LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram-521 230 :: Krishna Dist. :: A.P
Approved by AICTE, New Delhi. Affiliated to JNTUK, Kakinada

B.Tech.(I Semester) (R20) Regular Examinations, July/August 2021

TIME TABLE

TIME :10.00 AM to 01.00 PM

A.Y. 2020-21

DATE	AI & DS	ASE	CE	CSE	ECE	EEE	IT	ME
27-07-2021 (Tuesday)	20FE01 - Professional Communication-I	20FE01 - Professional Communication-I	20FE01 - Professional Communication-I	20FE01 - Professional Communication-I	20FE01 - Professional Communication-I	20FE01 - Professional Communication-I	20FE01 - Professional Communication-I	20FE01 - Professional Communication-I
29-07-2021 (Thursday)	20FE03 - Differential Equations	20FE03 - Differential Equations	20FE03 - Differential Equations	20FE03 - Differential Equations	20FE03 - Differential Equations	20FE03 - Differential Equations	20FE03 - Differential Equations	20FE03 - Differential Equations
31-07-2021 (Saturday)	20FE06 - Engineering Chemistry	20FE05 - Applied Chemistry	20FE05 - Applied Chemistry	20FE07 - Applied Physics	20FE07 - Applied Physics	20FE07 - Applied Physics	20FE06 - Engineering Chemistry	20FE05 - Applied Chemistry
02-08-2021 (Monday)	20AD01 - Computational Programming	20ME01 - Engineering Graphics	20CE01 - Surveying	20CS01 - Programming for Problem Solving using C	20EE01 - Basic Electrical Engineering	20CE04 - Basic Civil and Mechanical Engineering	20CS01 - Programming for Problem Solving using C	20ME01 - Engineering Graphics
04-08-2021 (Wednesday)	20CS02 - Digital Logic Design	20ME02 - Engineering Mechanics	20CE02 - Building Materials and Construction	20EE02 - Basic Electrical and Electronics Engineering	20EC01 - Electronic Devices and Circuits	20EE03 - Electronic Circuits and Devices	20EE02 - Basic Electrical and Electronics Engineering	20EE02 - Basic Electrical and Electronics Engineering

Note: Any omissions or clashes in the time table may please be informed to the Controller of Examinations immediately.

Date: 13-07-2021

CONTROLLER OF EXAMINATIONS

13/7/21

PRINCIPAL

Copy to: 1. Vice-Principal, Deans & HoDs 2. Transport in-charge & Librarian
3. Canteen, Security & Hostels 4. All Notice Boards

H.T.No. | | | | | | | | | | |

29 JUL 2021

R20

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

B.Tech. (I Semester) Regular Examinations

20FE03-DIFFERENTIAL EQUATIONS

(Common to all)

Time : 3 hours | Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Find the family of orthogonal trajectories of the cardioids $r=a(1-\cos\theta)$, where 'a' is parameter.	7M	CO1	L3
(b)	Find the general solution of the equation $\left[y(1+\frac{1}{x})+\cos y\right]dx+(x+\log x-x\sin y)\,dy=0.$	7M	CO1	L2
	(OR)			
2(a)	Solve $(1+xy)y\,dx+(1-xy)x\,dy=0.$	7M	CO1	L2
(b)	Find the family of orthogonal trajectories of the semi- cubical parabolas $ay^2=x^3$, where 'a' is parameter.	7M	CO1	L3
3(a)	Solve $(D^2-2D+1)y=xe^x\sin x.$	7M	CO2	L2
(b)	Find complete solution of $(D^2-4D+3)y=\sin 3x\cdot\cos 2x.$	7M	CO2	L2
	(OR)			
4(a)	Apply method of variation of parameters to find the complete solution of $\frac{d^2y}{dx^2}+y=\cos ecx.$	7M	CO2	L3
(b)	Solve $\frac{d^2y}{dx^2}+\frac{dy}{dx}+y=(1-e^x)^2.$	7M	CO2	L2
5(a)	Apply Euler's method to estimate the value of y(1.2), given IVP is $\frac{dy}{dx}=2+xy, y(1)=1.$ (use step size h = 0.25)	7M	CO3	L3
(b)	Solve $y'=x^2+y^2, y(0)=0$ and hence estimate the value of y(1) using Picard's series method.	7M	CO3	L3
	(OR)			
6(a)	Apply Taylor's series method to solve $y'=x^2-y, y(0)=1$ and hence estimate the value of y(0.1).	7M	CO3	L3
(b)	Estimate the value of $y(1.2)$ using Simple R – K method, given that $\frac{dy}{dx}=xy^2, y(1)=2.$ (take h = 0.2).	7M	CO3	L3
7(a)	If $u=x+y+z, y+z=uv, z=uvw$ then evaluate $\frac{\partial(x,y,z)}{\partial(u,v,w)}$	7M	CO4	L2
(b)	Apply Taylor's series expansion to expand $e^x\cdot\cos y$ near the point $(1,\frac{\pi}{4})$.	7M	CO4	L3
	(OR)			
8(a)	Apply Lagrange's method to find maximum value of $x^my^nz^p$ subject to the condition $x+y+z=a.$	7M	CO4	L3
(b)	Expand $e^x\log(x+y)$ in terms of 'x' and 'y' using Maclaurin's series expansion.	7M	CO4	L3
9(a)	Form the partial differential equation by eliminating the arbitrary constants 'a' and 'b' from $z=a\log\left[\frac{b(y-1)}{1-x}\right]$	7M	CO5	L2
(b)	Write standard form of Lagrange's partial differential equation and hence find the complete solution of $p\tan x+q\tan y=\tan z.$	7M	CO5	L2
	(OR)			
10(a)	Solve $x(y-z)p+y(z-x)q=z(x-y)$	7M	CO5	L2
(b)	Generate the partial differential equation by eliminating arbitrary function from the equation xyz = f(x+y+z).	7M	CO5	L2

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9(a)	Assume that you are a resident of Moghalrajpuram, Vijayawada. Open manholes in your area have become a source of danger for the pedestrians and vehicle owners. Write a letter to the Municipal Commissioner complaining about this problem.	7M	CO4	L3
(b)	Outline the notable contributions of C.V.Raman to science.	7M	CO2	L2
	(OR)			
10(a)	You have a problem with the room allotted to you in the hostel. Write a letter to the Warden of the hostel requesting to change your room.	7M	CO4	L3
(b)	Fill in the blanks with suitable Prepositions: (i) The novel was written ___ Mark Twain. (ii) We can only get to the camp _____ foot. (iii)What are you talking ___? (iv) It's very kind ____ you to help us . (v) He's very good ____ telling lies. (vi)My dad takes care ____ us. (vii) The books are lying ____ the floor.	7M	CO5	L2

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H.T.No. | | | | | | | | | | |

27 JUL 2021

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech. (I Semester) Regular/~~Supplementary~~ Examinations

20FE01-PROFESSIONAL COMMUNICATION-I

(Common to all)

Time : 3 hours | Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Summarize the preparations that Nellie Bly made before embarking on the world tour.	7M	CO3	L2
(b)	Write a Paragraph on the topic "First impressions are the Best impressions" in about 50 words.	7M	CO1	L2
	(OR)			
2(a)	What can you infer about the personality of Nellie Bly from the text "A Proposal to Girdle the Earth?"	7M	CO2	L2
(b)	Write Plural forms for the following nouns: (i)analysis (ii)calf (iii)daughter-in-law (iv)goose (v)knife (vi)potato (vii)belief.	7M	CO1	L1
3(a)	Why did Warren Burton consider Mary Smith the dearest of his teachers?	7M	CO3	L2
(b)	Write Synonyms for the following words: (i) dwindle (ii) renowned (iii) meager (iv) conceal (v) hindrance (vi) generous (vii) approval.	7M	CO5	L2
	(OR)			
4(a)	What made Warren Burton like Mr.Ellis?	7M	CO3	L1
(b)	You are the office manager and want to remind everyone to clean up after themselves in the lunchroom. There was recently an infestation of cockroaches. The building has since been fumigated but you still require the cooperation of staff to prevent a re-infestation. Draft a **Memo**. State the purpose of the memo, your reason(s) for sending it (i.e. the kind of behavior you have noticed) and what actions you want to be taken.	7M	CO4	L3
5(a)	Read the following passage and answer the questions that follow: Archaeology as a profession faces two major problems. First, it is the poorest of the poor. Only paltry sums are available for excavating and even less is available for publishing the results and preserving the sites once excavated. Yet archaeologists deal with priceless objects every day. Second, there is the problem of illegal excavation, resulting in museum-quality pieces being sold to the highest bidder. I would like to make an outrageous suggestion that would at one stroke provide funds for archaeology and reduce the amount of illegal digging. I would propose that scientific archeological expeditions and governmental authorities sell excavated artifacts on the open market. Such sales would provide substantial funds for the excavation and preservation of archaeological sites and the publication of results. At the	7M	CO2	L2

	same time, they would break the illegal excavator's grip on the market, thereby decreasing the inducement to engage in illegal activities. You might object that professionals excavate to acquire knowledge, not money. Moreover, ancient artifacts are part of our global cultural heritage, which should be available for all to appreciate, not sold to the highest bidder. I agree. Sell nothing that has unique artistic merit or scientific value. But, you might reply, everything that comes out of the ground has scientific value. Here we part company. Theoretically, you may be correct in claiming that every artifact has potential scientific value. Practically, you are wrong. I refer to the thousands of pottery vessels and ancient lamps that are essentially duplicates of one another. In one small excavation in Cyprus, archaeologists recently uncovered 2,000 virtually indistinguishable small jugs in a single courtyard, even precious royal seal impressions known as melekh handles have been found in abundance — more than 4,000 examples so far. The basement of museums is simply not large enough to store the artifacts that are likely to be discovered in the future. There is not enough money even to catalogue the finds; as a result, they cannot be found again and become as inaccessible as if they had never been discovered. Indeed, with the help of a computer, sold artifacts could be more accessible than are the pieces stored in bulging museum basements. Prior to sale, each could be photographed and the list of the purchasers could be maintained on the computer. A purchaser could even be required to agree to return the piece if it should become needed for scientific purposes. It would be unrealistic to suggest that illegal digging would stop if artifacts were sold in the open market. But the demand for the clandestine product would be substantially reduced. (i) What are the two problems faced by archaeology as a profession? (ii) What is the solution suggested by the author to counter illegal digging? (iii) Do archaeologists excavate for money? (iv) What is the antonym of 'Precious'? (v) Does everything that comes out of the ground has scientific value? (vi) What will happen if every artifact excavated is kept in museums? (vii) Give the meaning of the word 'Clandestine'.			
(b)	Fill in the blanks with appropriate Tense forms of the verbs given in brackets. (i) ___ you ___ (believe) in ghosts? (ii) Radha ___ (get) up at 5 in the morning. (iii) The students ____ (revise) the lessons now. (iv) It ___ (rain) since morning. (v) Although he tried hard, he ___ (not, get) the job. (vi) The movie ___ (start) when we reached the theatre. (vii) If you start early, you ____ (reach) in time.	7M	CO3	L1
	(OR)			

6(a)	What are the methods and tools used by a company with distributed workforce to connect its employees?	7M	CO2	L2
(b)	Summarize the following passage in about 50 words: The idea of walking can be an annoying thought to some. When in reality, walking can do many wonderful things for many different people. The mental and physical health benefits of walking are immense, yet many people want to walk as little as possible. People do not want to take the time to walk from point A to point B when instead they can easily just get into their car and drive. Many underestimate the many health benefits they could receive just by waking thirty minutes a day. There are many benefits of adding walking into your daily routine, such as improving your heart health and aiding/ preventing type 2 diabetes. The first benefit of taking a walk is that it can help one maintain a healthy weight and help prevent numerous health disorders. Going for a walking after a person has had a stressful day can help them feel better because it releases all of the built-up energy from the day. Going for a quick walk can give you a mood boost, and it also releases endorphins, which can help with people who are stressed or have depression. Walking also helps one to relax. Counting your steps and focusing on nature is a form of meditation that can help one to relax. Moreover, by doing so, it helps release endorphins and potent brain chemicals that relieve pain and stimulate relaxation. After going on several walks, one may notice that their memory will be improved.	7M	CO3	L2
7(a)	Why is Abdul Kalam called "the Missile Man of India"?	7M	CO2	L2
(b)	Fill in the following blanks with 'A', 'An', 'The' or 'No Article'. (i) ___ apple a day keeps the doctor away. (ii) ___ paper is well written. (iii) Who is ___ girl standing at the gate? (iv) Charles is ____ American. (v) Dr.Hamid is ____ Urdu teacher. (vi) I bought ___ umbrella to go out in the rain. (vii) Michael loves playing ___ football.	7M	CO5	L2
	(OR)			
8(a)	You have purchased a music system on 'Amazon', but you have received a defective one. Write an e-mail to the Customer Service Manager complaining about it.	7M	CO4	L3
(b)	Convert the following sentences into Reported Speech: (i) The teacher said to the students, "You should revise your lessons." (ii) He said to her, "Do you like apples?" (iii) The student said to the teacher, "I am sorry that I am late." (iv) Ram said to Mohan, "Let him do it." (v) The captain said to Kapil, "Bravo! You scored 89 runs." (vi) She said, "Mahesh will be reading a book." (vii) He said to his brother, "Shailesh has broken my glass."	7M	CO5	L2

H.T.No.										

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(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

B.Tech. (I Semester) Regular Examinations

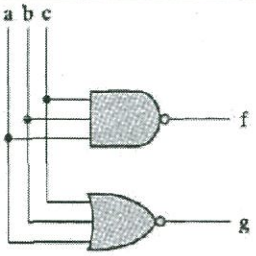
20CS02-DIGITAL LOGIC DESIGN

(AI&DS)

Time : 3 hours Max.Marks :70

Answer one question from each unit

All questions carry equal marks

Q. No	Questions	Marks	CO	BL
1(a)	Find the binary and octal equivalent of $(126)_{10}$and $(306.D)_{16}$.	7M	CO1	L2
(b)	Perform (i) (A-B) and (ii) (B-A) by using 2's complement, where two binary unsigned numbers are A= 110111 and B= 100010.	7M	CO1	L2
	(OR)			
2(a)	Illustrate the decimal to BCD and Excess-3 code conversion methods. Convert $(185)_{10}$to Excess-3 equivalent.	7M	CO1	L2
(b)	 Fig. Find the Boolean expression of f and g in Fig. as a function of three binary inputs a, b and c. Show the truth table and timing diagram of both the outputs using all eight possible combinations of a, b and c.	7M	CO1	L3
3(a)	Define the DeMorgan's theorem. Show the validation of DeMorgan's theorem with the help of truth table.	7M	CO2	L2
(b)	Express the Boolean function $F = A'C + A'B + AB'C + BC$ as a sum of minterms.	7M	CO2	L3
	(OR)			
4(a)	Simplify the following Boolean function F using Karnaugh map method: F(A, B, C, D)= Σ (1, 4, 5, 6,12,14,15). Implement the minimized Boolean function (F) with logic gates.	7M	CO2	L3
(b)	Obtain functional minimization of F(A, B, C, D)= Σ (0, 1, 2, 5, 8, 9, 10)into (i) sum of products (SOP) (ii) product of sum (POS) forms.Draw the corresponding gate level implementations for both the forms.	7M	CO2	L3
5(a)	Design full adder using half adders. Explain the operation with truth table and draw necessary circuit diagram.	7M	CO3	L3
(b)	Design and explain a 3-to-8 line decoder using truth table.	7M	CO3	L3
	(OR)			
6(a)	Design a 2-to-1 line multiplexer with logic gate and design 4-to-1 line multiplexer using 2-to-1 line multiplexer.	7M	CO3	L4
(b)	Design a 4-bit magnitude comparator. Present the gate level diagram.	7M	CO3	L3
7(a)	Compare Latch and flip-flop. Design an edge trigger D-flip-flop using both universal gates (NAND, NOR).	7M	CO4	L2
(b)	Design a synchronous 3-bit up counter using D-flip-flops.	7M	CO4	L3
	(OR)			
8(a)	Illustrate Bi-directional shift register with suitable example.	7M	CO4	L2
(b)	Design a 4-bit register with parallel load with D Flipflops.	7M	CO4	L3
9(a)	Design and explain 3×8 ROM.	7M	CO5	L3
(b)	Implement the following two Boolean functions with a PLA: $F_1(A, B, C) = \Sigma(0, 1, 5, 4)$, $F_2(A, B, C) = \Sigma(0, 5, 6, 7)$.	7M	CO5	L3
	(OR)			
10(a)	Design a combinational circuit using a ROM, wherethe circuit accepts a 3-bit number and outputs a binary number equal to the square of the input number.	7M	CO5	L3
(b)	Explain the operation of PAL.	7M	CO5	L2

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B.Tech. (I Semester) Regular Examinations

20AD01-COMPUTATIONAL PROGRAMMING
(AI&DS)

Time : 3 hours Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	What are loop control structures? Explain for loop, while loop and do-while loop with their syntax.	7M	CO1	L2
(b)	Define algorithm and state its characteristics with an example?	7M	CO1	L2
	(OR)			
2(a)	Distinguish between pseudo-code, algorithm and flowchart with a suitable example.	7M	CO1	L2
(b)	Draw a flowchart to check a number is prime number or not.	7M	CO1	L3
3(a)	What are string handlings functions? Explain all with their uses.	7M	CO2	L2
(b)	Write a program to print numbers from 1 to 10 using array and find sum of them.	7M	CO2	L3
	(OR)			
4(a)	How 1-D and 2-D array elements are stored in memory? Explain with example.	7M	CO2	L3
(b)	Write a program to copy one string into another string using strcpy() function.	7M	CO2	L3
5(a)	Distinguish between Call by value Call by reference.	7M	CO3	L3
(b)	What is recursive function? Write syntax for recursive functions.	7M	CO3	L2
	(OR)			
6(a)	Differentiate Library functions and User defined functions in C and Explain with examples.	7M	CO3	L4
(b)	What are the features of pointers? Write a C program to print address of a variable.	7M	CO3	L2
7(a)	Write a C program that defines a structure employee containing the details such as empno, empname, department name and salary. The structure has to store 20 employees in an organization. Use the appropriate method to define the above details and define a function that will display the contents.	7M	CO4	L3
(b)	List out the differences among unions, structures and arrays.	7M	CO4	L2
	(OR)			
8(a)	Illustrate the following: (i) Nested structures (ii) Array of structures.	7M	CO4	L2
(b)	Define Structure and write the general syntax for declaring and accessing members.	7M	CO4	L2
9(a)	Write short notes on i. fgets() ii. fputs() iii.feof().	7M	CO5	L1
(b)	Explain Binary searching Algorithm with an example.	7M	CO5	L3
	(OR)			
10(a)	Write a C program to find the minimum number in a list of 'N' numbers. Analyse its time complexity.	7M	CO5	L3
(b)	Write a program in C to reverse the contents of a file using random access file mode.	7M	CO5	L3

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H.T.No. | | | | | | | | | | |

31 JUL 2021

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B.Tech. (I Semester) Regular Examinations

20FE06-ENGINEERING CHEMISTRY
(AI&DS and IT)

Time : 3 hours Max.Marks :70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Justify the following statement, "Calomel electrode is reversible with respect to chloride ions".	7M	CO1	L2
(b)	Calculate the cell potential of the following cell at 298 K. Mg(s) / Mg^{2+} (0.001M) // Cu^{2+} (0.0001M) / Cu(s) $E^0_{Cu^{2+}/Cu}$ = +0.34V ; $E^0_{Mg^{2+}/Mg}$ = -2.37 V	7M	CO1	L3
	(OR)			
2(a)	Describe the construction and working of Li-ion battery.	7M	CO1	L2
(b)	Explain the construction of fuel cell with a neat diagram and give the equations that show its working.	7M	CO1	L2
3(a)	State the principle of cathodic protection and explain how impressed current method controls corrosion.	7M	CO2	L2
(b)	When does concentration cell corrosion occur? Explain corrosion of metal surface covered with water droplets.	7M	CO2	L2
	(OR)			
4(a)	How the following factors influence rate of corrosion? (i) Purity (ii) Position in galvanic series (iii) Relative area of cathode and anode (iv) Nature of surface film.	7M	CO2	L2
(b)	When does galvanic corrosion occur? Explain with an example.	7M	CO2	L2
5(a)	How to prepare nanomaterials using gas phase synthesis?	7M	CO3	L2
(b)	List out the materials used in making GPU and PCBs.	7M	CO3	L1
	(OR)			
6(a)	Outline the applications of nano-materials in various fields.	7M	CO3	L1
(b)	How catenanes and rotaxanes are characterized?	7M	CO3	L2
7(a)	How does conduction occur in intrinsic conducting polymers?	7M	CO4	L2
(b)	Differentiate thermosets and thermoplasts.	7M	CO4	L1
	(OR)			
8(a)	Define the term liquid crystal. Outline the structural aspects of molecules to form liquid crystal.	7M	CO4	L1
(b)	Describe working mechanism of liquid crystal display.	7M	CO4	L2
9(a)	Explain conductometric titration curve of weak acid versus strong base.	7M	CO5	L2
(b)	How to carry potentiometric titration of strong acid versus strong base to determine the endpoint of a titration?	7M	CO5	L2
	(OR)			
10(a)	State the principle of conductometry. Describe the conductometric titration curve of strong acid versus strong base.	7M	CO5	L2
(b)	How to estimate the concentration of Fe^{+3} using KCNS as complexing agent by colorimetry?	7M	CO5	L2

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4 AUG 2021

H.T.No. | | | | | | | | | | |

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B.Tech. (I Semester) Regular Examinations

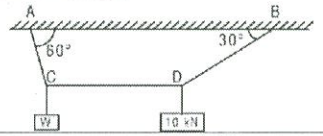
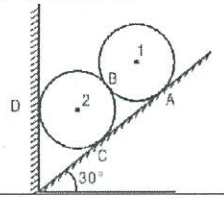
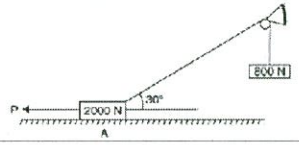
20ME02-ENGINEERING MECHANICS

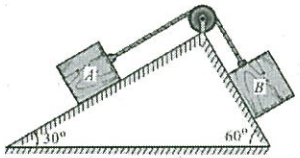
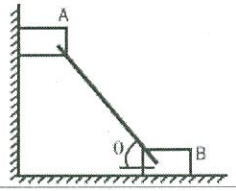
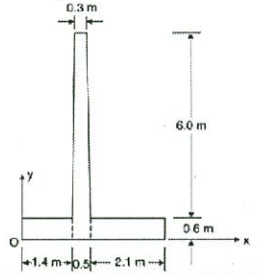
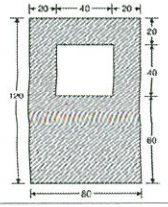
(ASE)

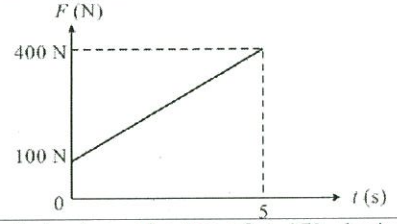
Time : 3 hours Max. Marks :70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Illustrate the following laws of mechanics: (i) Law of transmissibility of forces (ii) Parallelogram law of forces.	7M	CO1	L2
(b)	A cord supported at A and B carries a load of 10 kN at D and a load of W at C a shown in Figure. Find the value of W so that CD remains horizontal. 	7M	CO1	L3
	(OR)			
2(a)	Describe with examples the following system of forces (i) Coplanar concurrent forces (ii) Coplanar non-concurrent forces (iii) Non-coplanar non-concurrent forces.	7M	CO1	L2
(b)	Two identical rollers, each of weights 100 N are supported by an inclined plane and a vertical wall as shown in Figure. Assuming smooth surfaces, find the reactions induced at the points of supports A, B, C and D. 	7M	CO1	L3
3(a)	Explain the terms: coefficient of friction, angle of friction and cone of friction.	7M	CO2	L2
(b)	The block A shown in Figure weighs 2000 N. The cord attached to if passes over a friction less pulley and supports a weight equal to 800 N. The value of coefficient friction between A and the horizontal plane is 0.35. Determine the horizontal force P: (i) If the motion is impending towards the left. (ii) if the motion is impending towards the right. 	7M	CO2	L3
	(OR)			

4(a)	Two blocks *A* and *B* are placed on inclined planes as shown in Figure. The block *A* weighs *1000 N*. Determine minimum weight of the block *B* for maintaining the equilibrium of the systems. Assume that the blocks are connected by an inextensible string passing over a frictionless pulley. Coefficient of friction μ between blocks and plane is *0.25*. 	7M	CO2	L3
(b)	Two identical blocks A and B are connected by a rod and they rest against vertical and horizontal planes respectively as shown in Figure. If sliding impends when $\theta = 45°$, determine the coefficient of friction, assuming it to be same for both floor and wall. 	7M	CO2	L3
5(a)	Determine the centroid of a triangle of base width 'b' and height 'h' by the method of integration.	7M	CO3	L3
(b)	Determine the centroid of the reinforced concrete retaining wall section shown in Figure. 	7M	CO3	L3
	(OR)			
6(a)	State and prove "perpendicular axis theorem"	7M	CO3	L1
(b)	The cross-section of a rectangular hollow beam is as shown in Figure. Determine the polar moment of inertia of the section about centroidal axes. 	7M	CO3	L3

7(a)	A particle travels along a straight-line path such that in 4 seconds it moves from an initial position S_A = -8 m to position S_B = +3 m. Then in another 5 seconds it moves from S_B to S_C = -6 m. Determine the particle's average velocity and average speed during 9 second interval.	7M	CO4	L3
(b)	Prove $v^2 = u^2 + 2as$, when a particle moves at constant acceleration.	7M	CO4	L2
	(OR)			
8(a)	A motorist is travelling at 90 kmph, when he observes a traffic light 250 m ahead of him turns red. The traffic light is timed to stay red for 12 s. If the motorist whishes to pass the light without stopping, just as it turns green. Determine (i) the required uniform deceleration of the motor and (ii) the speed of the motor as it passes the traffic light.	7M	CO4	L3
(b)	A jet plane travels along a parabolic path. When it is at a point A it has a speed of 200 m/s which is increasing at the rate of 0.8 m/s². Determine the magnitude and direction of acceleration of the plane when it is at A.	7M	CO4	L3
9(a)	A crate of 20 kg mass is pulled up the inclined 20° by force F which varies as per the graph shown in figure. Find the acceleration and velocity of the crate at t = 5 s, knowing that its velocity was 4 m/s at t = 0. Take μ_k = 0.2. 	7M	CO5	L3
(b)	A 50 kg block kept on the top of a 15° sloping surface is pushed down the plane with an initial velocity of 20 m/s. If μ_k = 0.4, determine the distance traveled by the block and the time it will take as it comes to rest.	7M	CO5	L3
	(OR)			
10(a)	A flywheel starting from rest and accelerating uniformly performs in 5 s. Find its angular acceleration and its angular velocity after 10 s.	7M	CO5	L3
(b)	The relation of the rigid body is defined as follows where θ is angular displacement in radians and t in seconds: **(a)** $\theta = 3t^2 - 2t$ **(b)** $\theta = t^3 - 1.5t^2$, and **(c)** $\theta = 2 \sin(\pi t/4)$ Determine angular velocity and acceleration in each case at t = 2 s.	7M	CO5	L3

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H.T.No. | | | | | | | | | | |

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

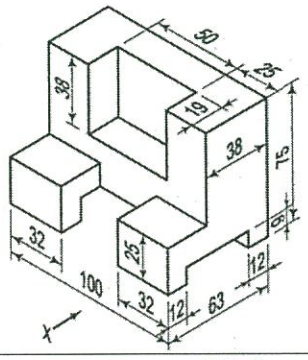
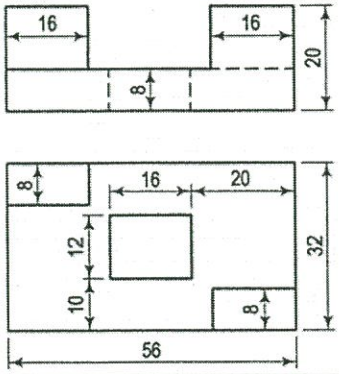
B.Tech. (I Semester) Regular Examinations

20ME01-ENGINEERING GRAPHICS
(ASE&ME)

Time : 3 hours | Max.Marks: 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	The foci of an ellipse are 90 mm apart and the minor axis is 65 mm long. Determine the length of the major axis and draw half the ellipse by concentric-circles method and the other half by oblong method.	7M	CO1	L3
(b)	A ball thrown up in the air reaches a maximum height of 45 metres and travels a horizontal distance of 75 metres. Trace the path of the ball, assuming it to be parabolic.	7M	CO1	L3
	(OR)			
2(a)	Draw a circle with diameter AB equal to 65 mm. Draw a line AC 150 mm long and tangent to the circle. Trace the path of A, when the line AC rolls on the circle, without slipping.	7M	CO1	L3
(b)	Draw an involute of a circle of 40 mm diameter. Also, draw a normal and a tangent to it at a point 100 mm from the centre of the circle.	7M	CO1	L3
3(a)	A vertical line AB, 75 mm long, has its end A in the H.P. and 25 mm in front of the V.P. A line AC, 100 mm long, is in the H.P. and parallel to the V.P. Draw the projections of the line joining B and C, and determine its inclination with the H.P.	7M	CO2	L3
(b)	Two pegs fixed on a wall are 4.5 metres apart. The distance between the pegs measured parallel to the floor is 3.6 metres. If one peg is 1.5 metres above the floor, find the height of the second peg and the inclination of the line joining the two pegs, with the floor.	7M	CO2	L4
	(OR)			
4(a)	Draw the projections of a line AB, 90 mm long, its mid-point M being 50 mm above the H.P. and 40 mm in front of the V.P. The end A is 20 mm above the H.P. and 10 mm in front of the V.P. Show the traces and the inclinations of the line with the H.P. and the V.P.	7M	CO2	L3
(b)	Two oranges on a tree are respectively 1.8 m and 3 m above the ground, and1.2 m and 2.1 m from a 0.3 m thick wall, but on the opposite sides of it. The distance between the oranges, measured along the ground and parallel to the wall is 2.7 m. Determine the real distance between the oranges.	7M	CO2	L4
5(a)	A regular pentagon of 25 mm side has one side on the ground. Its plane is inclined at 45° to the H.P and perpendicular to the V.P. Draw its projections.	7M	CO3	L3
(b)	Draw the projections of a rhombus having diagonals 125 mm and 50 mm long, the smaller diagonal of which is parallel to both the principal planes, while the other is inclined at 30° to the H.P.	7M	CO3	L3
	(OR)			

6(a)	The top view of a plate, the surface of which is perpendicular to the V.P. and inclined at 60° to the H.P. is a circle of 60 mm diameter. Draw its three views.	7M	CO3	L3
(b)	A plate having shape of an isosceles triangle has base 50 mm long and altitude 70 mm. It is so placed that in the front view it is seen as an equilateral triangle of 50 mm sides and one side inclined at 45° to xy. Draw its top view.	7M	CO3	L3
7(a)	Draw the projections of a pentagonal pyramid, base30 mm edge and axis 50 mm long, having its base on the H.P. and an edge of the base parallel to the V.P. Also, draw its side view.	7M	CO4	L3
(b)	A tetrahedron of 75 mm long edges has one edge parallel to the H.P. and inclined at 45° to the V.P. while a face containing that edge is vertical. Draw its projections.	7M	CO4	L3
	(OR)			
8(a)	A hexagonal pyramid, base 25 mm side and axis 55 mm long, has one of its slant edges on the ground. A plane containing that edge and the axis is perpendicular to the H.P. and inclined at 45° to the V.P. Draw its projections when the apex is nearer the V.P. than the base.	7M	CO4	L3
(b)	Draw the projections of a cone, base 50 mm diameter and axis 75 mm long, lying on a generator on the ground with the top view of the axis making an angle of 45° with the V.P.	7M	CO4	L3
9(a)	Draw the isometric view of a cone, base 40 mm diameter and axis 55 mm long when its axis is horizontal.	7M	CO5	L3
(b)	Draw orthographic projections (front view and side view) for the given isometric view. 	7M	CO5	L3
	(OR)			
10(a)	Draw the isometric view of the pentagonal pyramid whose axis is 65 mm long and base 30 mm. One side of its base is perpendicular to V.P.	7M	CO5	L3
(b)	Draw the isometric view of the following orthographic projections. 	7M	CO5	L3

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech. (I Semester) Regular Examinations

20FE05-APPLIED CHEMISTRY
(ASE,CE&ME)

Time : 3 hours Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Justify the following statement. "Water softened by Lime-soda process is not suitable for boilers".	7M	CO1	L2
(b)	How water can be desalinated using electro dialysis?	7M	CO1	L2
	(OR)			
2(a)	A sample of hard water contains the following dissolved salts. $CaCl_2$=11.1mg/l, $CaSO_4$=1.36mg/l, $Ca(HCO_3)_2$=16.2mg/l, $Mg(HCO_3)_2$=14.6mg/l. Calculate the total and permanent hardness.	7M	CO1	L3
(b)	List out the reasons for formation of scales and sludges in boilers. Suggest the suitable methods to prevent it.	7M	CO1	L2
3(a)	How to analyze coal for the following constituents? (i)Moisture content (ii)Volatile matter (iii) Ash content (iv) Fixed carbon.	7M	CO2	L2
(b)	Compare the merits and demerits of solid, liquid and gaseous fuels.	7M	CO2	L2
	(OR)			
4(a)	How gasoline is prepared using moving bed catalytic cracking process?	7M	CO2	L2
(b)	Outline the advantages of using C.N.G.	7M	CO2	L2
5(a)	Justify the following statement, "Calomel electrode is reversible with respect to chloride ions".	7M	CO3	L2
(b)	Calculate the cell potential of the following cell at 298 K. $Mg(s) / Mg^{2+}(0.001M) // Cu^{2+}(0.0001M) / Cu(s)$ $E^0_{Cu^{2+}/Cu}$ =0.34V; $E^0_{Mg^{2+}/Mg}$ = -2.37 V	7M	CO3	L3
	(OR)			
6(a)	Describe the construction and working of Li-ion battery.	7M	CO3	L2
(b)	Explain the construction of fuel cell with a neat diagram and give the equations to show its working.	7M	CO3	L2
7(a)	State the principle of cathodic protection and explain how impressed current method controls corrosion.	7M	CO4	L2
(b)	When does concentration cell corrosion occur? Explain corrosion of metal surface covered with water droplets.	7M	CO4	L2
	(OR)			
8(a)	How the following factors influence rate of corrosion? (i) Purity (ii) Position in galvanic series (iii) Relative area of cathode and anode (iv) Nature of surface film.	7M	CO4	L2
(b)	When does galvanic corrosion occur? Explain with an example.	7M	CO4	L2
9(a)	Illustrate addition and condensation polymerization.	7M	CO5	L2
(b)	How to prepare TEFLON? List out its properties and applications.	7M	CO5	L2
	(OR)			
10(a)	List out the applications of nano materials.	7M	CO5	L2
(b)	State the characteristics of composites.	7M	CO5	L1

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

L.B. Reddy Nagar:: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech. (I Semester) Regular Examinations

20CE02-BUILDING MATERIALS AND CONSTRUCTION

(CE)

Time : 3 hours Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Describe the manufacturing of fly ash and hollow bricks.	7M	CO1	L2
(b)	Mention at least any six good qualities of stones.	7M	CO5	L1
	(OR)			
2(a)	Describe in brief the various stages involved in the manufacturing of bricks.	7M	CO1	L2
(b)	What are the engineering applications/uses of stones as building material?	7M	CO5	L1
3(a)	Describe the limestone cycle process.	7M	CO2	L2
(b)	Describe the manufacturing of cement by dry process.	7M	CO2	L2
	(OR)			
4(a)	Discuss the uses of Cement as building material.	7M	CO2	L2
(b)	Describe the process of manufacturing Fat lime.	7M	CO2	L2
5(a)	Classify the types of mortar based on (i) Bulk density (ii) Types of binder.	7M	CO4	L1
(b)	Outline the plans and elevation of the 1 ½ brick wall Flemish bonds.	7M	CO4	L2
	(OR)			
6(a)	Classify the types of mortar based on (i) Nature of application (ii) Types of binder.	7M	CO4	L1
(b)	Discuss general principles adopted in the stone masonry Construction.	7M	CO4	L2
7(a)	Discuss the functions of Foundation.	7M	CO3	L2
(b)	Illustrate various types of curved roofs.	7M	CO3	L2
	(OR)			
8(a)	Describe the spiral stair cases with neat sketch.	7M	CO3	L2
(b)	Illustrate the construction of flat roofs.	7M	CO3	L2
9(a)	List the general causes for dampness.	7M	CO3	L1
(b)	Compare soft wood and hard wood.	7M	CO1	L2
	(OR)			
10(a)	Classify the paints based on their function and pigment used.	7M	CO4	L1
(b)	Explain different of artificial seasoning of the timber.	7M	CO1	L2

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

B.Tech. (I Semester) Regular Examinations

20CE01-SURVEYING

(CE)

Time : 3 hours Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss in brief the various accessories used for linear measurement in surveying with sketch.	7M	CO1	L2
(b)	What is ranging? If two end stations are not intervisible due to some obstacle such as existence of high ground between them, discuss in details how you will perform ranging?	7M	CO1	L2
	(OR)			
2(a)	(i) Distinguish between whole circle bearing (WCB) and reduced bearing (RB). (ii) The distance between two points, measured with a 20 m chain, was recorded as 327 m. It was afterwards found that the chain was 3 cm too long. What was the true distance between the points?	7M	CO1	L3
(b)	List out the different sources of error in chain surveying? Differentiate between cumulative and compensating errors.	7M	CO1	L2
3(a)	Explain how will you continue chaining past the following obstacles: (i) A river (ii) A tall building	7M	CO1	L2
(b)	What are the sources of error in compass traversing?	7M	CO1	L2
	(OR)			
4(a)	State four merits and four demerits of plane table survey.	7M	CO1	L2
(b)	Describe intersection method of plane table survey.	7M	CO1	L2
5(a)	Describe the method of reciprocal leveling.	7M	CO1	L2
(b)	Explain the various sources of errors in the theodolite surveying.	7M	CO2	L2
	(OR)			
6(a)	State the fundamental lines of Dumpy level and give their relationship.	7M	CO2	L2
(b)	Describe the method of temporary adjustment of Dumpy level.	7M	CO2	L2
7(a)	State the use of contour map and explain in details about the interpolation of contour.	7M	CO4	L2
(b)	Discuss in details about GPS and total station.	7M	CO4	L2
	(OR)			
8(a)	Describe the components of a transit theodolite .	7M	CO2	L2
(b)	Draw a neat sketch showing a simple curve and its component features and define each of them.	7M	CO1	L2
9(a)	The following table shows the latitudes and departures of the sides of a closed traverse ABCD. Find the area of the traverse. Side / Latitude (in m) N / Latitude (in m) S / Departure (in m) E / Departure (in m) W AB 214.8 -- 124.0 -- BC -- 245.1 205.7 -- CD -- 155.9 -- 90.0 DA 186.2 -- -- 239.7	7M	CO4	L3
(b)	Write short notes on types of horizontal curves stating its application in civil engineering.	7M	CO1	L2
	(OR)			
10(a)	Explain the advantages of global position system.	7M	CO1	L2
(b)	Two roads meet at an angle of 127°30'. Calculate the necessary data for setting out a curve of 15 chains to connect two straight portions of the road if it is intended to set out the curve by chain and offsets only. Assume the length of chain as 20meters.	7M	CO4	L3

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

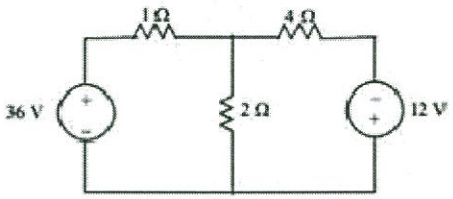
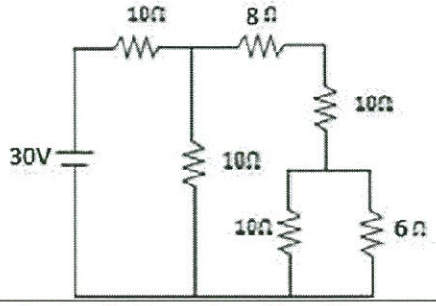
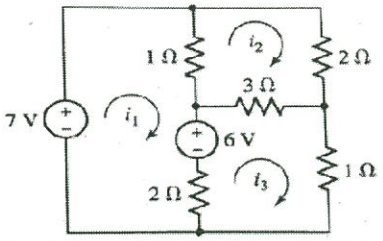
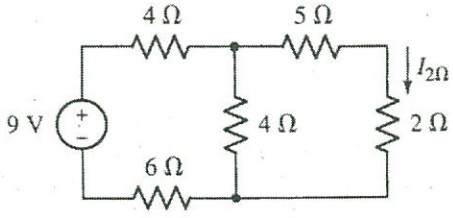
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

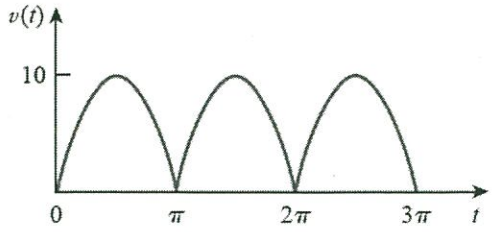
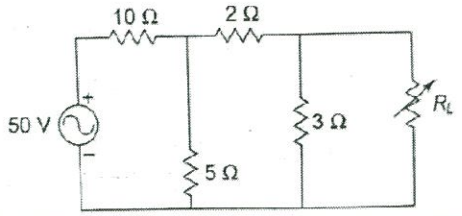
B.Tech. (I Semester) Regular Examinations

20EE02-BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(CSE,IT&ME)

Time : 3 hours Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Define the following: (i) Potential Difference (ii) Resistance (iii) Inductance (iv) Capacitance (v) Work (vi) Power and (vii) Energy.	7M	CO1	L2
(b)	Determine the mesh currents for the circuit shown in figure. 	7M	CO1	L3
	(OR)			
2(a)	Determine the current delivered by the source for circuit shown in figure. 	7M	CO1	L3
(b)	Use mesh analysis to determine the three mesh currents in the circuit shown in figure. 	7M	CO1	L3
3(a)	Use Norton's theorem to find current through the 2 Ω resistor in the circuit 	7M	CO1	L3

(b)	Find rms value of the full-wave rectified sine wave shown in Fig. 	7M	CO1	L3
	(OR)			
4(a)	Determine the maximum power delivered to the load in the following circuit. 	7M	CO1	L3
(b)	Derive the expression for Band width for series RLC circuit.	7M	CO1	L3
5(a)	Illustrate the principle and operation of a DC motor.	7M	CO2	L2
(b)	What is a transformer? And derive the emf equation of a single-phase transformer.	7M	CO2	L2
	(OR)			
6(a)	Outline the principle and operation of a DC generator.	7M	CO2	L2
(b)	Explain the constructional details of single-phase transformer.	7M	CO2	L2
7(a)	What is PN junction diode? How the potential barrier formed in PN junction diode?	7M	CO3	L2
(b)	A diode is used as a half wave rectifier to supply power to a 500 Ω load from a 220 V source of supply. Calculate the rms load current and the dc diode voltage.	7M	CO3	L2
	(OR)			
8(a)	Analyze the operation of Full Wave Rectifier with necessary graphs.	7M	CO3	L2
(b)	Discuss about Zener shunt voltage regulator.	7M	CO3	L2
9(a)	Enumerate the construction of PNP transistor.	7M	CO4	L2
(b)	Describe construction and working of e-MOSFET.	7M	CO4	L2
	(OR)			
10(a)	Discuss how transistor works as an amplifier.	7M	CO4	L2
(b)	Explain input/output characteristics of BJT incommon base configuration.	7M	CO4	L2

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

B.Tech. (I Semester) Regular Examinations

20CS01-PROGRAMMING FOR PROBLEM SOLVING USING C
(CSE&IT)

Time : 3 hours Max.Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1 (a)	What is pseudocode? Explain with example,how it is used as a problem-solving tool.	7M	CO1	L1
(b)	Draw the flowchart and write a C program to compute simple interest.	7M	CO1	L2
	(OR)			
2 (a)	Illustrate any five operators used in C language.	7M	CO1	L2
(b)	Write a C program to find the factorial of a number using do-while, where the number n is entered by user.	7M	CO1	L3
3 (a)	What is array? Explain the declaration and initialization of one dimensional and two-dimensional array with an example.	7M	CO2	L2
(b)	Write a C program to find the greatest number from two-dimensional array.	7M	CO2	L3
	(OR)			
4 (a)	Outline built-in functions for handling strings.	7M	CO2	L2
(b)	Write a C Program to implement string copy operation STRCOPY (str1,str2).	7M	CO2	L3
5 (a)	Explain the concept of array of pointers with examples.	7M	CO3	L2
(b)	Write a C program to read and display multiple strings using pointers.	7M	CO3	L3
	(OR)			
6 (a)	What are the two different techniques of passing arguments to function? Explain with example.	7M	CO3	L2
(b)	Write a program in C using functions to swap two numbers using global variables concept and call by reference concept.	7M	CO3	L3
7 (a)	Describe the following: (i) Nested structures (ii) Array of structures	7M	CO4	L1
(b)	Write a C program to read and display student details using structure.	7M	CO4	L3
	(OR)			
8 (a)	Analyze structure within a structure with an example.	7M	CO4	L2
(b)	Write a c-program using structures to read, write, compute average – marks and display the students scoring above and below the average marks for a class of N students.	7M	CO4	L3
9 (a)	Write a short note on: (i) fgets() (ii) fputs()	7M	CO5	L1
(b)	Write a C program to copy the contents from one file to another file.	7M	CO5	L3
	(OR)			
10 (a)	What do you mean by command-line arguments? Give an example program.	7M	CO5	L2
(b)	Explain error handling during I/O operations.	7M	CO5	L1

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech. (I Semester) Regular Examinations

20FE07-APPLIED PHYSICS

(CSE,ECE,&EEE)

Time : 3 hours Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Illustrate formation of Newton's rings in reflected system. Obtain an expression for radius of curvature of the plano convex lens.	7M	CO1	L2
(b)	Evaluate the thickness of air film at 10th dark ring in Newton's rings system viewed normally by a reflected light of wavelength 500 nm. The diameter of the 10th dark ring is 2 mm.	7M	CO1	L3
	(OR)			
2(a)	Define resolving power of a grating and derive the expression for it.	7M	CO1	L2
(b)	Estimate the highest order that can be seen with a grating having 15000 lines/inch. The wavelength of the light used is 500 nm.	7M	CO1	L3
3(a)	Describe the construction and working of He-Ne laser.	7M	CO2	L2
(b)	He-Ne laser emits light at a wavelength of 632.8 nm and has an output power of 2.3 mW. How many photons are emitted in each minute by this laser when operating?	7M	CO2	L3
	(OR)			
4(a)	Explain different types of optical fibers.	7M	CO2	L2
(b)	Enumerate the applications of optical fibers.	7M	CO2	L1
5(a)	Show that the energy of particle in a potential box is quantized.	7M	CO3	L3
(b)	An electron is trapped in a one dimensional box of 0.1 nm length. Calculate the energy required to excite it from its ground state to the fifth excited state.	7M	CO3	L3
	(OR)			
6(a)	Illustrate Fermi-Dirac distribution function for electrons in a metal. Discuss its variation with temperature.	7M	CO3	L2
(b)	Determine the temperature at which there is 1 % probability of a state with an energy 0.5 eV above Fermi energy.	7M	CO3	L3
7(a)	Deduce the Einstein's relation in semiconductors.	7M	CO4	L2
(b)	Distinguish direct and indirect band gap semiconductors.	7M	CO4	L2
	(OR)			
8(a)	Demonstrate the working of solar cell.	7M	CO4	L2
(b)	List out the applications of solar cell.	7M	CO4	L1
9(a)	Explicate the hysteresis loop observed in Ferromagnetic materials.	7M	CO5	L2
(b)	Differentiate soft and hard magnetic materials.	7M	CO5	L1
	(OR)			
10(a)	Define electronic polarization. Derive the expression for electronic polarizability.	7M	CO5	L2
(b)	The polarizability of Ne gas is $0.35X10^{-40}$ Fm^2. If the gas contains $2.7X10^{25}$ atoms m^{-3} at 0°C and 1 atmospheric pressure, determine its dielectric constant.	7M	CO5	L3

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech. (I Semester) Regular Examinations

20EC01-ELECTRONIC DEVICES AND CIRCUITS

(ECE)

Time : 3 hours Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Describe Transition and Diffusion capacitance of the PN Junction diode.	7M	CO1	L2
(b)	When a reverse bias is applied to a germanium PN junction diode, the reverse saturation current at room temperature is 0.4 micro amperes. Determine the current flowing in the diode when 0.15 V forward bias is applied at room temperature.	7M	CO3	L3
	(OR)			
2(a)	Compare the PN-Junction diode and Zener diode.	7M	CO2	L2
(b)	Illustrate the operation of Diode using characteristics.	7M	CO2	L2
3(a)	A half wave rectifier is supplied from a 230V, 50Hz supply with a step down ration of 4:1 to a resistive load of 10KΩ. the diode forward resistance is 75Ω and transformer secondary resistance is 10Ω. Estimate maximum, average, RMS values of current, DC output voltage, efficiency and ripple factor of the circuit.	7M	CO4	L3
(b)	Based on the conduction of the diode, justify how Diode can be used as Switch and voltage Clamper.	7M	CO3	L3
	(OR)			
4(a)	Compare the Half-wave rectifier and Full wave rectifier in terms of its parameters.	7M	CO1	L1
(b)	Illustrate the need of filter and derive the expression for ripple factor of a Full wave rectifier using Inductor filter.	7M	CO2	L2
5(a)	Identify the current components of PNP Transistor.	7M	CO3	L2
(b)	Summarize the operation of transistor using Common Base configuration with its input and output characteristics.	7M	CO2	L2
	(OR)			
6(a)	A transistor has Base current = 100μA and Collector current = 2mA. Estimate the following parameters: β, α, Emitter current I_E.	7M	CO3	L3
(b)	The common base DC current gain of transistor is 0.967. if the emitter current is 10mA, estimate the base current I_B.	7M	CO3	L3
7(a)	Mark the Drain and Transfer characteristics of N channel JFET.	7M	CO2	L1
(b)	Identify the symbols of Different FETs.	7M	CO3	L1
	(OR)			
8(a)	Interpret the operation of P Channel Enhancement mode MOSFET with its diagram.	7M	CO2	L2
(b)	Justify, how a MOSFET can be used as Capacitor.	7M	CO3	L3
9(a)	For a Fixed bias circuit with V_{CC} = 22.5V, R_C =5.6KΩ, R_B=90KΩ, β=55, V_{BE}=0.6V. The transistor operates in active region. Determine the operating point and stability factor S.	7M	CO4	L3
(b)	Discuss Sensistor compensation technique for stable operation of BJT.	7M	CO2	L2
	(OR)			
10(a)	Explain about Diode Compensation technique for I_{CO}.	7M	CO2	L2
(b)	Draw the circuit of Collector to base bias and derive the expressions for I_B, I_C, V_{CE} and stability factor S.	7M	CO3	L3

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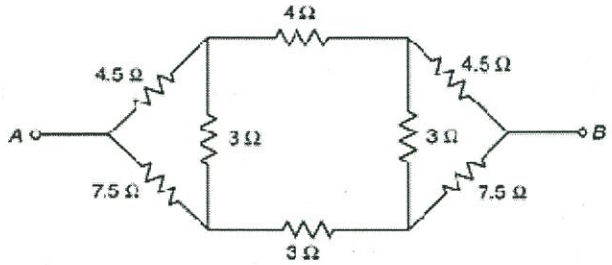
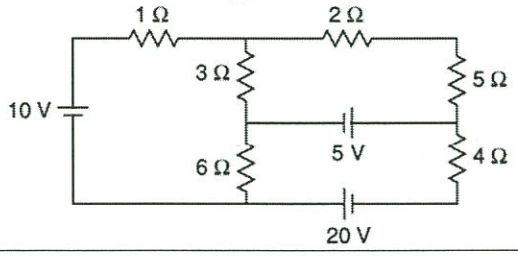
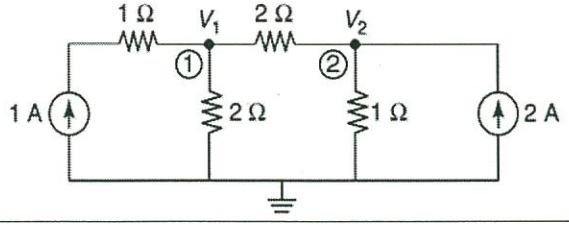
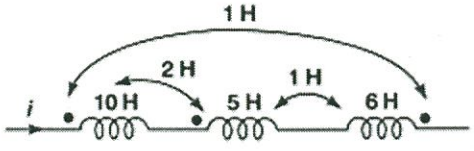
LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

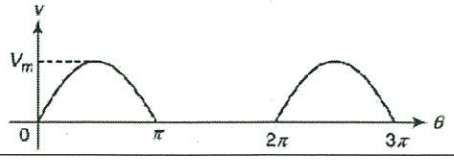
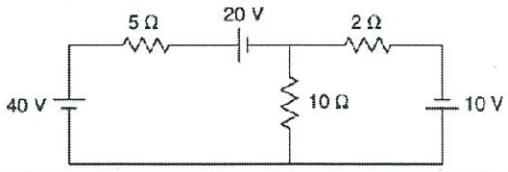
B. Tech (I Semester) Regular Examinations

20EE01-BASIC ELECTRICAL ENGINEERING
(ECE)

Time : 3 hours Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Illustrate the network transformation from delta connection to star connection.	7M	CO1	L2
(b)	Determine an equivalent resistance between A and B terminals in the network. 	7M	CO1	L3
	(OR)			
2(a)	Calculate the current flowing through the 5Ω resistor. 	7M	CO1	L3
(b)	Obtain the voltages at nodes 1 and 2 for the network. 	7M	C01	L3
3(a)	Summarize the concepts of self inductance and mutual inductance in magnetic circuits.	7M	CO1	L2
(b)	Determine the equivalent inductance of the given network below. 	7M	CO1	L3
	(OR)			
4(a)	Describe the average value and R.M.S value of a sinusoidal waveform.	7M	CO2	L2

(b)	Find the average value, R.M.S value, form factor and peak factor of the given signal. 	7M	CO2	L3
5(a)	Examine the procedure to verify the superposition theorem with necessary steps.	7M	CO3	L2
(b)	Use superposition theorem to verify the current passing through the 2Ω resistor is same. 	7M	CO3	L3
	(OR)			
6(a)	Outline the concepts of resonant frequency and bandwidth of a series RLC circuit.	7M	CO4	L3
(b)	A series RLC circuit is connected to a 200V ac supply. The current drawn by the circuit at resonance is 20A. The voltage drop across the capacitor is 5000V at series resonance. Calculate resistance and inductance if capacitance is 4μF. Calculate the resonant frequency.	7M	CO4	L3
7(a)	Explain about poles and zeros of network function with necessary equation.	7M	CO1	L2
(b)	Solve poles and zeros of the network functions given below and draw pole-zero plot. (a) $F(s)=\frac{s(s+2)}{(s+1)(s+3)}$ (b) $F(s)=\frac{s(s+1)}{(s+2)^2(s+3)}$ (c) $F(s)=\frac{s(s+2)}{(s+1+j1)(s+1-j1)}$ (d) $F(s)=\frac{(s+1)^2(s+5)}{(s+2)(s+3+j2)(s+3-j2)}$	7M	CO1	L3
	(OR)			
8(a)	Discuss about open-circuit impedance parameters of a two-port network.	7M	CO1	L2
(b)	Interpret the condition for reciprocity in open-circuit impedance parameter with necessary proof.	7M	CO1	L3
9(a)	Describe the working principal and operation of DC Motor with neat diagrams.	7M	CO2	L2
(b)	Restate the significance of back EMF equation in DC Motor.	7M	CO2	L2
	(OR)			
10(a)	Illustrate construction details and essential parts of DC Generator with a neat diagram.	7M	CO2	L2
(b)	Derive the voltage equation and power equation of DC motor.	7M	CO2	L2

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech. (I Semester) Regular Examinations

20EE03-ELECTRONIC CIRCUITS AND DEVICES

(EEE)

Time : 3 hours Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Describe the working of PN junction diode with the help of V-I characteristics.	7M	CO1	L2
(b)	Describe the working of varactor diode with the help of neat sketches.	7M	CO1	L2
	(OR)			
2(a)	Interpret the three models of PN junction diode with the help of neat sketches and equivalent circuits.	7M	CO1	L2
(b)	The reverse saturation current of a silicon PN junction diode is 10μA. Determine the diode current for the forward bias voltage of 0.6V at room temperature.	7M	CO1	L3
3(a)	Summarize the working of full wave rectifier using two diodes and draw the input and output waveforms.	7M	CO2	L2
(b)	The secondary side voltage For a full – wave rectifier circuit is 10V-0-10V, and load resistance is 100Ω. Determine (i) DC output voltage, and current, (ii) RMS value of voltage and current, (iii)ripple voltage and ripple factor, (iv) Rectification efficiency.	7M	CO2	L3
	(OR)			
4(a)	Describe the working of C-filter. Derive an expression for the ripple factor of a full wave rectifier using C-filter.	7M	CO2	L2
(b)	A full wave rectified voltage of 18V peak is applied across a 500μF filter capacitor. Calculate the ripple and DC voltages if the load takes a current of 100mA.	7M	CO2	L3
5(a)	Summarize the input and output characteristics of a common base transistor configuration with neat sketches.	7M	CO3	L2
(b)	Calculate the values of I_C and I_E for a transistor with α_{dc} = 0.99 and I_{CBO} =5μA, I_B is measured as 20 μA.	7M	CO3	L3
	(OR)			
6(a)	Describe the operation of JFET with the help of neat sketches.	7M	CO3	L2
(b)	A FET has a driven current of 4mA . If I_{DSS}=8mA &$V_{GS(off)}$ =-6V.Find the values of V_{GS} and V_P.	7M	CO3	L3
7(a)	Draw BJT self bias circuit and derive the expression for stability factor S.	7M	CO4	L3
(b)	Determine the operating point for the self bias circuit arrangement with V_{cc}=20V, R_2 =R_C=5KΩ, R_E=1K Ω, R_1=40k Ω and β=99.	7M	CO4	L3
	(OR)			
8(a)	Describe Bias compensation using thermistor.	7M	CO4	L2
(b)	List the advantages and disadvantages of fixed bias, collector to base bias and self bias circuits.	7M	CO4	L2
9(a)	Draw the circuit diagram of CE amplifier and explain its working clearly and also list out the features of it.	7M	CO4	L2
(b)	A CE amplifier is connected to a voltage source of internal resistance R_S = 800 Ω and the load resistance R_L = 1KΩ.The h- parameters are h_{ie} = 1k Ω, h_{re} = 2*10^{-4}, h_{fe} = 50, h_{oe} = 25 mhos. Compute the current gain, input impedance, voltage gain, output impedance and power gain.	7M	CO4	L3
	(OR)			
10(a)	Derive the expressions for voltage gain, current gain, input impedance and output impedance of an approximated common base amplifier.	7M	CO4	L3
(b)	A CB amplifier is drawn by a voltage source of internal resistance R_s = 1200 Ω and the load resistance R_L = 1000 Ω the h- parameters are h_{ib} = 22 Ω, h_{rb} = 3*10^{-4}, h_{fb} = -0.98, h_{ob} = 0.5 mhos. Compute the current gain, input impedance, voltage gain, output impedance and power gain using exact model.	7M	CO4	L3

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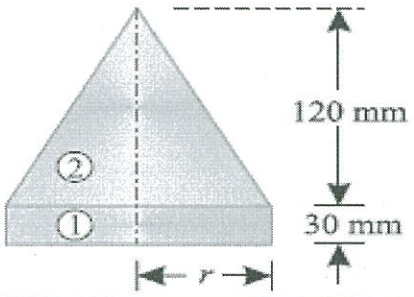
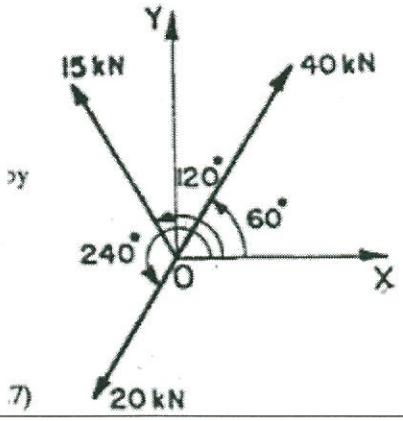
LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar:: Mylavaram – 521 230:: Krishna Dist.:: A.P.

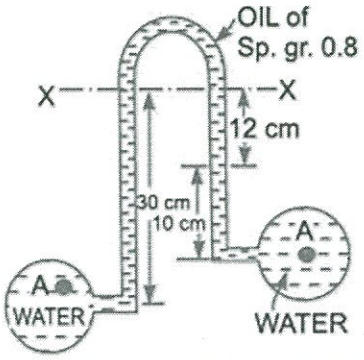
B.Tech. (I Semester) Regular Examinations

20CE04-BASIC CIVIL AND MECHANICAL ENGINEERING
(EEE)

Time : 3 hours Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1 (a)	Illustrate the classification of system of forces.	7M	CO1	L2
(b)	A solid body formed by joining the base of a right circular cone of height H to the equal base of a right circular cylinder of height h. Calculate the distance of the centre of mass of the solid from its plane face, when H = 120 mm and h = 30 mm. 	7M	CO1	L3
	(OR)			
2.	Three forces of magnitude 40 kN,15kN and 20 kN acting at a point O as shown in the figure. The angles made by three forces with x-axis are 60^0,$120^0$and 240^0 respectively. Determine the magnitude and direction of the resultant force. 	14M	CO1	L3
3(a)	Discuss the physical properties of fluids with proper dimensions and units.	7M	CO2	L2
(b)	Describe the types of pressures involved in the fluid mechanics.	7M	CO2	L2
	(OR)			

4 (a)	Outline the classification of flows.	7M	CO2	L2
(b)	Water is flowing through two different pipes to which an inverted differential manometer having an oil of sp. gr. 0.8 is connected. The pressure head in the pipe A is 2 m of water, calculate the pressure in the pipe B for the manometer readings as shown in Fig.  	7M	CO2	L3
5 (a)	Explain in detail about Pelton wheel hydraulic turbine.	7M	CO3	L2
(b)	Discuss the following briefly. (i) Draft tube theory (ii) Cavitation	7M	CO3	L2
	(OR)			
6 (a)	A turbine is to operate under a head of 25m at 200 rpm. The discharge is 9cumec. If the efficiency is 90%, determine: (i) Specific speed of turbine, (ii) Power generated and (iii) Type of turbine.	7M	CO3	L3
(b)	Differentiate between the Francis and Kaplan turbines.	7M	CO3	L2
7 (a)	List out the laws of thermodynamics and explain.	7M	CO4	L1
(b)	Discuss the following terms: (i) System (ii) Cycle (iii) Internal energy (iv) Enthalpy	7M	CO4	L2
	(OR)			
8 (a)	Describe the function of I.C. engine parts with neat sketch.	7M	CO4	L2
(b)	Demonstrate the working of four stroke petrol engine with the reference of diagram.	7M	CO4	L3
9 (a)	Classify the gas turbines and list out the applications of gas turbines.	7M	CO5	L2
(b)	Illustrate the working of impulse steam turbine with proper sketch.	7M	CO5	L3
	(OR)			
10 (a)	Classify the steam turbines.	7M	CO5	L2
(b)	What are the differences between open cycle and closed cycle gas turbines?	7M	CO5	L1

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