

Course Code: B20HS1101						
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)				R 20		
I B. Tech I Semester –MODEL PAPER						
ENGLISH						
Common to AIDS,CE,CSE,ECE,EEE,IT&ME						
Time : 3Hrs.			Max. Marks: 70			
Answer any one Question from EACH UNIT.						
All questions carry equal marks.						
				M	CO	KL
UNIT-I						
1	a.	Compose an essay on “A Drawer full of happiness”.	7	2	K3	
	b.	Identify & Write suitable verb forms for the following. i) He _____ (work) in the college when his brother studied his engineering. ii) He _____ (finish) his task before his friend visited him. iii) As soon as he _____ (get) the telegram, at once he started. iv) It is high time she _____ (do) her project.. v) The book _____ (comprise) five chapters. vi) The photo of my grandfather _____ (hang) on the wall. vii) Neither team _____ (score) any goal.	7	5	K3	
OR						
2	a.	Compose an essay on any ONE of the following. i) Pros and cons of Social Networking Sites ii) The essence of education	7	2	K3	
	b.	Read the following passage and answer the questions that follow: Liquids are practically incompressible. Unlike gases but like solids, a liquid does not change much in volume when the pressure on it is changed, even when the pressures of thousands of atmospheres are involved. The kinetic theory accounts for this saying that the amount of free space between the molecules of a liquid has been reduced almost to a minimum. Any attempt to compress the liquid meets with resistance as the electron cloud of one molecule repels the electron cloud of the adjacent molecule. Liquids diffuse slowly, but in gases it is more rapid. It occurs because molecules have kinetic energy and move from one place to another .In a liquid ,molecules do not move very far before they collide with neighbouring molecules. i) What is the nature of the liquids? ii) What does kinetic theory say about the incompressible nature of liquids? iii) What are the different kinds of matter? iv) Give the meaning for ‘diffusion’? v) Why diffusion is more rapid in gases? vi) Give the antonym for ‘kinetic’. vii) Mention a suitable title.	7	2,5	K3	

UNIT-II					
3	a.	Compose an essay on the relevance of Nehru's letter to Indira to the present context.	7	2	K3
	b.	Write antonyms and construct sentences for any SEVEN of the following words . i) procreate ii) hectic iii) reckon iv) beguile v) opulent vi) suffuse vii) astute viii) mandatory	7	5	K3
OR					
4	a.	Formulate a precis for the following passage. Most of us use the products of science – railways, aeroplanes, electricity, wireless and thousands of others – without thinking how they came into existence. We take them for granted, as if we were entitled to them as a matter of right. We are very proud of the fact that we live in an advanced age and are ourselves very advanced. Now, there is no doubt that our age is very different from previous ages and I think it is perfectly correct to say that is far more advanced. But it is a different thing from saying that we, as individuals or groups, are more advanced. It would be the height of absurdity to say that because an engine driver can run an engine and Plato or Socrates could not, the engine driver is more advanced than, or is superior to, Plato or Socrates. But it would be perfectly correct to say that the engine itself is a more advanced method of locomotion than Plato's chariot was.	7	2	K3
	b.	Write meanings and bring out the difference in usage for any FOUR of the following homonyms. i) Affect/Effect ii) Continuous/ Continual iii) Veracious/Voracious iv) Facilitate/Felicitate iv) Apposite/Opposite v) Intelligent/ Intelligible	7	5	K3
UNIT-III					
5	a.	Compose an essay on "Stephen Hawking – Positivity 'Benchmark'".	7	2	K3
	b.	Draft a letter to the educational consultancy asking about the information regarding the post-graduation and research programmes in foreign universities.	7	4	K3
OR					
6	a.	Write an E-mail to the manufacturer complaining about the computer that you bought recently.	7	4	K3
	b.	Draft a resume and covering letter for the post of a software engineer.	7	4	K3
UNIT-IV					
7	a.	Summarize the essay "Liking a Tree, Unbowed"?	7	2	K3
	b.	Give the meaning and write sentences of any SEVEN of the following FOREIGN PHRASES. i) ab initio ii) a la mode iii) siesta iv) amour proper v) ad hoc vi) Alma Mater vii) alter ego viii) bonafide	7	5	K3
OR					
8	a.	Write a pamphlet on book exhibition/ tour.	7	2	K3
	b.	Construct Sentences through the transformation of the following sentences as indicated.	7	5	K3

		<p>i. They painted the house green. (Add a question tag)</p> <p>ii. Do it. (Change the voice)</p> <p>iii) He said to the boy, “What are you doing here.” (Convert it into Indirect Speech)</p> <p>iv) My father said that Honesty is the best policy. (Convert it into direct Speech)</p> <p>v) They were very poor. They had insufficient food for themselves. They invited the strangers to dinner. (Change it into Complex)</p> <p>vi) The old man being weak could not walk properly. (Change it into Compound)</p> <p>vii). Shakespeare is the most famous of all writers in English. (Change it into positive degree)</p>			
UNIT-V					
9	a.	Elaborate the message which the author communicates to the readers through the lesson “Stay Hungry-Stay Foolish”.	7	2	K3
	b.	<p>Correct and Re-construct any SEVEN of the following Sentences.</p> <p>i) One must use his best efforts if he wishes to succeed.</p> <p>ii) Since he came, we are happy.</p> <p>iii) I could hardly believe in my eyes.</p> <p>iv) Suppose, if you arrive late, you will miss the show.</p> <p>v) Neither Jack is intelligent nor hardworking.</p> <p>vi) Hardly the sun had risen when we set out.</p> <p>vii) It is high time she improves her behaviour.</p> <p>viii) She gave me many informations.</p>	7	5	K3
OR					
10	a.	Compile a report to the editor about the problem of brain drain in India	7	4	K3
	b.	<p>Fill in the blanks with the appropriate choices.</p> <p>i) The film Titanic was promoted with all the usual _____</p> <p>a) hyperbole b) dialect c) taboo d) aesthetic</p> <p>ii) The schedule of a few planes was _____ due to heavy smog.</p> <p>a) prohibited b) abated c) impeded d) bolstered</p> <p>iii) Einstein had never bothered by the flood of _____ from his fellow critics.</p> <p>a) recantation b) castigation c) vituperation d) skepticism</p> <p>iv) The field had been _____ by heavy downpour last night.</p> <p>a) tirade b) fluctuated c) mixed d) saturated</p> <p>v) Modi is good at giving _____ speeches.</p> <p>a) extempore b) prepared c) epilogue d) long</p> <p>vi) The manuscript was reproduced in _____ .</p> <p>a) facsimile b) archives c) cache d) vacillation</p> <p>vii) Examine the report carefully before you _____ it publicly in front of the press and media.</p> <p>a) rescind b) repudiate c) revere d) redress</p>	7	5	K3

Course Code: B20BS1101				
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			R20	
I B.Tech I Semester –MODEL PAPER				
MATHEMATICS – I				
(LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS)				
Common to AIDS, CE, CSE, ECE, EEE, IT & ME				
TIME: 3 Hrs.		Max. Marks: 70 M		
Answer any One Question from Each Unit				
All questions carry equal marks				
UNIT-I		M	CO	KL
1.a)	Solve the system of equations $20x + y - 2z = 17$, $3x + 20y - z = -18$, $2x - 3y + 20z = 25$ by Gauss –Siedel method.	7	CO1	K3
b)	Investigate the values of λ and μ so that the equations $2x + 3y + 5z = 9$; $7x + 3y - 2z = 8$; $2x + 3y + \lambda z = \mu$; have (i) no solution (ii) unique solution (iii) infinite number of solutions.	7	CO1	K3
(OR)				
2. a)	Solve the system of equations $10x + y+z =12$, $2x+10y+z =13$, $2x+2y+10z =14$ by Gauss- elimination method.	7	CO1	K3
b)	Define rank and determine the rank of the matrix A by reducing it to its normal form where A is: $A = \begin{bmatrix} 2 & 3 & -1 & -1 \\ 1 & -1 & -2 & -4 \\ 3 & 1 & 3 & -2 \\ 6 & 3 & 0 & -7 \end{bmatrix}$	7	CO1	K3
UNIT-II				
3.a)	Verify Cayley-Hamilton theorem and use the theorem to determine the inverse of the matrix $A = \begin{bmatrix} 1 & 0 & 3 \\ 2 & 1 & -1 \\ 1 & -1 & 1 \end{bmatrix}$	7	CO2	K3
b)	Reduce the quadratic form $2x^2 + 2y^2 + 2z^2 - 2xy - 2yz - 2zx$ to canonical form by the use of an orthogonal transformation.	7	CO2	K3
(OR)				
4. a)	Determine the Eigen values and the corresponding Eigen vectors of the matrix $A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$	7	CO2	K3
b)	If $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$, use Cayley-Hamilton theorem to determine the value of $2A^5 - 3A^4 + A^2 - 4I$. Also determine the inverse of A.	7	CO2	K3

UNIT-III				
5.a)	Solve $\frac{dy}{dx} + (\tan x)y = (\sec x)y^3$.	7	CO3	K3
b)	Solve $(y^4 + 2y)dx + (xy^3 + 2y^4 - 4x)dy = 0$.	7	CO3	K3
OR				
6. a)	Determine the orthogonal trajectories of the family of parabolas $ay^2 = x^3$.	7	CO4	K3
b)	A body originally at 80°C , cools down to 60°C in 20 minutes, the temperature of air being 40°C . Determine the temperature of the body after 40 minutes from the original?	7	CO4	K3
UNIT-IV				
7.a)	Solve $(D^3 - D)y = 2x + 1 + 4 \cos x$.	7	CO5	K3
b)	Solve $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = e^x \log x$ by the method of variation of parameters.	7	CO5	K3
OR				
8. a)	Solve $(D^2 + 3D + 2)y = e^{e^x}$.	7	CO5	K3
b)	Use method of variation of parameters to solve the equation $\frac{d^2y}{dx^2} + y = \operatorname{cosec} x$.	7	CO5	K3
UNIT-V				
9.a)	Determine $L\{t \cos at\}$ and $L\left\{\int_0^t e^{-t} \cos t dt\right\}$.	7	CO6	K3
b)	Using convolution theorem evaluate $L^{-1}\left\{\frac{1}{(s+a)(s+b)}\right\}$.	7	CO6	K3
OR				
10. a)	Determine $L^{-1}\left\{\frac{5s+3}{(s-1)(s^2+2s+5)}\right\}$.	7	CO6	K3
b)	Solve $\frac{d^2y}{dt^2} + 4\frac{dy}{dt} + 3y = e^{-t}$, $y(0) = y'(0) = 1$ by using Laplace transforms.	7	CO6	K3

I B. Tech I Semester - MODEL QUESTION PAPER

APPLIED PHYSICS

(Common to AIDS, CE, EEE & ME)

Time: 3 Hrs.

Max. Marks: 70

Answer any one Question from Each Unit

All questions carry equal Marks

M CO KL

UNIT-I

1	a.	Explain the principle of Superposition and discuss the conditions for maxima and minima of intensity.	6	1	2
	b.	How the Newton's Rings are formed and deduce an expression for the wave length of light used.	8	1	3

OR

2	a.	Distinguish the different types of diffractions of light.	6	1	2
	b.	Give qualitative and quantitative analysis of Fraunhofer diffraction at a single slit	8	1	3

UNIT-II

3	a.	Define polarization and explain the different types of polarization possible in a dielectric	6	2	2
	b.	Deduce the Clausius Mosottirelation and its significance in dielectrics.	8	2	3

OR

4	a.	Define Magnetic susceptibility and give a classification of magnetic materials.	6	2	1
	b.	Describe the Hysteresis exhibited by Ferromagnetic materials and explain its using a suitable theory	8	2	3

UNIT-III

5	a.	Give the selection procedure of the active medium of laser device.	6	3	2
	b.	With suitable diagrams, discuss the working principle, design and working of He - Ne laser system	8	3	3

OR

6	a.	What is the significance of Numerical Aperture of an optical fiber and obtain an expression for it.	8	3	2
	b.	Discuss the sensor applications of optical fibers.	6	3	3

UNIT-IV

7	a.	What is an intrinsic semiconductor and obtain an expression for the density of carriers.	8	4	3
	b.	Distinguish between direct and indirect band gap semiconductors and mention their applications.	6	4	2

OR

8	a.	Discuss the Hall Effect in detail and explain its significance.	8	4	3
	b.	Distinguish between drift and diffusion current in semiconductors.	6	4	2

UNIT-V					
9	a.	Explaining Magnetostriction effect, describe how the ultrasonics can be produced.	8	5	3
	b.	Mention the applications of ultrasonics.	6	5	1
OR					
10	a.	How the nano materials can be produced by sol – gel method.	6.	5	3
	b.	Write about Carbon Nanotubes	4	5	2
	C.	Discuss some important applications of nanomaterials.	4	5	1

Course Code: B20 CS 1101						
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					R 20	
I B. Tech I Semester MODEL QUESTION PAPER						
PROGRAMMING FOR PROBLEM SOLVING USING C						
(Common to AIDS, CSE , ECE & IT)						
Time: 3 Hrs.			Max. Marks:70			
Answer any one Question from Each Unit						
All questions carry equal Marks						
				M	CO	KL
UNIT-I						
1	a.	What do you mean C Variable, C Constants? Explain in detail	7M	CO1	K1	
	b.	Explain Expressions Precedence and Associativity in detail	7M	CO1	K2	
OR						
2	a.	Explain types of storage classes in C	7M	CO1	K2	
	b.	Write the basic structure of C program and explain each and every step	7M	CO1	K2	
UNIT-II						
3	a.	Explain logical, bitwise operators with examples	7M	CO2	K2	
	b.	Differentiate two-way selection and multi-way selection	7M	CO2	K2	
OR						
4	a.	What is the difference between Pre-test loop and Post-test Loop with an example	7M	CO2	K2	
	b.	Discuss Event and Counter controlled loops	7M	CO2	K2	
UNIT-III						
5	a.	What is an Array? Define and initialize 1-D, 2-D Arrays	7M	CO3	K1	
	b.	Write a program to evaluate the average of values in an Array	7M	CO3	K3	
OR						
6	a.	Explain declaration and initialization of Array of Strings	7M	CO3	K2	
	b.	What is an Union? List the difference between Structures and Unions	7M	CO3	K1	
UNIT-IV						
7	a.	Explain the concept of Array of Pointers with example	7M	CO4	K2	
	b.	With proper example explain different arithmetic operators on Pointers	7M	CO4	K2	
OR						
8	a.	Explain L and R values in C Language and how are they used in C Language	7M	CO4	K2	
	b.	Discuss various Processor Commands	7M	CO4	K2	
UNIT-V						
9	a.	How to pass Array to a Function in C	7M	CO5	K2	
	b.	Discuss the Types of Functions in C	7M	CO5	K2	
OR						
10	a.	What is Stream? Describe two different methods of creating a Stream-Oriented data file	7M	CO5	K1	
	b.	Write a program to Copy contents from one File to another File	7M	CO5	K1	

Course Code: B20 IT 1101					
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)				R 20	
I B. Tech I Semester MODEL QUESTION PAPER					
FUNDAMENTALS OF COMPUTERS AND INFORMATION TECHNOLOGY					
Common to AIDS & IT					
Time: 3 Hrs.			Max. Marks:70		
Answer any one Question from Each Unit					
All questions carry equal Marks					
		Question	M	CO	KL
UNIT-I					
1.	a).	Draw the block diagram and explain a Digital computer?	7	CO1	K2
	b).	What is a BUS? Explain common bus system in a digital computer?	7	CO1	K2
OR					
2.	a).	Define what is a T state? Explain a machine cycle and its importance.	7	CO1	K2
	b).	Write about evolution of computers?	7	CO1	K2
UNIT-II					
3.	a).	Explain briefly about Primary memory?	7	CO2	K2
	b).	Classify and explain different secondary storage devices?	7	CO2	K2
OR					
4.	a).	Explain about Data acquisition Sensors, and Optical recognition devices	7	CO2	K2
	b).	Explain about Display devices and types.	7	CO2	K2
UNIT-III					
5.	a).	Explain different types and functions of an Operating System?	7	CO3	K2
	b).	Explain briefly different features in MS office tools.	7	CO3	K2
OR					
6.	a).	What are different characteristics for a language to be a good programming language? Explain.	7	CO3	K2
	b).	Explain the features of any one High level Programming language?	7	CO3	K2
UNIT-IV					
7.	a).	Explain Data communication with a block Diagram?	7	CO4	K2
	b).	What is a computer network? Explain any three Networking devices	7	CO4	K2
OR					
8.	a).	What is the need for security of information over Internet? Discuss	7	CO4	K2
	b).	Explain about a) Virus b) cryptography c) Firewall d) digital signature	7	CO4	K2
UNIT-V					
9.	a).	Define Database and Database management system? Explain DBMS architecture	7	CO5	K2
	b).	Explain different steps involved in creating a form in MS access.	7	CO5	K2
OR					
10.	a).	What is E commerce? Explain about electronic data interchange	7	CO5	K2
	b).	Explain about a) Smart cards b) RFID c) Brain computer interface (BCI)	7	CO5	K2

Answer any One Question from Each Unit

All questions carry equal marks

UNIT-I		M	CO	KL
1.a)	Determine the Fourier series for the function $f(t) = \begin{cases} -1, & -\pi < t < -\pi/2 \\ 0, & -\pi/2 < t < \pi/2 \\ 1, & \pi/2 < t < \pi \end{cases}$	7	CO1	K3
b)	Determine Fourier series of the function $f(x) = 2x - x^2$ in $(0, 3)$ and hence deduce that $\frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \dots = \frac{\pi}{12}$.	7	CO1	K3
OR				
2. a)	Determine Fourier series for the function $f(x)$ given by $f(x) = \begin{cases} 1 + \frac{2x}{\pi}, & \text{if } -\pi \leq x \leq 0 \\ 1 - \frac{2x}{\pi}, & \text{if } 0 \leq x \leq \pi \end{cases}$ and deduce that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \dots = \frac{\pi^2}{8}$.	7	CO1	K3
b)	Determine the Half – Range cosine series for the function $f(x) = x^2$ in the range $0 \leq x \leq \pi$.	7	CO1	K3
UNIT-II				
3.a)	Using the Fourier Sine Transform of e^{-ax} ($a > 0$), evaluate $\int_0^{\infty} \frac{x \sin kx}{a^2 + x^2} dx$.	7	CO2	K3
b)	Using Fourier integral representation, establish that $\int_0^{\infty} \frac{\omega \sin \omega x}{1 + \omega^2} d\omega = \frac{\pi}{2} e^{-x}, x > 0$.	7	CO2	K3
OR				
4. a)	Determine the inverse Fourier sine transform $f(x)$ of $F_s(p) = \frac{p}{1+p^2}$.	7	CO2	K3
b)	Using Parseval's Identity, establish that $\int_0^{\infty} \frac{x^2}{(1+x^2)^2} dx = \frac{\pi}{4}$.	7	CO2	K3
UNIT-III				
5.a)	If $U = \tan^{-1} \frac{x^3+y^3}{x-y}$ and $x U_x + y U_y = \sin 2U$, establish that $x^2 U_{xx} + 2xy U_{xy} + y^2 U_{yy} = 2 \cos 3U \sin U$.	7	CO3	K3
b)	If $u = x^2 - 2y^2, v = 2x^2 - y^2$ where $x = r \cos \theta, y = r \sin \theta$ then establish that $\frac{\partial(u,v)}{\partial(r,\theta)} = 6 r^3 \sin 2\theta$.	7	CO3	K3
OR				

6. a)	Develop $x^2y + 3y - 2$ in a Taylor series in powers of $(x - 1)$ and $(y + 2)$ using Taylor's theorem.	7	CO4	K3
b)	By using the method of differentiation under the integral sign establish that $\int_0^\infty \frac{\tan^{-1}(ax)}{x(1+x^2)} dx = \frac{\pi}{2} \log(1+a)$, $a \geq 0$.	7	CO4	K3
UNIT-IV				
7. a)	Solve $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$.	7	CO5	K3
b)	solve $(D^2 - DD' - 2D'^2)z = (y-1)e^x$.	7	CO5	K3
OR				
8. a)	Solve $x(y-z)p + y(z-x)q = z(x-y)$.	7	CO5	K3
b)	solve $(D + D' - 1)(D + 2D' - 3)z = 3x + 6y + 4$.	7	CO5	K3
UNIT-V				
9.a)	Determine the solution of $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} = 0$ by the method of separation of variables.	7	CO6	K3
b)	A tightly stretched elastic string of length L, fixed at its end points is initially in a position given by $u(x, 0) = u_0 \sin^3 \frac{\pi x}{L}$. If it is released from rest, determine the displacement at any subsequent time.	7	CO6	K3
OR				
10.a)	Determine the solution of $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = 0$ by the method of separation of variables.	7	CO6	K3
b)	A bar of conducting material of length π units is initially kept at a temperature $\sin x$. Determine the temperature at any subsequent time if the ends of the bar are held at zero temperature.	7	CO6	K3

APPLIED CHEMISTRY

Common to AIDS,CE,EEE & ME

Time: 3 Hrs.

Max. Marks:70

Answer any one Question from Each Unit

All questions carry equal Marks

M CO KL

UNIT-I

1	a.	Explain the mechanism of free radical Polymerization reaction with a suitable example.	7	CO1	K2
	b.	Distinguish between thermoplastic and thermosetting resins	7	CO1	K3

OR

2	a.	What are conducting Polymers? Discuss the applications of conducting Polymers.	7	CO1	K2
	b.	Write notes on Bu Na – S and Bu Na – N.	7	CO1	K2

UNIT-II

3	a.	Explain the Proximate analysis of coal and give its significance.	7	CO3	K2
	b.	Explain Photovoltaic cell with neat diagram.	7	CO3	K2

OR

4	a.	Explain the fractional distillation of crude oil	7	CO3	K2
	b.	How synthetic Petrol can be prepared by Berguis Process.	7	CO3	K2

UNIT-III

5	a.	Explain the mechanism of electrochemical theory of corrosion with neat diagram	7	CO2	K2
	b.	Describe briefly about cathodic Protection.	7	CO2	K3

OR

6	a.	Explain Hydrogen – Oxygen fuel cell with neat cell diagram	7	CO4	K2
	b.	Discuss about Lithium batteries	7	CO4	K2

UNIT-IV

7	a.	What is hardness? How it is determined by EDTA method? Explain	7	CO2	K2
	b.	Describe with equations how water can be softened using Lime & Soda Process	7	CO2	K2

OR

8	a.	Discuss various sterilizing methods used in municipal water treatment	7	CO2	K2
	b.	Illustrate the reverse osmosis Process with a neat diagram	7	CO2	K2

UNIT-V

9	a.	Discuss chemistry involved in setting and hardening of cement?	7	CO4	K2
	b.	What are refractories? Discuss the classification of refractories.	7	CO4	K2

OR

10	a.	Write the engineering applications of Liquid Crystals.	7	CO3	K2
	b.	Explain the stoichiometric defects in crystals.	7	CO3	K2

			CO	KL	M
UNIT - I					
1.	a).	i. Convert (1032.2) ₄ to decimal. ii. Perform the subtraction using 2's complement 100-110000	7	C1	K2
	b).	Reduce the Boolean Functions to minimum number of literals (i) $ABC+A1B1C+A1BC+ABC1+A1B1C1$ to five literals (ii) $(A+C+D)(A+C+D1)(A+C1+D)(A+B1)$ to four literals	7	C1	K2
OR					
2.	a).	Convert the function to another canonical form. $F(x,y,z)=\pi(0,3,6,7)$	7	C1	K2
	b).	Implement the Boolean function $F=xy+x1y1+y1z$ with (i) AND ,OR and NOT gates (ii) OR,NOT gates (iii) AND, NOT gates	7	C1	K2
UNIT - II					
3.	a).	Simplify the Boolean Function using K-Map. $F(A,B,C,D)=ACE+A^1CD^1E+A^1C^1DE$ $D(A,B,C,D)=DE^1+A^1D^1E+AD^1E^1$	7	C2	K3
	b).	Design and explain Binary Adder/ Subtractor.	7	C2	K3
OR					
4.	a).	Simplify the Boolean Function to product of sums. $F(A,B,C,D)=\pi(0,1,2,3,4,10,11)$	7	C2	K2
	b).	Design and explain Decimal Adder.	7	C2	K2
UNIT - III					
5.	a).	Design and explain about JK Flip flop.	7	C3	K3
	b).	Explain about State Reduction and Assignment with example.	7	C3	K3
OR					
6.		Explain about design procedure of sequential circuits with an example	14	C3	K4
UNIT - IV					
7.	a).	Design and explain about Shift Register.	7	C4	K3
	b).	Design and explain about BCD Ripple counter.	7	C4	K3
OR					
8.	a).	Design and explain about Universal Shift Register.	7	C4	K3
	b).	Design and explain about Synchronous Binary counter.	7	C4	K3
UNIT - V					
9.	a).	Explain about Memory decoding of RAM.	7	C5	K3
	b).	Explain about ROM Variants	7	C5	K3
OR					
10.	a).	Explain PLA and PAL	7	C5	K3
	b).	Explain about Hamming code with an example	7	C5	K3

Course Code: B20 IT 1202						
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)				R 20		
I B. Tech II Semester - MODEL QUESTION PAPER						
OBJECT ORIENTED PROGRAMMING THROUGH C++						
Common to AIDS & IT						
TIME: 3 Hrs.		Max. Marks: 70 M				
Answer any one Question from Each Unit						
All questions carry equal Marks						
				M	CO	KL
UNIT - I						
1.	a).	Differentiate between OOP and POP concepts.	7	CO1	K4	
	b).	Distinguish between c and c++.	7	CO1	K4	
OR						
2.		Differentiate oops concepts along with examples.	14	CO1	K4	
UNIT - II						
3.	a).	Illustrate Copy constructor with example program.	7	CO2	K3	
	b).	Write a c++ program to create a class area and create 3 constructors to calculate area of a square, circle and rectangle?	7	CO2	K3	
OR						
4.	a).	Illustrate friend function and explain its characteristics.	7	CO2	K3	
	b).	Write a c++ program to create two classes each with a single member variable, find out the maximum of two variables using a friend function.	7	CO2	K3	
UNIT - III						
5.	a).	Illustrate the statement “c++ provides provision for treating user defined data types just as built in types” with an example.	7	CO3	K3	
	b).	Write about Operator overloading with example.	7	CO3	K3	
OR						
6.	a).	Write about inheritance in c++ with a program.	7	CO3	K3	
	b).	Write how call by reference mechanism implemented in c++.	7	CO3	K3	
UNIT - IV						
7.	a).	Explain Abstract class and virtual class?	7	CO3	K2	
	b).	Identify visibility modes for data members in c++.	7	CO3	K2	
OR						
8.	a).	Explain about virtual functions? With an example explain the usage of virtual functions.	7	CO3	K2	
	b).	Discuss Run time polymorphism.	7	CO3	K2	
UNIT - V						
9.	a).	Discuss with necessary examples error handling and exception handling in c++.	7	CO4	K2	
	b).	Explain template? How they help in writing generic programs?	7	CO4	K2	
OR						
10.	a).	Identify Principles of Exception handling.	7	CO4	K2	
	b).	Explain with a C++ Program how to handle multiple Exceptions.	7	CO4	K2	

Answer any one Question from Each Unit

All questions carry equal Marks

M CO KL

UNIT-I

1	a.	State and explain Kirchoff's Laws with example	7	1	3
	b.	Calculate the equivalent resistance R_{ab} at terminals a-b for the given circuit	7	1	3

OR

2	a.	Derive the expression for Average and RMS values of a sinusoidal waveform.	7	2	3
	b.	A 2ohm resistance, 0.125 F capacitance and 3 H inductance are connected in series across a voltage $V(t) = 12 \sin(2t + 30^\circ)$. Find (i) Z, I, V_L , V_C , power factor (PF) and active power / real power. (ii) Write time equations for I, V_L , V_C . (iii) Draw the vector diagram.	7	2	3

UNIT-II

3	a.	Derive the EMF equation of DC generator.	7	3	3
	b.	A 6-pole, lap-connected armature has 500 conductors and is driven at 500 rev/min. If the flux per pole is 20 milli weber, determine the generated E.M.F.	7	3	3

OR

4	a.	Derive the Torque equation of DC motor.	7	3	3
	b.	A DC motor takes an armature current of 110A at 480V. The armature circuit resistance is 0.2 ohm. The machine has 6 poles and the armature is lap-connected with 864 conductors. The flux per pole is 0.05 Wb. Calculate (i) the speed and (ii) the gross torque developed by the armature.	7	3	3

UNIT-III

5	a.	Derive the EMF equation of a single phase transformer.	7	3	3
	b.	A 25-kVA transformer has 500 turns on the primary and 50 turns on the secondary winding. The primary is connected to 3000-V, 50-Hz supply. Find the full-load primary and secondary currents, the secondary e.m.f. and the maximum flux in the core. Neglect leakage drops and no-load primary current	7	3	3

OR					
6	a.	Obtain the formula for equivalent circuit referred to primary and secondary	7	3	4
	b.	Explain the principle and operation of Induction Motor	7	3	3
UNIT-IV					
7	a.	Explain the operation of Diode in Forward and reverse bias conditions and draw V-I characteristics.	7	4	3
	b.	Draw the circuit diagram of Bridge rectifier and explain its operation	7	4	3
OR					
8	a.	Explain the operation of Zener diode as a voltage regulator.	7	4	3
	b.	Draw the circuit diagram of Half wave rectifier and explain its operation	7	4	3
UNIT-V					
9	a.	Explain about the principle of operation of PNP transistor.	7	5	3
	b.	Explain in detail about the differences between PNP and NPN transistors.	7	5	3
OR					
10	a.	Draw and explain the input and output characteristics of a transistor in CE configuration.	7	5	3
	b.	Explain Transistor as an amplifier.	7	5	4
