalle. Prepare a mail questionnaire to be sent to each student of your institute to improve the library, playground and canteen in addition to the existing facilities.   10M

OR

Q.5(B) Students use mobiles while driving. Prepare a report on the impact of usage of mobile phones. Assume yourself as the convener of the discipline committee in a professional college. Submit the report to the chairman of the institution.   10M

Q.6(A) **The Pie diagram below gives information on course attendance of different subjects. Summarize the information by selecting and reporting the main features, and make comparisons where relevant.** Write at least 150 words.   10M

Pie chart labels: Computer Science, Calculus, Statistics, Physics 14.5%, Economics 32.4%
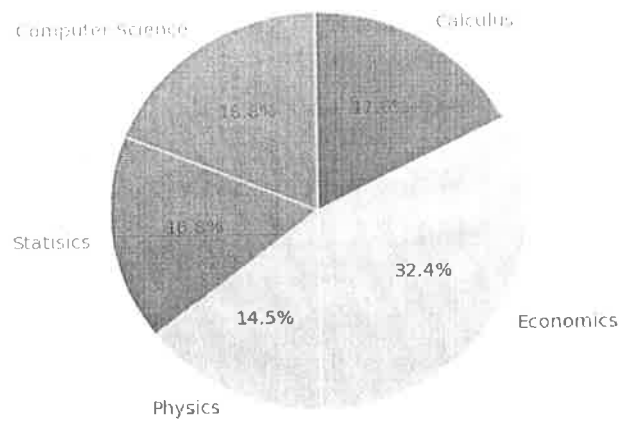
OR

Q.6(B) Read the following paragraphs and answer the questions given below: 10M

The art of academic writing is not easy to master. It is a formal skill, which requires precision and accuracy, and is perfected by continuous and dedicated practice. Academic writing is the skillful exposition and explanation of an argument, which the writer has carefully researched and developed over a sustained period of time. It is a time-consuming activity and demands patience and perseverance. But the joy of reading and sharing with others, one's succinctly composed piece of argument, is incomparable.

Before beginning to write, the writer must ask himself a few questions – Why am I writing? What is it that I intend to share with others? What purpose will my writing serve? Have I read enough about the topic or theme about which I am going to write? If one is hesitant to answer even one of the aforementioned questions, one better not write at all! Because academic writing is a serious activity – it makes one part of a shared community of readers and writers who wish to disseminate and learn from well-argued pieces of writing.

The structure of an argumentative essay should take the form of – introduction (which should be around ten percent of the entire essay),body (it should constitute eighty percent of the piece) and the conclusion (again, ten per cent of the essay). The introduction should function as the hook which draws the reader in and holds his attention, the body should include cogent and coherently linked paragraphs and the conclusion should re-state the argument and offer a substantial ending to the piece.

Answer the following questions:

Q1. What is academic writing?
Q2.Why is reading an important part of writing?
Q3.Why should one ask oneself the questions mentioned in the second paragraph?
Q4.What are the components of the structure of an argumentative essay?
Q5. Give an appropriate title.

*** END***

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech I Year I & II Semester (R14) Supplementary End Semester Examinations – Feb 2021

LINEAR ALGEBRA & COMPLEX ANALYSIS

(Common to All)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part A or B only

Q.1

i. Find inverse of the matrix $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ — 1M

ii. Define vector space. — 1M

iii. Find the matrix of linear transformation $L : P_3 \to R^3$ given by $L(ax^3 + bx^2 + cx + d) = [c+d, 2b, a-d]$ with respect to the standard bases for P_3 and for R^3 — 1M

iv. Find the eigen values of the matrix $\begin{bmatrix} 1 & 0 \\ 4 & 3 \end{bmatrix}$ — 1M

v. Find the principal root of $(i)^{(1/2)}$ — 1M

vi. Write the function $f(z) = z + \dfrac{1}{z}$ $(z \neq 0)$ in the form $f(z) = u(r, \theta) + i v(r, \theta)$ — 1M

vii. Find all values of z such that $\log z = \dfrac{i\pi}{2}$ — 1M

viii. Find all values of z such that $e^z = 1 + i$ — 1M

ix. Determine the behavior of singularity for the function $f(z) = e^{1/z}$ — 1M

x. Define singular point. — 1M

Q.2(A) Find the minimal positive integer values for the variables that will balance the chemical equation $aAgNO_3 + bH_2O \to cAg + dO_2 + eHNO_3$ — 10M

OR

Q.2(B) Find the transition matrices from B-coordinates to C-coordinates and from C to S for P_2 given by $B = \{-x^2 + 4x + 2, 2x^2 - x - 1, -x^2 + 2x + 1\}$; $C = \{x^2 - 2x - 3, 2x^2 - 1, x^2 + x + 1\}$ and standard basis $S = (x^2, x, 1)$ for P_2. — 10M

Q.3(A) Let $L : R^3 \to R^4$ given by $L\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 4 & -2 & 8 \\ 7 & 1 & 5 \\ -2 & -1 & 0 \\ 3 & -2 & 7 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$. Find a basis for *ker*(L) and a basis for *range*(L). Verify that dim(*ker*(L)) + dim(*range*(L)) = dim (R^3) — 10M

OR

Q.3(B)

Find the eigenvalues and eigenvectors of $A = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 2 & -3 \\ 0 & 0 & -5 \end{bmatrix}$

10M

Q.4(A) Show that each of the following functions are differentiable in the indicated domain, also find $f'(z)$.

$a)\, f(z) = \dfrac{1}{z^2}\,(z \neq 0)$

$b)\, f(z) = e^{-\theta}\cos(\ln r) + ie^{-\theta}\sin(\ln r),\, (r > 0, 0 < \theta < 2\pi)$

10M

OR

Q.4(B) Derive the Cauchy-Riemann equations for polar coordinates

10M

Q.5(A) Find all roots of the equation sin z = cosh 4 by equating the real parts and then the imaginary parts of sin z and cosh 4.

10M

OR

Q.5(B) Evaluate $\int_c f(z)dz$ where $f(z) = y - x - 3ix^2$ and C Consists of the line segment z=0 to z=i and other from z= i to z= 1+i

10M

Q.6(A)

By using Cauchy-Residue Theorem , Evaluate $\int_c \dfrac{5z-2}{z(z-1)}dz$ Where $C:|z| = 2$

10M

OR

Q.6(B) Give two Laurent series expansions in powers of z for the function $f(z) = \dfrac{1}{(z-2)(1-z)}$ and specify the regions in which those expansions are valid

10M

*** END***

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)
B. Tech I Year I & II Semester (R14) Supplementary End Semester Examinations – Feb 2021
ADVANCED CALCULUS
(Common to All)

Time: 3Hrs   Max Marks: 60

> Attempt all the questions. All parts of the question must be answered in one place only.
> **All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part A or B only**

Q.1	i.	Write the polar equation for equivalent Cartesian equation $x^2 + xy + y^2 = 1$	1M
	ii.	Find the unit tangent vector of the curve $r(t) = (3\cos t)i + (3\sin t)j + t^2 k$	1M
	iii.	Write the domain and range for the surface $w = \sqrt{x^2 + y^2 + z^2}$	1M
	iv	When a function f(x, y) has local minimum at (a, b)	1M
	v.	Evaluate $\int_0^2 \int_0^1 (x - y) dy\, dx$	1M
	vi	Write the Equations relating Rectangular coordinates to Cylindrical Coordinates	1M
	vii.	Find the gradient field of $f(x, y, z) = x^2 y + y^2 z + z^2 x$	1M
	viii.	If $F = xyi + yzj + zxk$ then find $divF$	1M
	ix.	Define Alternating series test	1M
	x.	When the power series is convergence at x=c	1M

Q.2(A)	Sketch the curve $r^2 = 4\sin 2\theta$	10M

OR

Q.2(B)	Find the T, N and K for the space curve $r(t) = (3\sin t)i + (3\cos t)j + 4t\,k$	10M

Q.3(A)	Find $\dfrac{\partial f}{\partial x}, \dfrac{\partial f}{\partial y}, \dfrac{\partial^2 f}{\partial x^2}, \dfrac{\partial^2 f}{\partial y^2}, \dfrac{\partial^2 f}{\partial x \partial y}, \dfrac{\partial^2 f}{\partial y \partial x}$ for the function $f(x, y, z) = \ln(x + 2y + 3z)$	10M

OR

Q.3(B)	Find the maximum and minimum values of the function $f(x, y) = 3x + 4y$ on the circle $x^2 + y^2 = 1$	10M

Q.4(A)	Evaluate $\iint_R e^{x^2 + y^2} dy\, dx$, where R is the semicircular region bounded by the X-axis and the curve $y = \sqrt{1 - x^2}$ by using polar coordinates	10M

OR

Q.4(B)	Find the volume of the " ice cream cone" D cut from the solid sphere $\rho \le 1$ by the cone $\phi = \pi / 3$	10M

Q.5(A)   Show that $F = (e^x \cos y + yz)i + (xz - e^x \sin y)j + (xy + z)k$ is conservative over its   10M
natural domain and find potential function for it.

OR

Q.5(B)   Use stokes theorem to evaluate $\int_c F.dr$. If $F = xz\overline{i} + xy\overline{j} + 3xz\overline{k}$ and C is boundary of   10M

the portion of the plane $2x + y + z = 2$ in the first octant traversed counter clockwise
direction

Q.6(A)   Investigate the convergence of the following series $\sum_{n=2}^{\infty} \dfrac{n(n+1)}{(n^2+1)(n-1)}$ 10M

OR

Q.6(B)   Find the Taylor series and Taylor polynomials generated by $f(x) = \cos x$ at x=0   10M

*** END***

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)
B.Tech I Year I & II Semester (R14) Supplementary End Semester Examinations – FEB 2021
COMPUTER PROGRAMMING
(Common to All)

Time: 3Hrs   **Max Marks: 60**

> Attempt all the questions. All parts of the question must be answered in one place only.
> **All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only**

Q.1	i. Define variable. Write rules for writing variables	1M
	ii. What is the difference between break and continue statement?	1M
	iii. What is a pointer? How it is initialized?	1M
	iv What are the different ways to initialize arrays? Give example	1M
	v. How do you initialize a string?	1M
	vi Define a structure? Write the syntax and give example.	1M
	vii. Who can access protected members?	1M
	viii. Name any two object oriented programming languages	1M
	ix. List the advantages of the stack.	1M
	x. Give two examples for linear data structures.	1M
Q.2(A)	i) Explain the structure of a C program with an example.	5M
	ii) What is the advantage of switch-case? Write syntax and give example.	5M
	OR	
Q.2(B)	What is a token? Explain C tokens.	10M
Q.3(A)	What is function? Explain function definition, function header, function body function declaration with an example.	10M
	OR	
Q.3(B)	What is an array? Explain different types of arrays with examples.	10M
Q.4(A)	What is a string? Explain string handling functions.	10M
	OR	
Q.4(B)	Explain how to declare structure. Structure variable and how to access structure members.	10M
Q.5(A)	What is a constructor? Explain different forms of constructors with examples.	10M
	OR	
Q.5(B)	List and explain the various inheritance types with examples.	10M
Q.6(A)	i) What is queue? Explain the operations of queue.	5M
	II) What is stack? Explain the operations of stack.	5M
	OR	
Q.6(B)	Define Linked list? Explain the procedure to count number of nodes in the list.	10M

*** END***

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)
B. Tech I Year I & II Semester (R14) Supplementary End Semester Examinations – FEB 2021
BASIC ELECTRICAL & ELECTRONICS ENGINEERING
(Common to All)

Time: 3Hrs
Max Marks: 60

> Attempt all the questions. All parts of the question must be answered in one place only.
> **All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part A or B only**

Q.1

i. Two resistors, of resistance 3 Ω and 6 Ω, are connected in parallel across a battery having a voltage of 12V. Determine the total current supplied by the battery. — 1M

ii. State Kirchhoff's Current Law. — 1M

iii. Define frequency of AC signal? — 1M

iv. If a three-phase delta-connected balanced load is connected to a balanced three-phase supply, what is the relation between line current and phase current of the load? — 1M

v. A flux density of 1.2 T is produced in a piece of cast steel having relative permeability of 764. Find the magnetic field strength required to produce the given flux density. — 1M

vi. What are the losses of a Transformer? — 1M

vii. Why armature core is laminated in a DC machine? — 1M

viii. Define Slip? — 1M

ix. What is knee voltage of a PN junction diode? — 1M

x. What is indicated by the arrow head on a transformer symbol? — 1M

Q.2(A) In the network shown below find the current and voltage drops through 5Ω resistor using nodal analysis. — 10M
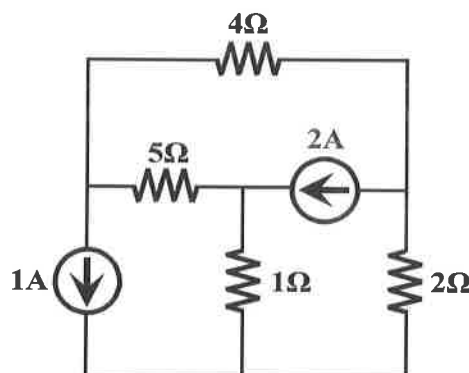
OR

Q.2(B) Calculate current through the 15Ω resistor using superposition theorem   10M
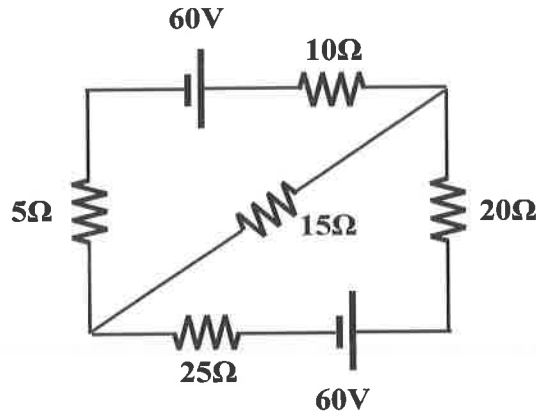
Q.3(A) i. A pure inductance of 318.3 mH is connected in series with a 200 Ω resistor to a 240   6M
V, 50 Hz AC supply. Calculate (a) the inductive reactance of the coil, (b) the impedance
of the circuit, (c) the current in the circuit, (d) the p.d. across each component, and (e)
the phase angle between voltage and current supplied by the source.
ii. Describe the AC Analysis of Series RC Circuit.   4M

OR

Q.3(B) i. Write the advantages of 3-phase systems   4M
ii. Derive the relationship between phase and line voltages and currents in a balanced   6M
three phase star connected system. Also write the expressions for active, reactive and
apparent powers.

Q.4(A) i. Draw and explain hysteresis loop of a Ferro magnetic material.   5M

ii. Explain the operation of transformer under no-load condition using phasor diagram.   5M

OR

Q.4(B) Describe Equivalent Circuit of a Transformer. (a) With respect to primary side (b) with   10M
respect to secondary side.

Q.5(A) With the help of neat sketch, explain the constructional details of a DC machine.   10M

OR

Q.5(B) i. Explain the principle of operation of three phase induction motor.   6M
ii. A 6-Pole 50 Hz Induction Motor has slip of 2.5%. Find its Synchronous speed and   4M
Rotor Speed.

Q.6(A) Write in detail about the operation of full-wave rectifier with centre-tapped   10M
transformer, with a neat diagram.

OR

Q.6(B) Write the construction and operation of npn bipolar junction transistor.   10M

*** END***

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)
B.Tech I Year I&II Semester (R14) Supplementary End Semester Examinations – Feb' 2021
(Regulations: R14)
ENVIRONMENTAL SCIENCE
(Common to All)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

Q.1	(i)	What are the important components of environment?	1M
	(ii)	Define renewable energy resources.	1M
	(iii)	Define food web.	1M
	(iv)	Write a food chain in Grass Land Ecosystem.	1M
	(v)	What are the two Hot spots of Biodiversity in India?	1M
	(vi)	What do you mean by poaching?	1M
	(vii)	Define soil pollution.	1M
	(viii)	List any two effects of floods.	1M
	(xi)	Define sustainable development.	1M
	(x)	Define population explosion.	1M

Q.2(A) Environmental Science is a multy disciplinary subject. Explain.   **10M**

OR

Q.2(B) Discuss Renewable energy sources by taking any one examples.   **10M**

Q.3(A) Define Ecological Pyramid. Explain various types of ecological pyramids with proper diagrams.   **10M**

OR

Q.3(B) Explain the structure and function of Lake Ecosystem.   **10M**

Q.4(A) Define Biodiversity. Explain major threats to Biodiversity.   **10M**

OR

Q.4(B) Explain any one type of conservation of Biodiversity.   **10M**

Q.5(A) Define water pollution? Explain cause, effects and control measures of Air Pollution.   **10M**

OR

Q.5(B) Write an essay on Solid Waste Management.   **10M**

Q.6(A) Explain rain water harvesting.   **10M**

OR

Q.6(B) Write an essay on human population and the environment   **10M**

*** END***

Hall Ticket No:

Question Paper Code: 14ME11T01

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)

B.Tech I Year I & II (R14) Semester Supplementary End Semester Examinations –Feb 2021

ENGINEERING GRAPHICS
(Common to All)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 1 to 5 answer either Part-A or B only

Q.1(A)   Draw the given figure using Auto CAD commands   12M
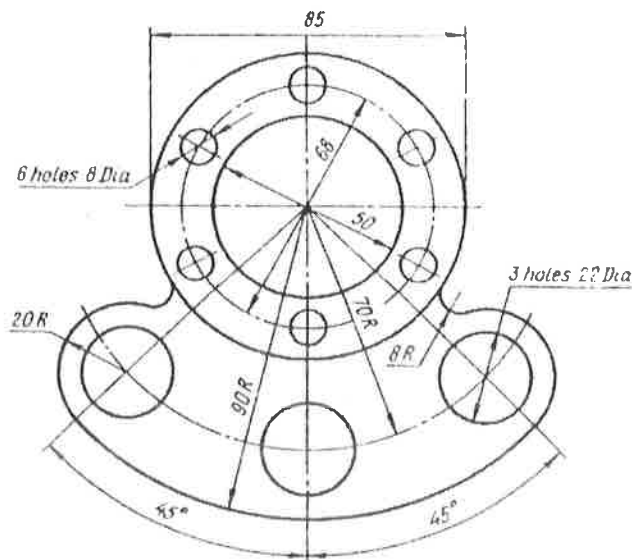
OR

Q.1(B)   Draw the given figure using Auto CAD commands   12M
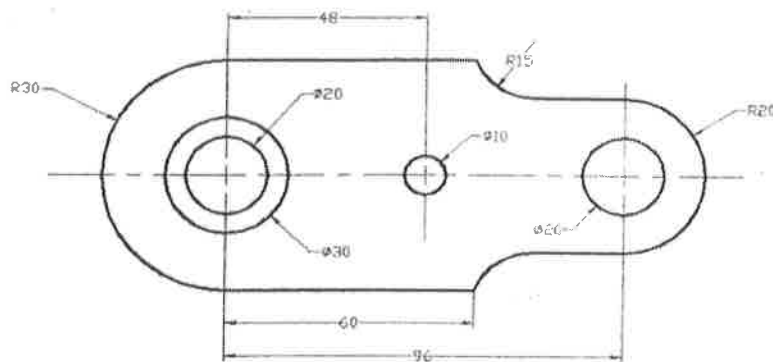
Q.2(A)   Draw the projections of the following points on the same ground line and keep the   12M
distance between the projectors as 30mm. Also state the quadrants in which the
points lie.
1. Point A, 40mm infront of the V.P. and 30mm above the H.P.
2. Point B, 50mm below the H.P. and on the V.P.
3. Point C, 50mm below the H.P. and 40mm behind the V.P.
4. Point D, 30mm above the H.P. and 45mm in front of the V.P.

OR

| Q.2(B) | The Front view of a line 90mm long is inclined at 45^0 to XY line. a'b' being 50mm long. a' is 15mm above H.P and a is on V.P. Draw the projections of the line and find its inclinations with H.P and V.P. | 12M |

| Q.3(A) | Draw the projections of a circle of 50mm diameter resting in the H.P and a point A on the circumference. Its plane is inclined at 45^0 to the HP and the top view of the diameter AB making an angle of 30^0 with the VP. | 12M |

OR

| Q.3(B) | A Pentagonal Prism of base edge 30 mm and axis 60mm rests on an edge of its base in the H.P. Its axis is parallel to V.P and inclined at 45^0 to H.P. Draw its projections. | 12M |

| Q.4(A) | A pentagonal prism of base side 30mm and height 70 mm resting on its base on H.P with the rectangular face parallel to V.P. It is cut by a section plane inclined at 45 degrees to the H.P and passing though the midpoint of the axis. Draw the development of the lateral surface of the truncated prism. | 12M |

OR

| Q.4(B) | A cylinder of base diameter 40 mm and height 80 mm rests on its base on HP. It is cut by section plane perpendicular to VP and inclined at 45° to HP and passing through the axis at a distance 45 mm from base. Draw the front view and sectional top view and true shape. | 12M |

| Q.5(A) | Draw the front view, top view and side view for the given figure. | 12M |

OR

| Q.5(B) | A Vertical cylinder of 90mm diameter is completely penetrated by another cylinder of 60mm diameter, their axes bisecting each other at right angles. Draw their projections showing curves of penetration, assuming the axis of penetrating cylinder to be parallel to the V.P. | 12M |

END

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)
B.Tech I Year I & II Semester (R14) Supplementary End Semester Examinations – FEB 2021
FUNCTIONAL ENGLISH
(Common to ALL)

Time: 3Hrs   Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only. **All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only**

z

Q.1

i. Fill in the blank with appropriate article.   1M
    I have finished all ……. books you lent me.

ii. Write the noun for the given verb in brackets. (Speak)   1M

iii. Use the phrase *make small talk,* in your own sentences   1M

iv. Change the following sentence into passive voice.   1M
     We sing a song

v. Make the following sentence more emphatic by using *what*/the thing.   1M
    This room's got big windows, and I like that.

vi. Write one word Substitute for the following sentence.   1M
     One who believes in fate.

vii. Rewrite the following sentences using 'otherwise'.   1M
      They can't have recognized. They would have waved.

viii. Write one example of spoken English.   1M

ix. Fill in the blank with suitable preposition.   1M
     I am thinking ___ starting my own business.

x. Use the idiom *once in a blue moon* in your own sentences   1M

Q.2(A) With the advancement in technology, It is easier and cheap to communicate and connect with   10M
people across the world. Justify the statement in 300 words.

OR

Q.2(B) **Fill in the blanks with appropriate verb forms**   10M
    i. Look, I _____ (hold) two tickets for the circus.
    ii. When Kishan arrived at the cafe, I _____ (wait) for him for half an hour.
    iii. They got _____ (marry) last saturday
    iv. She always _____(participate) in music concerts.
    v. He _____(watch) *TV, when Tom* _____(arrive).
    vi. We _____ (start) the community concert on November 28.
    vii. I expect lot of people _____ (attend) the lecture.
    viii. By the time the police _____ (arrive), the robbers _____ (run) away.

Q.3(A) i. **Fill the gaps with words underneath in an appropriate form- Active or** Passive   5M

Burst	Fire	Shoot	Fill	Hit

A Western villain ------------- with the help of a special effects compressed air gun,
which--------------- soft pellets instead of bullets. The pellets --------------- with blood
and ----------- dramatically when they --------------- their target.

ii. Arrange the jumbled sentences to form a meaningful paragraph.   5M

     i.   Then we come to classical Sanskrit which is also very good.

     ii.   Instead of being inspired by good idea, we have even lost what we had.

     iii.   However it gradually deteriorates and there is no vitality left it in it.

     iv.   We start with magnificent literature.

     v.   The process of decay through centuries can be traced in our literature.

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

Q.3(B)   **Use the hints below and develop into a story.**   10M

Cap seller - going to market - felt tired - slept under a tree - a basket - caps for sale - monkeys on the tree - came down - opened the basket - took the caps - wore them - started making noise - Cap seller woke up - no cap in the basket - looked up in wonder - monkeys wearing caps - tried several methods to collect the caps - failed - out of frustration threw his cap - monkeys also threw the caps - Cap seller collected the caps and went away happily.

Q.4(A)   **i. Fill in the blanks choosing between Will and Would.**   5M

     a.   I ------ carry that for you, if you like.

     b.   If the government doesn't cut taxes before the next election, it certainly--------not get re-elected.

     c.   Would you pick-up a hitchhiker late at night? I certainly --------not.

     d.   If you went by train, you-----get there much faster.

     e.   I wonder if we -----still be friends in 20 years' time.

ii. Rewrite the following sentences using 'otherwise'.   5M

     i.   They can't be in, because the lights aren't on.

     ii.   They can't have recognized us, because they didn't wave.

     iii.   They must be expecting guests, because the house was so tidy.

     iv.   They must have got stuck in traffic, because they weren't here.

     v.   They can't have gone far, because they didn't take the car.

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

Q.4(B)   **Write suitable dialogues for the following situations**   10M

     a.   Rajesh wants to take coaching for competitive exams. He enquires his friends to help him in finding best coaching centre for competitive exams.

     b.   Prakash came to know that his friend got state first rank. He congratulates his friend.

Q.5(A)   **Correct** the following sentences .   10M

     i.   More you read less you understand.

     ii.   On a way home, I saw old beggar accompanied by child.

     iii.   If you had asked me, I will give you my laptop.

     iv.   How much restaurants are in your neighborhood?

     v.   My mother always told me a bedtime history when I was a kid.

     vi.   I don't have no money.

     vii.   Where did you went yesterday?

     viii.   Are you agree with me?

     ix.   The teacher along with his students were going.

     x.   Suresh is my older brother.

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

Q.5(B)   Modern children have more fun than the children in the olden days.   10M

Q.6(A)   **Read the following passage and answer the questions given below.**   10M

Electricity is becoming dearer these days. Households account for a major share of the electricity consumed. In the typical household, refrigeration and air conditioning account for

the lion's share of electricity consumption. Emerging technology plays a major role in solving this problem. Energy efficiency at home can be improved if consumers purchase energy efficient appliances. The mandatory energy labelling of air conditioners and refrigerators help consumers select energy –efficient models and thus helps households save electricity and reduce utility bills.

1) _____ is becoming dearer these days.
   A. electricity   B. Refrigeration   C. air conditioning   D. all of these
2) _____ accounts for the lion's share
   A. refrigeration   B. air conditioning   C. Electricity   D. both A and B
3) _____ plays a major role in solving electricity consumption
   A. emerging technology   B. air conditioning   C. consumers D. households
4) Energy efficiency at home can be improved if consumers purchase
   A. energy efficient appliances   B.   refrigerators   C. air conditioning D. both B and C
5) The title of the passage is
   A. electricity   B. energy   C. technology   D. efficiency

OR

Q.6(B)   Write about the importance of festivals and celebrations in day to day life in 300 words   10M

*** END***

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)
B.Tech I Year I & II Semester (R14) Supplementary End Semester Examinations – Feb 2021
Engineering Physics
(Common to All)

Time: 3Hrs   Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1   i.   Find the unit vector of $\vec{A} = \hat{\imath} + \hat{\jmath} + \hat{k}$.   1M
        ii.   Find the velocity if the displacement of the particle is given by $x(t)$ = (4t-5)   1M
              meter.
        iii. Define inertial frame of reference.   1M
        iv.   State work energy theorem and write its equation.   1M
        v.   Define moment of inertia.   1M
        vi.   State the conservation of angular momentum.   1M
        vii. What are the characteristics of SHM?   1M
        viii. Waves on string are always transverse. Why?   1M
        ix.   Mention the conditions to get interference.   1M
        x.   A grating of length 2 cm and having 10,000 lines, what is its grating element?   1M

Q.2(A) i) Explain Scalar and Vector product.   4M
        ii) If $\vec{A} = 2\hat{\imath} - \hat{\jmath} + \hat{k}$ and $\vec{B} = \hat{\imath} + 2\hat{\jmath}$.   6M
        Find   a) $\vec{A} \cdot \vec{B}$,   b) $\vec{A} \times \vec{B}$,   c) angle between $\vec{A}$ and $\vec{B}$.
                                                OR
Q.2(B) i) Deduce the expression for velocity in polar coordinates by using position $\vec{r} = r\hat{r}$.   5M
        ii) Three freight cars each of mass 'M' are pulled with force 'F' by a locomotive.   5M
        Friction is negligible. Find the forces on each car.

Q.3(A) Derive the rocket equation and show that final velocity is independent of how the   10M
        mass is released when it moves in a free space.
                                                OR
Q.3(B) Find the centre of mass of a right angle triangle sheet of mass 'M', base 'b', and height   10M
        'h'.

Q.4(A) State and prove parallel axis theorem.   10M
                                                OR
Q.4(B) What is harmonic oscillator? Derive the differential equation for forced harmonic   10M
        oscillator and find its solution.

Q.5(A) What are Lissajous figures? Construct the Lissajous figures for the two perpendicular   10M
        SHMs   x = A cos (2πt)   and y = A cos (2πt).

                                        OR

Q.5(B) i) Derive the relation between phase velocity & group velocity.   5M

        ii) Deduce the differential equation of propagation of one dimensional wave.   5M

Q.6(A) Explain the formation of Newton's rings. Determine the radius of curvature of Plano   10M
        convex lens using Newton's rings experiment.

                                        OR

Q.6(B) Give the theory of Fraunhoffer diffraction due to diffraction grating (N-slit). Obtain the   10M
        condition of maxima and minima and plot intensity distribution curve.
                                    *** END***

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)
B.Tech I Year I & II Semester (R14) Supplementary End Semester Examinations – FEB 2021
ENGINEERING CHEMISTRY
(Common to All)

Time: 3Hrs   Max Marks: 60

> Attempt all the questions. All parts of the question must be answered in one place only.
> **All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only**

Q. No.1.	(i)	Which salts causes permanent hardness to the water?	1 M
	(ii)	Define ion exchange resins.	1 M
	(iii)	Define order of the reaction.	1 M
	(iv)	Define 'First Law of Thermodynamics'	1 M
	(v)	Write the monomers of 'Buna-S rubber'	1 M
	(vi)	Write any two applications of 'paper chromatography'	1 M
	(vii)	What is secondary battery? Give an example?	1 M
	(viii)	What is primary battery?	1 M
	(ix)	What is lime?	1 M
	(x)	Give one example of abrasive?	1 M

Q.2(A)	Describe the ion exchange process for the softening of water.	10M
	OR	
Q.2(B)	Explain chlorination of water. Describe about break point of chlorination.	10M
Q.3(A)	Find out the expression for work done when an ideal gas expands isothermally.	10M
	OR	
Q.3(B)	Derive integrated first order rate equation, and half-life from it.	10 M
Q.4(A)	Write a detailed procedure of Gel Permeation Chromatography (GPC)	10 M
	OR	
Q.4(B)	Write preparation, properties and applications of Polystyrene.	10 M
Q.5(A)	Explain charging, discharging and applications of lead-acid battery?	10 M
	OR	
Q.5(B)	Explain the various influencing factors influencing the rate of corrosion.	10 M
Q.6(A)	Explain the Solvo-thermal method for synthesizing nanoparticle.	10M
	OR	
Q.6(B)	Explain the manufacturing method of Portland cement.	10 M

***END**