

--	--	--	--	--	--	--	--	--	--

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

B.Tech I Year II Semester (R20) Regular End Semester Examinations – NOVEMBER 2021
ENGINEERING PHYSICS

(Civil Engineering)

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

		Marks	CO	BL
Q.1	i. If $\vec{P} = 3\cos\theta \hat{i} + 3\sin\theta \hat{j}$. Find unit vector of \vec{P} .	1M	1	1
	ii. Mention base vector \hat{r} in terms of base vectors \hat{i} and \hat{j} .	1M	1	1
	iii. Write differential form of Newton's 2 nd law.	1M	2	1
	iv. At $t = 0$ second, the momentum of the system is 100 kg-m/s. Calculate the momentum after 10 seconds if there are no external forces acting on this system.	1M	2	2
	v. The displacement in SHM is given by $x = 5 \sin 2\pi t$. Calculate the time period of SHM	1M	3	2
	vi. Define transverse wave.	1M	3	1
	vii. Give the relation between phase difference and path difference?	1M	4	1
	viii. What is Brewster's law?	1M	4	1
	ix. Write any two characteristics of Laser.	1M	5	1
	x. On which principle optical fiber work?	1M	5	1
Q.2(A)	(i) \hat{r} and $\hat{\theta}$ are the base vectors in polar coordinates. Prove that $\frac{d\hat{r}}{dt} = \frac{d\theta}{dt} \hat{\theta}$ and $\frac{d\hat{\theta}}{dt} = -\frac{d\theta}{dt} \hat{r}$.	5M	1	3
	(ii) The position of the particle is given by $\vec{r} = A(e^{\alpha t} \hat{i} + e^{-\alpha t} \hat{j})$, where A and α are arbitrary constants. Find the velocity and sketch the trajectory.	5M	1	4
OR				
Q.2(B)	(i) A bead moves along the spoke of a wheel at constant speed ' u ' meters per second. The wheel rotates with uniform angular velocity $\dot{\theta} = \omega$ radians per second about an axis fixed in space. At $t = 0$ the spoke is along the x axis, and the bead is at the origin. Find the bead's velocity at time t (i) in polar coordinates; (ii) in Cartesian coordinates.	6M	1	4
	(ii) Two blocks m_1 and m_2 are in contact on a horizontal table. A horizontal force is applied to one of the blocks, as shown in the figure. If $m_1 = 2$ kg, $m_2 = 1$ kg, and $F = 3$ N, find the force of contact between the two blocks.	4M	1	3



Q.3(A)	(i) Deduce the expression of fundamental rocket equation.	5M	2	5
	(ii) A spacecraft moves through space with constant velocity ' v '. The spacecraft encounters a stream of dust particles that embed themselves on the spacecraft at rate dm/dt . The dust has velocity ' u ' just before it hits. At time t the total mass of the spacecraft is $M(t)$. The problem is to find the external force ' F ' necessary to keep the spacecraft moving uniformly.	5M	2	4
OR				
Q.3(B)	Deduce the expression for escape velocity for an object of mass ' m ' projected upward from the earth at some angle, using work-energy theorem.	10M	2	5
<hr/>				
Q.4(A)	What is Lissajous Figure? Construct the Lissajous figures for the superimposed two perpendicular simple harmonic motions described by following equations. $x = A \cos(\omega t)$ and $y = A \cos(\omega t + \pi/4)$	10M	3	4
OR				
Q.4(B)	i) Deduce the differential form of the progressive wave?	5M	3	4
	ii) Derive the differential equation of motion for damped harmonic oscillator.	5M	3	4
<hr/>				
Q.5(A)	Describe the arrangement to observe Newton's rings by reflected light. Obtain an expression for the radius of curvature of a Plano-convex lens?	10M	4	4
OR				
Q.5(B)	Explain polarization by double diffraction and describe the construction and working of Nicol Prism.	10M	4	5
<hr/>				
Q.6(A)	Describe the principle, construction and working of ruby laser.	10M	5	4
OR				
Q.6(B)	Derive the expression for the acceptance angle and Numerical Aperture of the optical fiber.	10M	5	4

*** END***

--	--	--	--	--	--	--	--	--	--

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech I Year II Semester (R20) Regular End Semester Examinations – NOVEMBER 2021**APPLIED PHYSICS**

(Common to ECE, CST, CSE-IOT, CSE-CS)

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

		Marks	CO	BL
Q.1	i. What is the speed of the pendulum in SHM at the mean position and at extreme position?	1M	1	1
	ii. Define Standing Wave Ratio (SWR).	1M	1	1
	iii. Write the condition to get constructive and destructive interference.	1M	2	1
	iv. Calculate the thickness of quarter wave plate for light of wavelength 5460 Å. The refractive indices of ordinary and extraordinary rays are 1.652 and 1.488 respectively.	1M	2	1
	v. Find the de-Broglie wavelength of an electron with a velocity of 10^7 m/s?	1M	3	2
	vi. Define wave function Ψ .	1M	3	1
	vii. Explain diffusion current.	1M	4	1
	viii. Give two examples of indirect bandgap semiconductors.	1M	4	1
	ix. Sketch population inversion in three level energy system.	1M	5	1
	x. What is the critical angle of a medium of refractive index 1.414	1M	5	1
Q.2(A)	i) What are Lissajous figures? On what factors they depend?	2M	1	2
	(ii) Construct the Lissajous figures for the superimposed two perpendicular simple harmonic motions described by following motions $x = A \cos(\pi t)$ and $y = A \cos(2\pi t + \pi/2)$	8M	1	4
OR				
Q.2(B)	What is damped harmonic oscillator? Discuss the various cases of damped harmonic oscillator by deriving the necessary expressions.	10M	1	4
Q.3(A)	(i) Sketch the neat diagram of Newton's Ring set-up. Derive the expressions for the diameter of bright and dark rings.	8M	2	4
	(ii) In Newton's ring experiment, determine the diameter of 10 th ring using source of wavelength 600 nm and the radius of curvature of the lens is 100 cm.	2M	2	2
OR				
Q.3(B)	What is double refraction? Explain the construction and working of Nicol Prism.	10M	2	5

Q.4(A)	Derive Schrodinger's time independent and time dependent wave equations.	10M	3	4
OR				
Q.4(B)	(i) Applying Schrodinger time independent wave equation, show that the energies of a particle trapped in a potential well with infinite walls is quantized.	8M	3	4
	(ii) Calculate the first two energy levels for an electron in a quantum well of width 10Å with infinite walls.	2M	3	2
<hr/>				
Q.5(A)	(i) On the basis of band theory, explain how the solids are classified into metals, Semiconductors and insulators?	5M	4	3
	(ii) Explain direct and indirect band gap semiconductor with suitable diagrams.	5M	4	2
OR				
Q.5(B)	Discuss Hall effect and derive an expression of Hall coefficients for an n-type semiconductor.	10M	4	5
<hr/>				
Q.6(A)	Describe the construction and working of Ruby Laser with neat diagram of energy levels.	10M	5	4
OR				
Q.6(B)	(i) Draw a suitable diagram of optical fiber and explain the principle, construction and working of an optical fiber as a waveguide.	8M	5	3
	(ii) The refractive index of core and cladding of a step index optical fiber are 1.55 and 1.50, respectively. Calculate a) numerical aperture and b) acceptance angle.	2M	5	2

*** END***

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 20CHE101

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

B.Tech I Year II Semester (R20) Regular End Semester Examinations – NOVEMBER 2021

ENGINEERING CHEMISTRY

(Common to EEE, ME, CSE, CSE-AI, CSE-DS)

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

		Marks	CO	BL
Q.1	i. Reason out the appearance of steel blue colour at the endpoint in the estimation of the hardness of water by EDTA.	1M	1	1
	ii. List out the problems faced by the boiler due to the formation of scale and sludge.	1M	1	1
	iii. Define ionization energy with an example.	1M	2	1
	iv. What is the difference between E1 and E2 reaction?	1M	2	1
	v. Give any two applications of UV-Visible spectroscopy.	1M	3	1
	vi. How many peak are expected in $^1\text{H-NMR}$ for CH_3OH ?	1M	3	1
	vii. Define Entropy.	1M	4	1
	viii. Write the Nernst equation for EMF.	1M	4	1
	ix. Give the significance of the viscosity index of the lubricants.	1M	5	1
	x. How Scherrer equation used in XRD analysis?	1M	5	1
<hr/>				
Q.2(A)	i) 1.2 g of CaCO_3 was dissolved in HCl and the solution was made up to 1L using distilled water. 100 mL of CaCO_3 solution required 25 mL EDTA for titration. 50 mL of sample water required 30 mL EDTA before boiling and 18 mL EDTA after boiling. Calculate the temporary, permanent and total hardness in ppm.	8M	1	4
	ii) Define alkalinity. Write the ions and the ion combinations causing alkalinity.	2M	1	2
OR				
Q.2(B)	Explain de-mineralization of water using Ion-Exchange Method.	10M	1	5
<hr/>				
Q.3(A)	Discuss the relation between electronic configuration and ionization energy with examples.	10M	2	6
OR				
Q.3(B)	Elaborate in detail the SN^1 and SN^2 reactions with example.	10M	2	6
<hr/>				
Q.4(A)	Discuss the working principle, instrumentation and applications of Raman spectroscopy.	10M	3	6
OR				
Q.4(B)	Explain the principle and working of Microwave Spectroscopy.	10M	3	5

Q.5(A)	i) Describe the construction, working principle and applications of lead-acid battery.	5M	4	3
	ii) Discuss the cell reactions involved during the charging and the discharging process of the lithium ion battery.	5M	4	3
	OR			
Q.5(B)	Write a short note on i) work ii) Entropy ii) Energy	10M	4	3
<hr/>				
Q.6(A)	Discuss the synthesis of CNT using CVD method with neat diagrams.	10M	5	6
	OR			
Q.6(B)	Elucidate with neat diagram the manufacturing of Portland cement from the raw materials.	10M	5	5

***** END*****

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

B.Tech I Year II Semester (R20) Regular End Semester Examinations NOVEMBER 2021
LINEAR ALGEBRA & DIFFERENTIAL EQUATIONS

(Common to CE, ME)

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

		Marks	CO	BL
Q.1	i. Define Rank of a Matrix.	1M	1	1
	ii. If 2, 3 and 6 are eigenvalues of a matrix A then what are the eigenvalue of A^{-1} ?	1M	1	1
	iii. What is the order and degree of the differential equation $\left(1 + \left(\frac{dy}{dx}\right)^2\right)^{\frac{1}{2}} = 2y$	1M	2	2
	iv. Find the solution of the differential equation $\frac{dy}{dx} = \frac{3y}{2x}$.	1M	2	1
	v. Find the solution of $4y'' + 4y' + y = 0$.	1M	3	1
	vi. What is particular integral of the differential equation?	1M	3	1
	vii. Find the Laplace transform of the $f(t) = 2t - 5$.	1M	4	2
	viii. State the Convolution theorem.	1M	4	1
	ix. Form partial differential equation by eliminating arbitrary constants $z = ax^2 + by^2$.	1M	5	1
	x. Define Wave equation in one dimensional space.	1M	5	1
Q.2(A)	Find the eigen values and eigenvectors of the matrix $A = \begin{pmatrix} 3 & 2 & 2 \\ 1 & 2 & 2 \\ -1 & -1 & 0 \end{pmatrix}$	10M	1	3
OR				
Q.2(B)	Verify Cayley-Hamilton theorem for $A = \begin{bmatrix} 3 & 1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 5 \end{bmatrix}$ and hence find A^{-1} and A^4 .	10M	1	3
Q.3(A)	Solve the differential equations (i) $(x^3 y^2 + xy) dx = dy$. (ii) $x \log x \frac{dy}{dx} + y = \log x^2$.	10M	2	3

OR

Q.3(B)	Solve the differential equation $(3x^2y^3e^y + y^3 + y^2)dx + (x^3y^3e^y - xy)dy = 0.$	10M	2	3
Q.4(A)	Solve the differential equation $y'' - 3y' + 2y = xe^{3x} + \sin 2x$	10M	3	3
	OR			
Q.4(B)	Solve by using Variation of Parameter $y'' + y = \sec x$	10M	3	3
Q.5(A)	Find the solution of differential equation $y'' + 16y = \cos 4t$ with initial condition $y(0) = 0, y'(0) = 0$ by using Laplace transformation.	10M	4	3
	OR			
Q.5(B)	Find the inverse Laplace transformation of (i) $L^{-1}\left(\frac{3s-8}{4s^2+25}\right)$ (ii) $L^{-1}\left(\frac{s+2}{s^2-4s+13}\right)$	10M	4	4
Q.6(A)	Solve the partial differential equation $\frac{\partial^2 z}{\partial x \partial x} = \sin x \sin y$ for which $\frac{\partial z}{\partial y} = -2 \sin y$ when $x = 0.$	10M	5	3
	OR			
Q.6(B)	Find the eigen values and Eigen function of $y'' + \lambda y = 0$ with condition $y(0) = 0, y'\left(\frac{\pi}{2}\right) = 0.$	10M	5	3

*** END***

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

B.Tech I Year II Semester (R20) Regular End Semester Examinations NOVEMBER 2021
LINEAR ALGEBRA, COMPLEX VARIABLES AND ORDINARY DIFFERENTIAL EQUATIONS
(ECE)

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

		Marks	CO	BL
Q.1	i. Find the rank of the matrix $A = \begin{pmatrix} 1 & 2 & 3 \\ 1 & 4 & 2 \\ 2 & 6 & 5 \end{pmatrix}$.	1M	1	1
	ii. Define symmetric matrix with an example.	1M	1	1
	iii. Show that the function $U(x, y) = 2x - 2xy$ is harmonic.	1M	2	1
	iv. Determine the residue of the function $f(z) = z \cos \frac{1}{z}$	1M	2	1
	v. State the Cauchy-Goursat theorem.	1M	3	1
	vi. Evaluate $\int \frac{z^2}{z-3} dz$, where C is the circle $ z = 1$	1M	3	2
	vii. Find the order and degree of the differential equation $\left(1 + \frac{dy^2}{dx}\right)^{\frac{3}{2}} = C \frac{d^2y}{d^2x}$	1M	4	1
	viii. Define linear differential equation.	1M	4	1
	ix. Find wronskian of the functions $y_1 = \cos x$ and $y_2 = \sin x$.	1M	5	1
	x. Find Particular Integral of the differential equation $(D^2 + 5D + 6)y = e^x$	1M	5	1

Q.2(A) Using Gauss-Jordan method, find the inverse of the matrix $A = \begin{pmatrix} 2 & 1 & -1 \\ 0 & 2 & 1 \\ 5 & 2 & -3 \end{pmatrix}$. 10M 1 3

OR

Q.2(B) Find the Eigen values and Eigen vectors of the matrix $A = \begin{pmatrix} 3 & 1 & 4 \\ 0 & 2 & 6 \\ 0 & 0 & 5 \end{pmatrix}$. 10M 1 3

Q.3(A) 10M 2 3
Verify Cauchy Riemann equations at $z = (0,0)$ for the function defined by

$$f(z) = \begin{cases} (\bar{z})^2/z, & \text{when } z \neq 0 \\ 0, & \text{when } z = 0 \end{cases}$$

and show that $f'(z)$ [first order derivative] does not exist at $z = (0,0)$

OR

Q.3(B) Verify that each of these functions is analytic everywhere or not 10M
 i) $f(z) = 2xy + i(x^2 - y^2)$, 2 3
 ii) $f(z) = \sin x \cosh y + i \cos x \sinh y$.

Q.4(A) Give two Laurent series expansions in the powers of z for the function 10M 3 4
 $f(z) = \frac{1}{z^2(1-z)}$ and specify the regions in which those expansions are valid.

OR

Q.4(B) Let C denote the positively oriented boundary of the square whose sides lie along the lines $x = \pm 2$ and $y = \pm 2$. Evaluate each of the following integrals 10M 3 3

(a) $\int_C \frac{e^{-z}}{z - i\frac{\pi}{2}} dz$ (b) $\int_C \frac{z}{2z+1} dz$

Q.5(A) Solve the differential equation $x \frac{dy}{dx} + y = x^3 y^6$. 10M 4 3
 OR

Q.5(B) Solve the differential equation $y - 2px = \tan^{-1}(xp^2)$, (where $\frac{dy}{dx} = p$). 10M 4 4

Q.6(A) Solve the differential equation $x^2 y'' + xy' + y = \log x \sin(\log x)$ 10M 5 4
 OR

Q.6(B) Find the solution of differential equation $\frac{d^2y}{dx^2} + 4y = \tan 2x$, using the method of variation of parameters 10M 5 3

*** END***

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

B.Tech I Year II Semester (R20) Regular End Semester Examinations NOVEMBER 2021
LINEAR ALGEBRA

(Common to CSE, CSE-DS, CSE-AI, CSE-IOT, CSE-CS,CST)

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

		Marks	CO	BL
Q.1	i. When a linear system of non-homogeneous equations are said to have a unique solution.	1M	1	1
	ii. Find the rank of the matrix $A = \begin{bmatrix} 1 & 3 & -4 \\ -1 & -3 & 4 \\ 2 & 6 & -8 \end{bmatrix}$	1M	1	2
	iii. Find a polynomial $p(x) = a - bx + cx^2$ which satisfies $p(0) = 2, p'(0) = 1, p(1) = 2$.	1M	2	1
	iv. State Rank-Nullity theorem.	1M	2	1
	v. Check whether $T(x, y) = (x + y, x - y)$ is Linear transformation or not.	1M	3	1
	vi. Find T^{-1} , if exists for the Linear transformation $T(x, y) = (x, x + y)$	1M	3	2
	vii. Define Dual space of V.	1M	4	1
	viii. Let $T: R^2 \rightarrow R^2$ be the Linear transformation defined by $T(x_1, x_2) = (x_1, x_1 + x_2)$. Compute $[T]_B$ for the standard basis $B = \{e_1, e_2\}$.	1M	4	2
	ix. State Inner product space.	1M	5	1
	x. Find whether $X_1 = (1, 2, 3)$ and $X_2 = (-2, 1, 0)$ are orthogonal or not.	1M	5	1

Q.2(A) Using the Gauss-Jordan method find the inverse of the matrix 10M 1 3

$$A = \begin{bmatrix} 1 & 1 & 1 & 1 \\ -1 & 1 & 1 & -1 \\ -1 & -1 & 1 & 1 \\ 1 & 1 & -1 & 1 \end{bmatrix}$$

OR

Q.2(B) Find the eigen values and eigenvectors of the matrix $A = \begin{bmatrix} 2 & 1 & 1 \\ 2 & 3 & 2 \\ 3 & 3 & 4 \end{bmatrix}$. 10M 1 3

Q.3(A) Show that the vectors $v_1 = (2, 2, 3)$, $v_2 = (-1, -2, 1)$ and $v_3 = (4, 6, 1)$ form a basis for \mathbb{R}^3 . 10M 2 3

OR

Q.3(B) Does the vector $(3, -1, 0, -1)$ in the subspace of \mathbb{R}^4 spanned by the vectors $(2, -1, 3, 2)$, $(-1, 1, 1, -3)$ and $(1, 1, 9, -5)$? 10M 2 3

Q.4(A) Show that the linear transformation T on \mathbb{R}^3 is invertible and find a formula for T^{-1} . $T(x, y, z) = (2x, 4x - y, 2x + 3y - z)$. 10M 3 3

OR

Q.4(B) Let $T: \mathbb{R}^3 \rightarrow \mathbb{R}^2$ be a linear transformation given by $T(x, y, z) = (3x + 2y - 4z, x - 5y + 3z)$. Find the matrix representation of T related to the basis $\alpha = \{(1, 1, 1), (1, 1, 0), (1, 0, 0)\}$ and $\beta = \{(1, 3), (2, 5)\}$ 10M 3 3

Q.5(A) Let D be the differential operator on the vector space $P_2(\mathbb{R})$. Given two ordered basis $\alpha = \{1, x, x^2\}$ and $\beta = \{1, 2x, 4x^2 - 2\}$ for $P_2(\mathbb{R})$. Find the associated matrix of T with respect to α and the associated matrix of T with respect to β . Are they similar? 10M 4 3

OR

Q.5(B) Find dual basis B^* of $B = \{\alpha_1, \alpha_2, \alpha_3\}$, where $\alpha_1 = (1, 0, 1)$, $\alpha_2 = (0, 2, -1)$ and $\alpha_3 = (1, -1, 0)$. 10M 4 4

Q.6(A) Apply the Gram-Schmidt process to the vectors $X_1 = (1, 0, 1)$, $X_2 = (1, 0, -1)$, $X_3 = (0, 3, 4)$ to obtain an orthonormal basis for $V_3(\mathbb{R})$ with the standard inner product. 10M 5 3

OR

Q.6(B) Find all the least square solutions to $Ax = b$, where 10M 5 4

$$A = \begin{bmatrix} 1 & 0 & 2 \\ 2 & 1 & 5 \\ -1 & 1 & -1 \\ 0 & 1 & 1 \end{bmatrix}, b = \begin{bmatrix} 1 \\ -1 \\ -1 \\ 2 \end{bmatrix}.$$

*** END***

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech I Year II Semester (R20) Regular End Semester Examinations NOVEMBER 2021**LINEAR ALGEBRA & TRANSFORM CALCULUS**

(EEE)

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

		Marks	CO	BL
Q.1	i. If two Eigen values of $A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$ are 3 and 15, then the third Eigen values is ---- .	1M	1	2
	ii. The quadratic form corresponding to the matrix $A = \begin{bmatrix} 1 & 2 \\ 2 & -3 \end{bmatrix}$ is -- --.	1M	1	2
	iii. Is the function $f(z) = \operatorname{Re}(z)$ analytic or not?	1M	2	1
	iv. Compute the poles of the function $f(z) = \cot z$.	1M	2	2
	v. Find $L\left\{\frac{e^{-t}}{t^2}\right\}$.	1M	3	2
	vi. Evaluate $L^{-1}\left\{\frac{1}{s(s^2+1)}\right\}$.	1M	3	1
	vii. Do Fourier sine transform of $\frac{1}{x} = \frac{\pi}{2}$ is true?	1M	4	1
	viii. If $F(e^{-x^2}) = \sqrt{\pi}e^{-\frac{s^2}{4}}$, then Fourier transform of $F\left(e^{-\frac{x^2}{3}}\right)$ is ----.	1M	4	2
	ix. Evaluate $Z\left\{\frac{1}{n+2}\right\}$.	1M	5	1
	x. Find $Z^{-1}\left\{\frac{3z^2+2z}{(z+4)(z-2)}\right\}$.	1M	5	2

Q.2(A) Reduce the following matrix in to its normal form and find its rank 10M 1 3

$$\begin{pmatrix} 2 & 3 & -1 & -1 \\ 1 & -1 & -2 & -4 \\ 3 & 1 & 3 & -2 \\ 6 & 3 & 0 & -7 \end{pmatrix}$$

OR

Q.2(B) Find the Eigen values and vectors of $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & -1 \\ 0 & -1 & 3 \end{bmatrix}$. 10M 1 3

Q.3(A) Find the residue of the function $f(z) = \frac{z-3}{z^2+2z+5}$ at its poles and hence evaluate $\oint_C f(z) dz$ where C is the circle $|z+1-i|=2$. 10M 2 3

OR

Q.3(B) Derive the polar form of CR equations. 10M 2 3

Q.4(A) Find the Laplace of the periodic function $f(t) = \begin{cases} \cos t, & 0 < t \leq \pi \\ 0, & \pi \leq t < 2\pi \end{cases}$. 10M 3 3

OR

Q.4(B) Find $L^{-1} \left\{ \frac{1}{2} \ln \left(\frac{s+1}{s-1} \right) \right\}$. 10M 3 4

Q.5(A) Find the Fourier transform of $f(x) = \begin{cases} 1 & \text{for } |x| < 1 \\ 0 & \text{for } |x| > 1 \end{cases}$. Hence evaluate $\int_0^{\infty} \frac{\sin x}{x} dx$. 10M 4 3

OR

Q.5(B) Find the Fourier sine transform of $f(x) = \frac{e^{-ax}}{x}$. 10M 4 3

Q.6(A) Find the inverse Z-transform of $\frac{2(z^2 - 5z + 6.5)}{(z-2)(z-3)^2}$ for $2 < |z| < 3$. 10M 5 3

OR

Q.6(B) Solve $y_{n+2} + 6y_{n+1} + 9y_n = 2^n$ with $y_0 = y_1 = 0$, using Z-transforms. 10M 5 4

*** END***

--	--	--	--	--	--	--	--	--	--

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech I Year II Semester (R20) Regular End Semester Examinations – NOVEMBER 2021

C PROGRAMMING AND DATA STRUCTURES

(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.No	Question	Marks	CO	BL
Q.1	i. Define a constant. List different constants in C	1M	1	1
	ii. List the data types in C. What is the size of each of these data types?	1M	1	1
	iii. How many steps required searching unsorted array of n elements?	1M	2	3
	iv. Which is the only function that all C program must contain?	1M	2	1
	v. How do you initialize a string?	1M	3	1
	vi. Can we store the address of pointer in other variable? Justify your answer.	1M	3	4
	vii. Why files are necessary? Define file	1M	4	2
	viii. Define structure.	1M	4	1
	ix. Abbreviate LIFO and FIFO	1M	5	1
	x. List out the operations performed in stack.	1M	5	1
Q.2(A)	i) What is a variable? Give the rules for naming a variable with examples.	5M	1	1
	ii) Develop a C program to generate multiplication table up to 10 of a given number.	5M	1	6
OR				
Q.2(B)	Explain the structure of a C program with an example.	10M	1	2
Q.3(A)	Develop a C program to find the greatest element in an array. Get the input from the user and the number of elements in the array should be greater than 10	10M	2	6
OR				
Q.3(B)	i) What is an array? Explain syntax to declare one dimensional array using example.	5M	2	3
	ii) Compare storage classes with an example programs.	5M	2	4
Q.4(A)	Develop a C program to swap of two numbers using pass by reference and pass by value.	10M	3	6
OR				
Q.4(B)	Explain the different arithmetic operations performed on Pointers with suitable examples.	10M	3	2
Q.5(A)	List and explain the major file operations in C.	10M	4	2
OR				
Q.5(B)	Develop a C program to count no of lines, words and characters in a file	10M	4	6
Q.6(A)	Explain the concept of queue with a neat diagram. What are the types of queue?	10M	5	2
OR				
Q.6(B)	Demonstrate the stack operation with an example.	10M	5	2

*** END***

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

B.Tech I Year II Semester (R20) Regular End Semester Examinations – NOVEMBER 2021

BASIC ELECTRICAL ENGINEERING

(Common to CE, ECE, CST, CSE-IOT, CSE-CS)

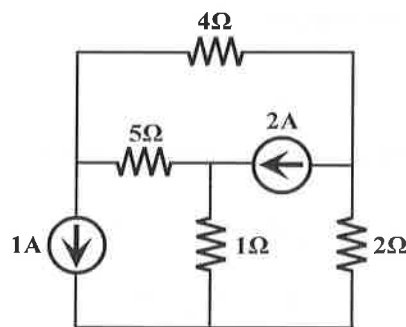
Time: 3Hrs

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

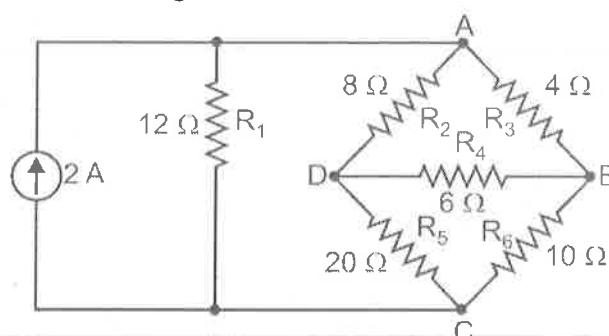
Q.1		Marks	CO	BL
	i. State Kirchoff's voltage Law.	1M	1	1
	ii. Explain the voltage source transformation	1M	1	2
	iii. Define peak factor of AC signal.	1M	2	2
	iv. State real and reactive power.	1M	2	1
	v. What is flux density?	1M	3	1
	vi. Define efficiency of a transformer.	1M	3	1
	vii. What is slip in an induction motor?	1M	4	1
	viii. Why armature core is laminated in a DC machine?	1M	4	1
	ix. How will an ideal diode behave in an electric circuit, when it is reverse biased?	1M	5	2
	x. What is the purpose of fuse?	1M	5	1

Q.2(A) In the network shown below find the current and voltage drops through 5Ω resistor, apply nodal analysis. 10M 1 3



OR

Q.2(B) Apply mesh current method, find the currents in resistances R₃, R₄, R₅ and R₆ of the circuit shown in Figure. 10M 1 3



Q.3(A)	i. What do you mean by AC quantity? Define cycle, Frequency, phase and phase difference of an alternating quantity.	4M	2	2
	ii. A coil, having both resistance and inductance, has a total effective impedance of 50Ω and the phase angle of the current through it with respect to the voltage across it is 45° lag. The coil is connected in series with a 40Ω resistor across a sinusoidal supply. The circuit current is 3A. Find, (a) supply voltage and (b) circuit phase angle.	6M	2	2
OR				
Q.3(B)	i. Write the advantages of 3-phase systems over single phase system.	3M	2	1
	ii. A balanced delta-connected load having an impedance $(15+j20) \Omega$ per phase is connected to a three-phase, 440V, and 50Hz supply. Find, the line currents and the power absorbed by the load. Assume RYB phase sequence.	7M	2	2
Q.4(A)	i. Draw and explain B-H curve of a ferro magnetic material.	6M	3	2
	ii. An iron ring of mean diameter 10cm is uniformly wound with 2000 turns of wire. When a current of 0.25 A is passed through the coil a flux density of 0.4 T is set up in the iron. Find, (a) the magnetizing force and (b) the relative permeability of the iron under these conditions.	4M	3	2
OR				
Q.4(B)	i. Draw the actual equivalent circuit of a single phase transformer.	5M	3	2
	ii. Derive the EMF equation of a transformer.	5M	3	2
Q.5(A)	With the help of neat sketch, explain the constructional details of a DC machine.	10M	4	2
OR				
Q.5(B)	Explain the D.O.L starting method of induction motor with neat diagram.	10M	4	2
Q.6(A)	Discuss in details the operation of a full wave bridge rectifier with a neat circuit diagram and relevant waveforms.	10M	5	2
OR				
Q.6(B)	Discuss the working of a miniature circuit breaker (MCB) with the help of neat diagram.	10M	5	2

*** END***

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

B.Tech I Year II Semester (R20) Regular End Semester Examinations – NOVEMBER 2021

BASIC ELECTRICAL ENGINEERING

(Common to CE, ECE, CST, CSE-IOT, CSE-CS)

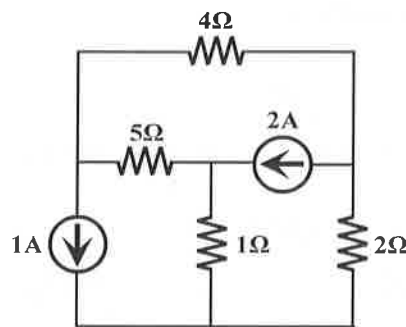
Time: 3Hrs

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

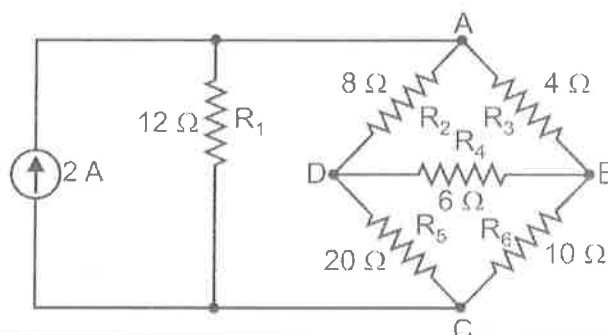
		Marks	CO	BL
Q.1	i. State Kirchoff's voltage Law.	1M	1	1
	ii. Explain the voltage source transformation	1M	1	2
	iii. Define peak factor of AC signal.	1M	2	2
	iv. State real and reactive power.	1M	2	1
	v. What is flux density?	1M	3	1
	vi. Define efficiency of a transformer.	1M	3	1
	vii. What is slip in an induction motor?	1M	4	1
	viii. Why armature core is laminated in a DC machine?	1M	4	1
	ix. How will an ideal diode behave in an electric circuit, when it is reverse biased?	1M	5	2
	x. What is the purpose of fuse?	1M	5	1

Q.2(A) In the network shown below find the current and voltage drops through 5Ω resistor, apply nodal analysis. 10M 1 3



OR

Q.2(B) Apply mesh current method, find the currents in resistances R₃, R₄, R₅ and R₆ of the circuit shown in Figure. 10M 1 3



Q.3(A)	i. What do you mean by AC quantity? Define cycle, Frequency, phase and phase difference of an alternating quantity.	4M	2	2
	ii. A coil, having both resistance and inductance, has a total effective impedance of 50Ω and the phase angle of the current through it with respect to the voltage across it is 45° lag. The coil is connected in series with a 40Ω resistor across a sinusoidal supply. The circuit current is 3A. Find, (a) supply voltage and (b) circuit phase angle.	6M	2	2
OR				
Q.3(B)	i. Write the advantages of 3-phase systems over single phase system.	3M	2	1
	ii. A balanced delta-connected load having an impedance $(15+j20) \Omega$ per phase is connected to a three-phase, 440V, and 50Hz supply. Find, the line currents and the power absorbed by the load. Assume RYB phase sequence.	7M	2	2
Q.4(A)	i. Draw and explain B-H curve of a ferro magnetic material.	6M	3	2
	ii. An iron ring of mean diameter 10cm is uniformly wound with 2000 turns of wire. When a current of 0.25 A is passed through the coil a flux density of 0.4 T is set up in the iron. Find, (a) the magnetizing force and (b) the relative permeability of the iron under these conditions.	4M	3	2
OR				
Q.4(B)	i. Draw the actual equivalent circuit of a single phase transformer.	5M	3	2
	ii. Derive the EMF equation of a transformer.	5M	3	2
Q.5(A)	With the help of neat sketch, explain the constructional details of a DC machine.	10M	4	2
OR				
Q.5(B)	Explain the D.O.L starting method of induction motor with neat diagram.	10M	4	2
Q.6(A)	Discuss in details the operation of a full wave bridge rectifier with a neat circuit diagram and relevant waveforms.	10M	5	2
OR				
Q.6(B)	Discuss the working of a miniature circuit breaker (MCB) with the help of neat diagram.	10M	5	2

*** END***

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 20ENG101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech I Year II Semester (R20) Regular End Semester Examinations – NOVEMBER 2021**PROFESSIONAL ENGLISH**

(Common to EEE, ME, CSE, CSE-DS, CSE-AI)

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

		Marks	CO	BL
Q.1	i. Write the synonyms for the following words. Begin, Beautiful	1M	1	2
	ii. Change the following sentence from <i>direct speech</i> to <i>indirect speech</i> . "Don't waste your money" she said.	1M	1	3
	iii. Add a suffix to the verb given to form a meaningful word. "encourage"	1M	2	3
	iv. List out the ways in which you have explored various choice and possibilities of your chosen UG programme, branch of study and college.	1M	2	5
	v. Frame a "wh" question for the following sentence: My cousin gave me this present.	1M	3	2
	vi. How do you scan a text for specific information?	1M	3	1
	vii. Fill in the blank with suitable adverb given in brackets: The thief entered a house..... (sweetly, quietly, quietly)	1M	4	3
	viii. Give a synonym of the underlined word: I am <u>capable</u> of achieving anything in life	1M	4	3
	ix. Write the importance of body language in one or two sentences.	1M	5	4
	x. Write the importance of recommendations in report writing in one or two sentences	1M	5	2
Q.2(A)	Fill in the blanks with appropriate verb forms	10M	1	2
	i) Our friends _____ for you for over an hour. (wait)			
	ii) It is not worth _____ so much money for this concert. (pay)			
	iii) When I reached the station, the train _____. (leave)			
	iv) I _____ the Taj Mahal last month. (visit)			
	v) They _____ (attend) the meeting tomorrow.			
	vi) Someone _____ at the door. (knock)			
	vii) Water _____ at 100°C. (boil)			
	viii) I _____ your letter yesterday. (receive)			
	ix) The police _____ no stone unturned to trace the culprits. (leave)			
	x) The robber _____ him on the head. (strike)			
	OR			
Q.2(B)	Connect the outlines to form a readable story	10M	1	6
	Lord Buddha appointed a day for the collection of alms -----devotees brought him gifts---rich men came with their precious Gifts-----came an old and poor woman in a pomegranate-----it was hardly eaten by her-----Lord accepted it both hands coming from his seat.			
Q.3(A)	Write a paragraph on the following topics.	10M	2	6
	i) Environmental Protection and ii) Handling Global Pandemics.			
	OR			

Q.3(B)	Read the following passage and answer the questions given below. Can we see (1) _____ (this/that/those) the earth is a globe? Yes, we can, when we watch a ship that sails out to sea. If we watch closely, we see that the ship begins (2) _____ (disappeared/disappearing/disappear). The bottom of the ship disappears first, and then the ship seems to sink lower and lower, (3) _____ (till/until/while) we can only see the top of the ship, and then we see nothing at all. What is hiding the ship from us? It is the earth. Stick a pin most of the way into an orange, and _____ (slowly/softly/sensitively) turn the orange away from you. You will see the pin disappear, _____ (just/right/fair) a ship does on the earth.	10M	2	3
Q.4(A)	(a) Make question tags for the following statements: i) They'll be arriving soon. ii) We aren't late. ii) The bus isn't coming. iii) You weren't sleeping. iv) He can help.	5M	3	6
	(b) Arrange the sentences to form a logical sequence to construct a coherent paragraph. i. Such a man goes on working hard and even if he fails, he never downcast. ii. It is therefore, the man who labours hard with a strong resolution and an unshaken will, who achieves success and makes his fortune. iii. In turn failures make him all the more determined and resolute and he persists in his task till he attains the desired success. iv. A man who possesses a strong will and firm determination finds all difficulties solved. v. To him there are a thousand ways open to steer clear of all dangers and difficulties.	5M	3	5
OR				
Q.4(B)	Write dialogue between two friends about COVID-19. (10 to 15 exchanges)	10M	3	6
Q.5(A)	Write an Email about 100 words to your friend describing how you are enjoying your summer vacation.	10M	4	6
OR				
Q.5(B)	"Wearing a mask all day causes health problems" Justify the statement in 300 words	10M	4	1
Q.6(A)	The Education Minister of your state is planning to set up a state university in your region. So, he has directed you to gather information on the possibilities of setting up a state university in your area. Write a report using the following points: <ul style="list-style-type: none"> • Importance of opening a state university in your area. • Availability of land in your area and other facilities like water, healthcare. • Required infrastructure. • Requirement of teaching and non-teaching staff. • Any other relevant point. 	10M	5	6
OR				
Q.6(B)	Write a report on the workshop on communication skills attended by you.	10M	5	6

*** END***

Hall Ticket No:

Question Paper Code: 20ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech I Year II Semester (R20) Regular End Semester Examinations –NOVEMBER 2021

ENGINEERING GRAPHICS

(Common to EEE, ME & CSE)

Time: 3Hrs

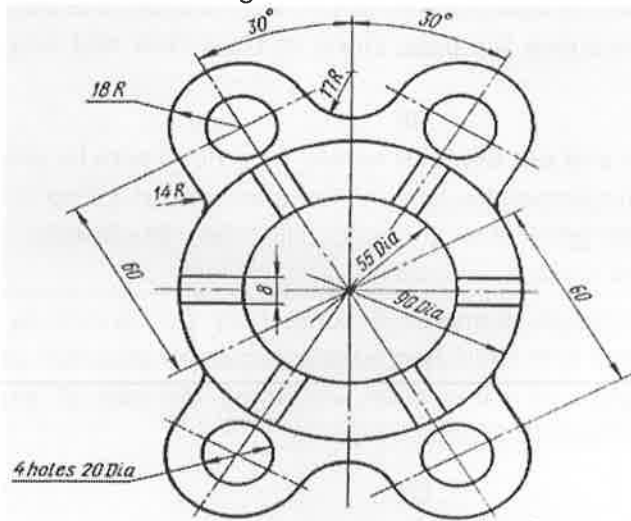
Max Marks: 60

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

Marks CO BL

Q.1(A) Draw the figure shown below using Auto CAD commands and dimension it.

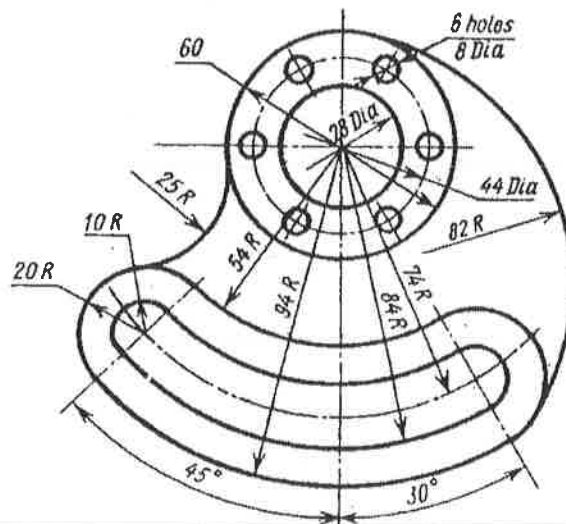
12M 1 3



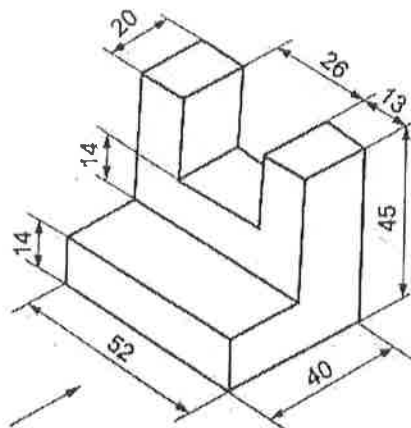
OR

Q.1(B) Draw the figure shown below using Auto CAD commands and dimension it.

12M 1 3



Q.2(A)	i. A point G is 20 mm above H.P, 25mm in front of V.P and 30mm in front of P.P. Draw front view, top view and left side view of the point.	6M	2	3
	ii. A point H is 35mm below H.P, 30mm behind V.P and 40mm in front of P.P. Draw front view, top view and left side view of the point.	6M	2	3
OR				
Q.2(B)	A line AB 70mm long is inclined at an angle of 60° to H.P and 45° to V.P. The point A is 30mm above H.P and 30mm in front of V.P. Draw its Projections and find the apparent inclinations with HP and VP.	12M	2	3
Q.3(A)	A pentagonal pyramid side of base 30 mm and axis 65 mm is resting with one of its slant edge on the HP. The axis of the pyramid is parallel to VP. Draw its projections.	12M	3	3
OR				
Q.3(B)	Draw the projections of a regular hexagon of 25mm side having one of its sides in the H.P and inclined at 60° to V.P and its surface making an angle of 45° with H.P.	12M	3	3
Q.4(A)	A Pentagonal prism of base edge 30mm side and axis 65mm has its base horizontal and an edge of the base parallel to V.P. A horizontal section plane cuts it at a distance of 25mm above the base. Draw its front view and sectional top view.	12M	4	4
OR				
Q.4(B)	A cylinder of base 50mm and axis 60mm is resting on ground with its axis vertical. It is cut by a section plane perpendicular to V.P and inclined at 45° to H.P passing through the top of the generator and cuts all other generators. Draw its development of its lateral surface.	12M	4	4
Q.5(A)	A Vertical cylinder of 100mm diameter is completely penetrated by another cylinder of 70mm diameter with their axes bisecting each other at 90° . Draw their projections showing curves of penetration, assuming the axis of penetrating cylinder to be parallel to the V.P.	12M	5	4
OR				
Q.5(B)	Draw Front view ,Topview and sideview for the given isometric view.	12M	5	3



*** END***

Hall Ticket No:

Question Paper Code: 20ME101

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

B.Tech I Year II Semester (R20) Regular End Semester Examinations –NOVEMBER 2021
ENGINEERING GRAPHICS

(Common to EEE, ME & CSE)

Time: 3Hrs

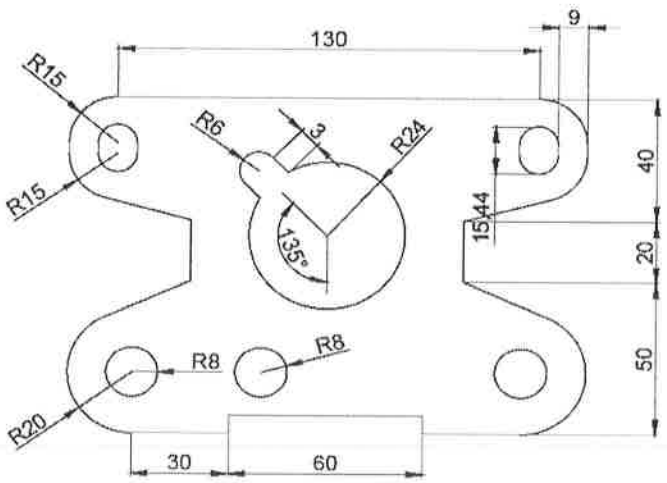
Max Marks: 60

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

Marks CO BL

Q.1(A) Draw the figure shown below using Auto CAD commands and dimension it.

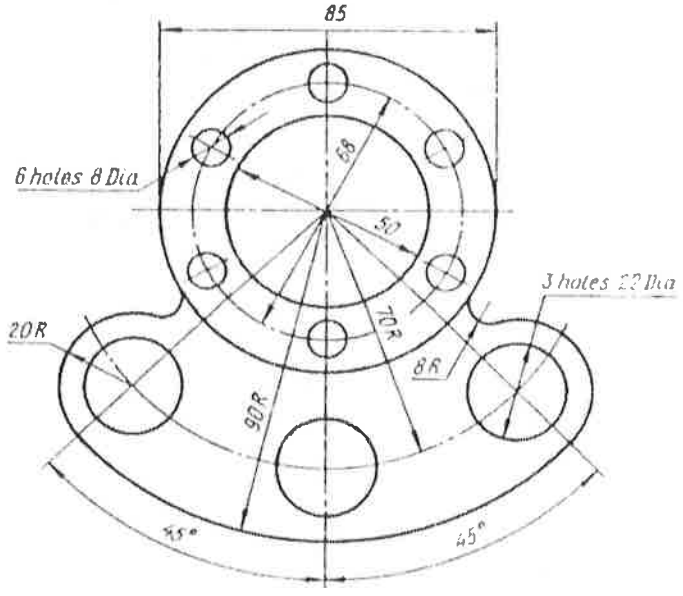
12M 1 3



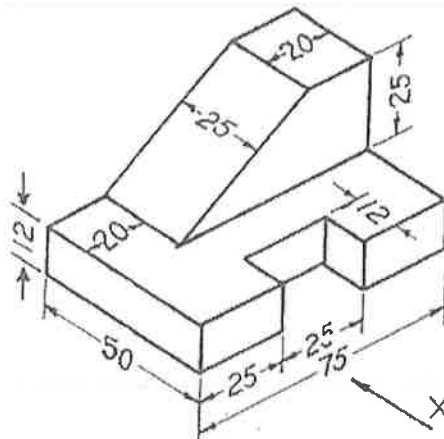
OR

Q.1(B) Draw the figure shown below using Auto CAD commands and dimension it.

12M 1 3



Q.2(A)	The Top view of a 85mm long line measures 55mm. While the length of its Front view is 45mm. Its one end A is in H.P and 20mm in front of V.P. Draw the projections of AB and determine its inclinations with H.P and V.P	12M	2	3
OR				
Q.2(B)	Draw the projections of the following points on the same reference line XY by keeping the distance between the projectors are 40mm. <ul style="list-style-type: none"> ➤ Point A, 40mm above the H.P. and 30mm in front of the V.P. ➤ Point B, 50mm below the H.P. and 40mm behind the V.P. ➤ Point C, 35mm above the H.P. and 55mm behind the V.P. 	12M	2	3
Q.3(A)	A square ABCD of 50mm side has its corner A in the H.P. its diagonal AC is inclined at 30° to the H.P and the diagonal BD inclined at 45° to the VP and parallel to H.P. Draw its projections.	12M	3	3
OR				
Q.3(B)	A Hexagonal prism of base edge 30 mm and axis 70 mm has an edge of its base in the V.P such that the axis is inclined at 30° to V.P and parallel to H.P. Draw its projections.	12M	3	3
Q.4(A)	A hexagonal prism of base side 30mm and height 80 mm resting on its base on H.P with one rectangular face perpendicular to V.P. It is cut by a section plane inclined at 45 degrees to the H.P and passing through the midpoint of the axis. Draw the development of the lateral surface of the truncated prism.	12M	4	4
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 40 mm from base. Draw the front view and sectional top view.	12M	4	4
Q.5(A)	Draw front view ,topview and side viewfor the isometric view given below	12M	5	4



OR

Q.5(B)	A vertical square prism, base 50mm side and height 90mm has a face inclined at 30° to the VP. It is completely penetrated by another square prism, base 40mm side and 100mm long, faces of which are equally inclined to the VP. The axes of the two prisms are parallel to the VP and bisect each other at right angles. Draw the projections showing lines of the inter section.	12M	5	3
--------	---	-----	---	---

*** END***

Hall Ticket No:

Question Paper Code: 20ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech I Year II Semester (R20) Regular End Semester Examinations –NOVEMBER 2021

ENGINEERING GRAPHICS

(Common to CSE, CSE-DS, CSE-AI)

Time: 3Hrs

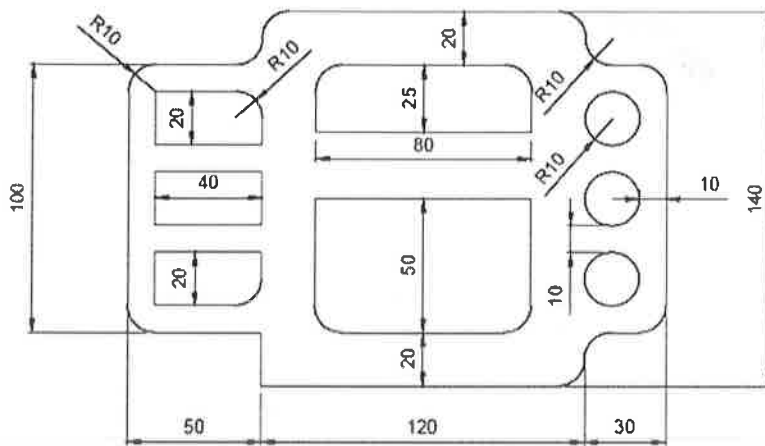
Max Marks: 60

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

Marks CO BL

Q.1(A) Draw the figure shown below using Auto CAD commands and dimension it,

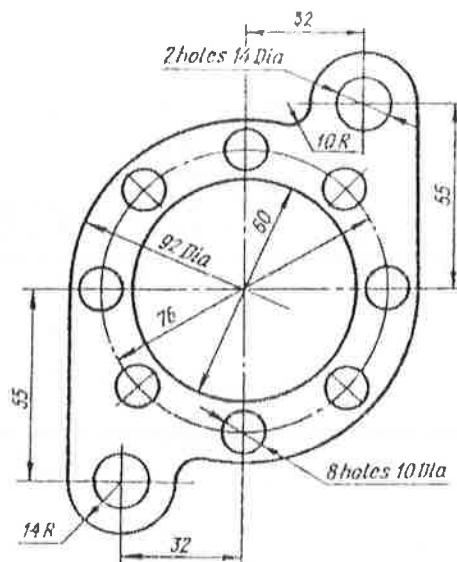
12M 1 3



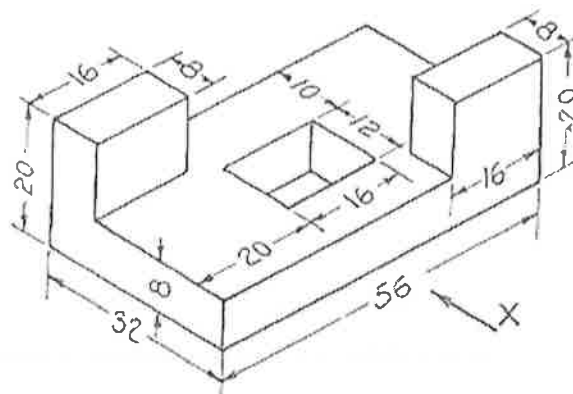
OR

Q.1(B) Draw the figure shown below using Auto CAD commands and dimension it,

12M 1 3



Q.2(A)	Two points C and D are in the H.P. The point C is 30mm in front of V.P and D is behind the V.P. the distance between their projectors is 40mm and line joining their top views makes an angle of 40° with XY. Find the distance of the point C from the V.P. Also state the quadrants in which point C and D lies.	12M	2	3
OR				
Q.2(B)	A line CD, 90mm long, measures 72mm in front view and 65mm in top view. Draw the two views of the line if it fully lies in the first quadrant. Find the true inclinations of the line. Point C lies at a distance 20mm from the reference planes.	12M	2	3
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° to the HP and the top view of the diameter AB making an angle of 30° with the VP.	12M	3	3
OR				
Q.3(B)	A Pentagonal pyramid of base side 30mm and axis 65mm has an edge of its base on the ground. The axis is inclined at 40° to the ground and parallel to V.P. Draw its projections.	12M	3	3
Q.4(A)	A square prism side of base 40mm and axis 70mm long Its base is resting on HP and its face is equally inclined to VP. It is cut by section plane which is perpendicular to VP and inclined 45° to HP and passing through a point 25mm from the top of the axis of the prism. Draw front view, sectional top view and true shape of the square prism	12M	4	4
OR				
Q.4(B)	A Hexagonal prism of base side 30mm and height 80 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 through the mid point of the axis. Draw the development of the lateral surface of the truncated prism.	12M	4	4
Q.5(A)	Draw front view ,topview and side viewfor the isometric view given below	12M	5	4



OR				
Q.5(B)	A Vertical cylinder of 80mm 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	5	3

*** END***

Hall Ticket No:

Question Paper Code: 20ME101

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

B.Tech I Year II Semester (R20) Regular End Semester Examinations –NOVEMBER 2021

ENGINEERING GRAPHICS

(Common to CSE, CSE-DS, CSE-AI)

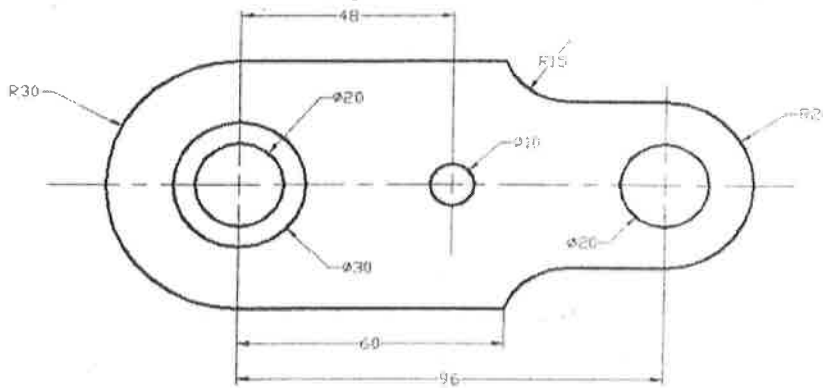
Time: 3Hrs

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 figure shown below using Auto CAD commands and dimension it.

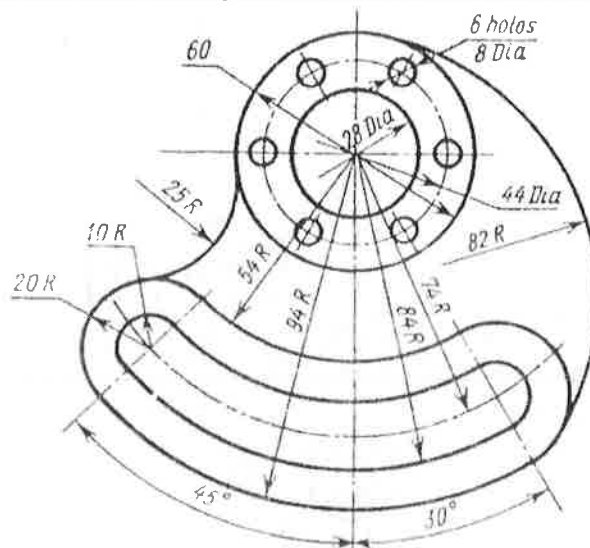
Marks 12M
CO 1
BL 3



OR

Q.1(B) Draw the figure shown below using Auto CAD commands and dimension it.

12M 1 3

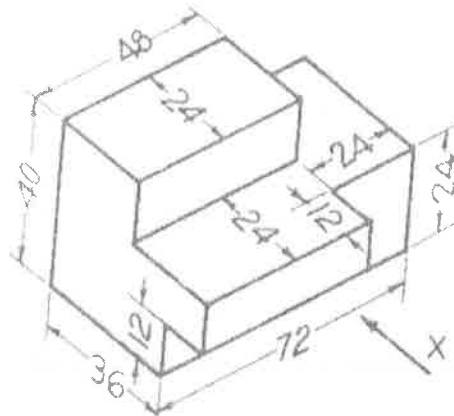


Q.2(A) A line CD 80mm long is inclined at an angle of 30° to HP and 45° to VP. The point C is 30mm above HP and 40mm in front of VP. Draw the projection of the straight line and find its apparent inclinations.

6M 2 3

OR

Q.2(B)	Draw the projections of the following points on the same ground line. Name the quadrants. <ul style="list-style-type: none"> ➤ Point A, 20mm in front of the V.P. and 60mm above the H.P. ➤ Point B, 25mm below the H.P. and on the V.P. ➤ Point C, 15mm below the H.P. and 50mm behind the V.P. 	12M	2	3
Q.3(A)	Draw the projections of a regular pentagon of 25mm side, which is resting with its base side on the HP. The surface of the pentagon is inclined at 45° to the HP and the base side resting on the HP is inclined at 60° to the VP. OR	12M	3	3
Q.3(B)	A Hexagonal Pyramid of base edge 30 mm and height 60mm has a triangular face on the ground and the axis is parallel to V.P. Draw its projections.	12M	3	3
Q.4(A)	A Pentagonal prism of base edge 30mm side and axis 65mm has its base horizontal and an edge of the base parallel to V.P. A horizontal section plane cuts it at a distance of 25mm above the base. Draw its front view and sectional top view. OR	12M	4	4
Q.4(B)	A cylinder of base 50mm and axis 60mm is resting on ground with its axis vertical. It is cut by a section plane perpendicular to V.P and inclined at 45° to H.P passing through the top of the generator and cuts all other generators. Draw its development of its lateral surface.	12M	4	4
Q.5(A)	A vertical square prism, base 50mm side and height 90mm has a face inclined at 30° to the VP. It is completely penetrated by another square prism, base 40mm side and 100mm long, faces of which are equally inclined to the VP. The axes of the two prisms are parallel to the VP and bisect each other at right angles. Draw the projections showing lines of the inter section. OR	12M	5	4
Q.5(B)	Draw Front view ,Topview and sideview for the given isometric view.	12M	5	3



*** END***