Hall	Tick	et Number :													
Cod	Code: 4GC13								1	1	I			R-1	4
	E	B.Tech. I Ye	ear S	Supp	oler	nen	tary	' Exc	amir	natio	ons	Мау	/June	2016	
					-			-	nem		-				
Мах	. Mo	arks: 70		(COI	nnc		AIL	Bran	cnes	>)			Time: 3 H	Hours
Answ	ver c	III five units b	by cł	1005	sing	one		stior	n fror	n ec	hor	unit	(5×14	= 70 Mai	rks)
								UNIT	- I						
1.	a)	What is hard	Iness	s of v	vater	? Me	ntion	its u	inits.	Calc	ulate	e the	carbona	ate and no	n
	ŗ	carbonate ha				•							•	•	
	b)	$Mg(HCO_3)_2 = 0$		-		-		-	-			-		-	7M 7M
	b)	Describe the	eues	aina	llion	proce	388 0	oy rev OR		osn	iosis	with	aneats	SKEICH	7 111
2.		What are b	oiler	tro	ubles	:? Н	ow			cau	sed?	, Giv	ve suad	nestions to	0
_ .		minimize the						are	ling	ouu		U.	ie euge		14M
							l	JNIT	-11						
3.	a)	Differentiate	betv	veen	cath	odic	prote	ectior	n and	l ano	dic p	oroted	ction		8M
	b)	What is the	emf o	of the	e follo	owing	g cell	at 2	5ºC						
		Zn (s)/Zn++ (0.1 N	Л) С	u++ (1.75	M)/C	u (s)	. The	e star	ndaro	d em	f of the o	cell is 1.1 \	√ 6M
								OR	-						
4.		Define fuel of are the adva		•							•				
		Why is wate	-										louolion		 14M
							ι	JNIT-	-111						
5.		What are sili	cone	es? G	Give p	orepa	aratio	on, pr	oper	ties a	and a	applic	cations of	of silicones	s 14M
								OR	1						
6.		Give an acco		of pre	epara	tion,	prop	erties	and	engii	neeri	ng us	ses of th	e following	4M
		(i) Bake (ii) PVC	lite												4M
		(iii) Styre			r										3M
		(iv) Nitrile	e rub	ber			[3M
								JNIT-							
7.		What are the for metallurg							-			escrit	be the m	nanufactur	e 14M
		for metallary		JORC	by C		IOIIII	OR		liou					1 - 1 1 1
8.	a)	With a neat	diagr	am o	desci	ibe t	he O			ana	lysis	met	nod.		10M
	b)	Define calori	-						-					e of fuel.	4M
							ι	JNIT	-V						
9.		What are r	ocke	et pr	opel	lants	? H	ow a	are t	they	clas	sifie	d? Wha	at are the	е
		requirements	s for	the s	selec	tion o	of a g	good	prop	ellan	t?				14M
						_		OR							
10.		What is the manufacture								•					s 14M
			~ y			, v		**	r 51 (2		2400			

Hall Ticket Number :					Г	
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Code: 4G513

B.Tech. I Year Supplementary Examinations May/June 2016

R-14

Engineering Drawing

(Common to EEE, ECE, CSE & IT)

Max. Marks: 70 Time: 3 Hours Answer all five units by choosing one question from each unit ($5 \times 14 = 70$ Marks)

UNIT–I

1. The distance between two fixed points is 100mm. a point moves in a plane through these two points, such that the sum of its distances from these two fixed points is always 140mm. Trace the path of the point. Draw a tangent and a normal to the curve at a point on it at a distance of 45mm from one of the fixed points.

OR

2. Draw an epicycloid when the directing and generating circles are each 50mm dia. Draw a tangent and a normal to the curve at a point on it 60mm. from the centre of the directing circle.

UNIT–II

3. The front view of a 125mm long line PQ measures 75mm and its top view measures 110mm. The end P is at distances of 20mm each from the reference planes. Draw its projections and determine its inclinations with the reference planes.

OR

4. A line AB is inclined at 40° to H.P. A is 25mm above H.P. and 30mm in front of V.P. The top view of the line is 70mm long and is inclined at 30° to XY. Draw the projections and determine true length and also its inclination with V.P.

UNIT-III

5. Draw the projections of a regular hexagon of 30mm side, having one of its sides in the H.P. but inclined at 60^o to V.P., and its surface making an angle of 45^o with H.P.

OR

6. The top view of a plate, the surface of which is perpendicular to V.P. and inclined at 60^o to H.P., is a circle of 60mm dia. Determine its true shape.

UNIT-IV

7. Draw the projections of a pentagonal prism, 30mm base edges & 65mm long axis, when it has a corner of its base in the V.P., axis inclined at 30° to V.P. and the front view of the longer edge passing through the corner in the V.P. making an angle of 45° with XY

OR

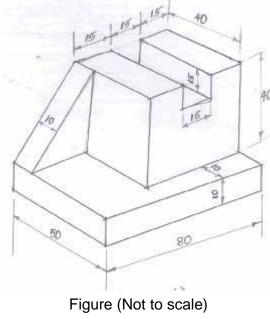
8. Draw the projections of a cube of 40mm long edges, resting on one of its corners in the H.P. and a solid diagonal perpendicular to V.P.

UNIT–V

9. Draw the isometric view of the frustum of the hexagonal pyramid, base 50mm long edges, top 25mm long edges & height 50mm.

OR

10. Draw the front view, side view and top view of the solid shown in figure.



Hall	Ticke	et Number :	
Code	e: 40	GC14 R-14	
	E	B.Tech. I Year Supplementary Examinations May/June 2016	
		Mathematics-I (Common to All Branches)	
Мах	. Mc	irks: 70 Time: 3 Hou	Urs
Answ	er a	Il five units by choosing one question from each unit ($5 \times 14 = 70$ Marks)
1.	a)		714
		Find the orthogonal trajectories of the family of curves $r^n = a^n \cos n_n$ Solve $\frac{d^2 y}{dx^2} + 4y = \tan 2x$ by the method of variation of parameters	7M
	,		7M
2.		OR	
Ζ.	a)	If the temperature of a cup of coffee is 92°C when freshly poured in a room having temperature 24°C. In one minute it was cooled to 80°C. How long a	
		period must elapse before the temperature of the cup becomes 65°C?	6M
	b)	Solve $(D^3 + 1)y = e^{-x} + \cos(2x - 1)$	8M
		UNIT–II	
3.	a)	Verify Rolle' theorem for $f(x) = e^{-x} \sin x$ in $[0, f]$.	8M
	b)	If $u = x + y + z$, $uv = y + z$, $uvw = z$, then prove that $\frac{\partial(x, y, z)}{\partial(u, v, w)} = u^2 v$	6M
		OR	om
4.	a)	Verify the Meclaurin's theorem for $f(x) = (1-x)^{\frac{5}{2}}$ with Lagrange's form of	
	.,	remainder up to 3 terms with x=1.	7M
	b)	Discuss the maxima and minima of $f(x, y) = x^3 y^2 (1 - x - y)$.	7M
		UNIT–III	
5.	a)	Trace the curve $y^2(2a-x) = x^3$	7M
	b)	Evaluate $\iint r \sin_n drd_n$ over the cardioids $r = a(1 - \cos_n)$ above the initial line.	7M
		OR	
6.		Change of order of integration and hence evaluate the double integral $\int_{-\infty}^{1} \int_{-\infty}^{2-x} xy dx dy$	
-		$\begin{array}{c} \hline \\ 0 \\ x^2 \end{array}$	14M
		UNIT–IV	
7.	a)	Evaluate $L\{te^{3t}\sin 2t\}$	4M
	b)	Find the Laplace transform of periodic function	
		$f(t) = \begin{cases} 1, & 0 < t < a/2 \\ -1, & a/2 < t < a \end{cases} $ And $f(t+a) = f(t)$.	10M
		OR	10101
8.		Solve $y^{11} + 2y^1 + 5y = e^{-t}$, $y(0) = 0$, $y^1(0) = 1$ using Laplace transform technique.	14M
		UNIT-V	
9.	a)	Find the directional derivative of $2xy + z^2$ at (1,-1,3) in the direction of $\overline{i} + 2\overline{j} + 3\overline{k}$.	7M
	b)	Prove that $div\left(\frac{\overline{r}}{r}\right) = \frac{2}{r}$, where $\overline{r} = x\overline{i} + y\overline{j} + z\overline{k}$ and $r = \overline{r} $	-7 N #
		OR	7M
10.		Verify Gauss divergence theorem for $\overline{F} = (x^3 - yz)\overline{i} - 2x^2 y\overline{j} + z\overline{k}$ taken over	
		the surface of cube bounded by the planes $x=y=z=a \& x=y=z=0$.	14M

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Hall Ticket Number :								[

Code: 4G111

B.Tech. I Year Supplementary Examinations May/June 2016

Programming in C & Datastructures

(Common to CSE & IT)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT–I

- 1. a) Explain various kinds of Computer Systems. Explain the differences between them
 - b) What is an algorithm and flowchart and describe the various symbols in flowchart. Draw a flowchart for adding two numbers

OR

- 2. a) Explain the structure of a "C" programming language
 - b) Explain the "C" input and output library functions *printf* and *scanf* with examples.

UNIT–II

- 3. a) What are the bit-wise operators and give an example for each operator
 - b) Explain the basic operations on Strings. Write a program to read string from keyboard and display it using character array or pointers.

OR

- 4. a) Write the syntax for various control statements and give example for each control statement.
 - b) Write a program for two dimension Matrix reading from keyboard and displaying on the monitor using arrays

UNIT-III

- 5. a) What is parameter pass by value and pass by reference in functions? Write a program to exchange the values of two variables using functions in both methods
 - b) What is a pointer and write syntax for pointer declaration. Explain the dynamic memory allocation and give an example for it.

OR

- 6. a) Explain pointers to functions and command line arguments with examples
 - b) Write a program to find the substring of a given string using pointers

UNIT–IV

- 7. a) Explain nested and array of structures.
 - b) Explain character input and output functions with example programs

OR

- 8. a) Write and explain selection sort or quick sort program with example
 - b) Write and Explain binary search method with example

UNIT–V

- 9. a) Explain infix, prefix and postfix notations. Give an example converting from one form to other forms
 - b) Write a program for insertion, deletion and searching of an item in the tree data structure.

OR

- 10. a) Define and Explain Stack and Queue and their operations
 - b) Explain the difference between queue and circular queues.

Hall Ticke	et Number :	
Code: 40	GC15 R-14	
E	B.Tech. I Year Supplementary Examinations May/June 2016 Mathematical Methods (Common to CSE & IT)	
Max. Mc		Jrs
Answer a	Il five units by choosing one question from each unit (5 x 14 = 70 Marks	

	UNIT-I	
1. a)	Define the following and give one example	<u></u>
F)	i) Symmetric matrix. ii) Skew-symmetric matrix iii) Orthogonal matrix	6M
D)	Define the rank of the matrix. Find the rank of the matrix $\begin{bmatrix} 1 & 1 & 2 & 2 \end{bmatrix}$	
	$\begin{vmatrix} 1 & 1 & 2 & 3 \\ 3 & 4 & 7 & 10 \end{vmatrix}$	
	$A = \begin{bmatrix} 1 & 1 & 2 & 3 \\ 3 & 4 & 7 & 10 \\ 5 & 7 & 11 & 17 \\ 1 & 0 & 12 & 11 \end{bmatrix}$ by reducing it to Canonical form.	
	6 8 13 16	8M
	OR	OIVI
2. a)	Find the values of a and b for which the equations $x + y + z = 6$, $x + 2y + 3z$	
Ζ. α)	and $x+2y+$ } $z = \sim$ will have i) no solution ii) a unique solution iii) an infinite	
	number of solutions.	7M
		7 101
b)	Find the matrix <i>M</i> that diagonalises the matrix $A = \begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$ by means of a	
	similarity transformation. Verify your answer.	7M
	UNIT–II	
3. a)	Reduce the quadratic form $2x_1^2 + 6x_2^2 + 2x_3^2 + 8x_1x_3$ to the canonical form by	
	orthogonal transformation. Also find the rank, index, signature and the nature of quadratic form.	7M
b)	Verify that the sum of the eigen values of A equals the trace of A and their	
	$\begin{bmatrix} 2 & 1 & 0 \end{bmatrix}$	
	product equals $ A $, for the matrix $A = \begin{bmatrix} 1 & 4 & 1 \\ 0 & 1 & 4 \end{bmatrix}$.	
	$\begin{bmatrix} 0 & 1 & 4 \end{bmatrix}$	7M
	OR	
4. a)	Define eigen values and eigen vectors of a matrix.	4M
	$\begin{bmatrix} 11 & -4 & -7 \end{bmatrix}$	
b)	Find the eigen values and eigen vectors of the Matrix $A = \begin{bmatrix} 11 & -4 & -7 \\ 7 & -2 & -5 \\ 10 & -4 & -6 \end{bmatrix}$	10M

UNIT-III

		UNIT-III							
5.	a)	Find the real root of $x \log_{10} x - 1.2 = 0$ correct to five places of decimal using							
		Regula-Falsi method.	7M						
	b)	Derive Newton's forward and backward difference interpolation formulae.	7M						
		OR							
6.	a)	Evaluate $\sqrt{12}$ to four decimal places by Newton-Raphson Method.	7M						
	b)	Write down the general formula for pth root. Find cube root of 10.	7M						
		UNIT–IV							
7	2)	Evelope $\int_{0}^{2} \frac{1}{1} dv$ using Transmitted rule. Taking $dv = 0.25$							
7.	a)	Evaluate $\int_{0}^{2} \frac{1}{1+x^{2}} dx$ using Trapezoidal rule, Taking $h = 0.25$.	7M						
	b)	Find the curve $Y = aX + (b/X)$ to the following data.							
		X 1 2 3 4							
		Y -1.51 0.99 3.88 7.66	7M						
		OR							
8.	a)	Given $\frac{dy}{dx} = \frac{y-x}{y+x}$ with $y=1$ for $x=0$. Find y approximately for $x=0.1$ by							
		Euler's method.	7M						
	b)	Find a solution of the set of simultaneous equations							
		$\frac{dx}{dt} = xy + t$, $\frac{dy}{dt} = ty + x$ Subjected to initial conditions $x = 1$, $y = -1$, $t = 0$							
		using Taylor's series method.	7M						
		UNIT-V							
9.	a)	Expand $f(x) = (x-1)^2$ as a Fourier cosine series in $0 < x < 1$	7M						
			7101						
	b)	Find the half range sine series for $f(x) = \begin{cases} x, & 0 \le x \le 1 \\ 2-x, & 1 \le x \le 2 \end{cases}$	714						
		OR	7M						
10.	a)								
		i) $z = (x+a)(y+b)$ ii) $f(x^2 + y^2 + z^2, z^2 - 2xy) = 0$	7M						
	b)	Find the complete integral of the first order the differential equation (n + q)(q - rn - yq) = 1							
		i) $(p+q)(z-xp-yq) = 1$ ii) $p = -p^2(y - p^2) + q^2(y - p^2)$							
		ii) $pqz = p^2(xq + p^2) + q^2(yp + q^2)$	7M						
