



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) Supplementary Examinations, November 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
08-11-2021 (Monday)	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
09-11-2021 (Tuesday)	20FE03 - Differential Equations	20FE03 - Differential Equations	20FE03 - Differential Equations	20FE03 - Differential Equations	20FE03 - Differential Equations	20FE03 - Differential Equations	20FE03 - Differential Equations	20FE03 - Differential Equations
10-11-2021 (Wednesday)	20FE06 - Engineering Chemistry	20FE05 - Applied Chemistry	20FE05 - Applied Chemistry	20FE07 - Applied Physics	20FE07 - Applied Physics	20FE07 - Applied Physics	20FE06 - Engineering Chemistry	20FE05 - Applied Chemistry
11-11-2021 (Thursday)	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
12-11-2021 (Friday)	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: 22-10-2021


CONTROLLER OF EXAMINATIONS


PRINCIPAL

Copy to: 1. Vice-Principal, Deans & HoDs 2. Transport in-charge & Librarian
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11-11-2021 (Thursday)	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
12-11-2021 (Friday)	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

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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)	Why did Nellie Bly decide to girdle the earth? What was the response of the business manager to her decision?	7M	CO3	L1
(b)	Write Plural forms for the following nouns: (i) sandwich (ii) scarf (iii) hero (iv) mouse (v) child (vi) datum (vii) thesis.	7M	CO1	L1
(OR)				
2(a)	If you were given an opportunity, where would you like to travel and why.	7M	CO1	L1
(b)	Write Plural forms for the following nouns: (i) phenomenon (ii) basis (iii) farmer (iv) valley (v) father-in-law (vi) fly (vii) tree.	7M	CO1	L1
3(a)	What qualities did Warren Burton like in the two teachers mentioned in his essay?	7M	CO3	L1
(b)	Write Synonyms for the following words: (i) impeccable (ii) generous (iii) detrimental (iv) tenacity (v) fascinate (vi) humble (vii) culminate.	7M	CO5	L2
(OR)				
4(a)	What were the problems faced by the Burton and his friends in letter writing exercise? How did his teacher resolve them?	7M	CO3	L1
(b)	Write Synonyms for the following words: (i) generous (ii) pinnacle (iii) nascent (iv) distinguished (v) spontaneously (vi) bravery (vii) investigate.	7M	CO5	L2
5(a)	Describe 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 70 words: Ever since the lockdown started, I feel lonely at home. I do have a brother but soon realized that talking to a person or doing the same thing consistently can get monotonous. Sometimes, I even feel that it would be better to go to school, which a month-back I could not have thought of in a million years. At my house, both my parents are doctors. Not that they do not have holidays, they do! Somehow, the holidays do not seem enough. My parents are treating COVID-19 patients and often discuss their healthcare. At times, I find their conversations scary and mom calms me down by saying this will end soon. Yet, I am hardly convinced with her explanations. In the little time that I get to talk to my friends, we discuss the current situation due to pandemic and its advantages, especially on the environment, as us human beings are in lockdown. A few days ago, when my father and I were sitting in the balcony at night I looked up in the sky and saw a lot more stars than I usually get to see. Even my mom told me that Yamuna river is getting cleaner amidst the lockdown.	7M	CO3	L1

20FE01-PROFESSIONAL COMMUNICATION-I

	<p>I also feel that my friends have their parents at home, spending quality time with them and all having fun times, together. While they have fun, my parents are at the hospital treating patients and, of course, this is something that makes me very proud. Still, it is not the same as having them at home.</p> <p>However, the advantage of not having parents at home is that I do not have to do any work until they are back. A few weeks ago, I panicked thinking that I would not get to celebrate my birthday on its due date, just as it was not celebrated the previous three consecutive years on the birthday day, since my parents were busy treating patients of typhoid, pneumonia or dengue. A sigh of relief, this year it does not matter that much as long as my family and I are safe.</p>			
(OR)				
6(a)	Explain the benefits and the limitations of Distributed Work.	7M	CO2	L2
(b)	<p>Identify the Redundant expressions in the following sentences:</p> <p>(i) Since from 1984, he has released several albums.</p> <p>(ii) The job is the end result of his hard work.</p> <p>(iii) Would you please repeat again what you said?</p> <p>(iv) He entered into the class.</p> <p>(v) The MLA has two armed gunmen.</p> <p>(vi) Is that your final conclusion?</p> <p>(vii) India depends on foreign imports for oil.</p>	7M	CO5	L2
7(a)	Describe the contribution of A.P.J. Abdul Kalam to Indian Space Science.	7M	CO2	L2
(b)	<p>Fill in the following blanks with 'A', 'An', 'The' or 'No Article'.</p> <p>(i) ___ house is blue in colour.</p> <p>(ii) David is ___ European.</p> <p>(iii) Who is ___ girl standing at the gate?</p> <p>(iv) ___ refrigerator has stopped working.</p> <p>(v) Have you missed ___ bus?</p> <p>(vi) Mr.Tharoor speaks ___ English fluently.</p> <p>(vii) My friend is learning to play ___ violin.</p>	7M	CO5	L2
(OR)				
8(a)	Write a note on Abdul Kalam's childhood and education.	7M	CO3	L1
(b)	You would like to join a course in French offered by an institution named 'The Mentors.' Write an email to the Director of the institution seeking details of the course.	7M	CO4	L3
9(a)	Give a brief account of the childhood and education of C.V.Raman.	7M	CO3	L1
(b)	Imagine that you are Physical Director of a college. Write a letter to the Sales Manager of Bharat Sports Company placing an order for the sports articles that you wish to purchase for your college.	7M	CO4	L3
(OR)				
10(a)	Explain the association of C.V.Raman with the city of Calcutta.	7M	CO3	L1
(b)	<p>Fill in the blanks with suitable Prepositions:</p> <p>(i) He has been suffering ___ fever.</p> <p>(ii) The sun rises ___ the east.</p> <p>(iii) I still think about him ___ time to time.</p> <p>(iv) I couldn't think of any reason ___ his bad behaviour.</p> <p>(v) There was a lack ___ clean water in the village.</p> <p>(vi) A small child was standing ___ the two adults.</p> <p>(vii) I didn't do it ___ purpose..</p>	7M	CO5	L2

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B.Tech. (I Semester) ~~Regular~~ / Supplementary 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 complete solution of $y^2 dx + (x^2 - xy - y^2) dy = 0$.	7M	CO1	L2
(b)	Find the family of orthogonal trajectories of the family of Lemniscates $r^2 = a^2 \cos 2\theta$, where 'a' is parameter.	7M	CO1	L3
(OR)				
2(a)	Solve $(5x^4 + 3x^2y^2 - 2xy^3) dx + (2x^3y - 3x^2y^2 - 5y^4) dy = 0$.	7M	CO1	L1
(b)	Show that the system of confocal and coaxial parabolas $y^2 = 4a(x+a)$ is self-orthogonal, where 'a' is parameter.	7M	CO1	L3
3(a)	Solve $(D^3 - 6D^2 + 11D - 6)y = e^{-2x} + e^{-3x}$.	7M	CO2	L2
(b)	Apply method of variation of parameters to find the complete solution of $\frac{d^2y}{dx^2} + y = \sec x$.	7M	CO2	L3
(OR)				
4(a)	Find complete solution of $(D^2 - 6D + 13)y = 8e^{3x} \sin 2x$.	7M	CO2	L2
(b)	Solve $(D^2 + D)y = x^2 + 2x + 4$.	7M	CO2	L2
5(a)	Given that $y' = 2y + 3e^x$, $y(0) = 0$. Find an approximate value of y at $x=0.2$ using Taylor's series method.	7M	CO3	L3
(b)	Apply Runge - Kutta method of fourth order to obtain solution of the differential equation $y' = xy$ with $y(0) = 1$ for $y(0.1)$.	7M	CO3	L3
(OR)				
6(a)	Solve $\frac{dy}{dx} = y - x^2$ with $y(0)=1$ using Picard's method and hence obtain the values of 'y' at the points $x=0.1, 0.2$.	7M	CO3	L3
(b)	Apply Euler's method to estimate the value of $y(0.1)$, given IVP is $\frac{dy}{dx} = \frac{y-x}{y+x}$, $y(0)=1$.	7M	CO3	L3
7(a)	If $x = r \cdot \cos \theta$, $y = r \cdot \sin \theta$ then show that $\frac{\partial(x,y)}{\partial(r,\theta)} \cdot \frac{\partial(r,\theta)}{\partial(x,y)} = 1$.	7M	CO4	L2
(b)	Expand the function $e^x \sin y$ in powers of x and y up to the terms of second degree using Maclaurin's series.	7M	CO4	L3
(OR)				
8(a)	Prove that $u = \frac{x+y}{1-xy}$, $v = \tan^{-1} x + \tan^{-1} y$ are functionally dependent and hence find the relation between them.	7M	CO4	L2
(b)	Discuss the maxima and minima of the function $x^3 + y^3 - 3axy$.	7M	CO4	L3
9(a)	Form the partial differential equation by eliminating the arbitrary function $\phi(xy + z^2, x + y + z) = 0$	7M	CO5	L2
(b)	Solve $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$.	7M	CO5	L2
(OR)				
10(a)	Find the partial differential equation of all spheres centers on z - axis with constant radius 'r'.	7M	CO5	L2
(b)	Write the general form of Lagrange's partial differential equation and hence solve $(y^2 + z^2)p - xyq + zx = 0$.	7M	CO5	L1

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B.Tech. (I Semester) ~~Regular~~/Supplementary 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)	Find the concentration of Cd^{+2} ions in the given electro chemical cell. $\text{Zn}/\text{Zn}^{+2} (0.1\text{M}) // \text{Cd}^{+2} (\text{M1})/\text{Cd}$ Given $E^0_{\text{Zn}^{+2}/\text{Zn}} = -0.76 \text{ V}$; $E^0_{\text{Cd}^{+2}/\text{Cd}} = -0.40\text{V}$; $E_{\text{cell}} = 0.3305 \text{ V}$	7M	CO1	L3
(b)	Summarize applications of electrochemical series.	7M	CO1	L2
(OR)				
2(a)	Describe the construction of fuel cell with a neat diagram and explain working process of it.	7M	CO1	L2
(b)	Explain the construction and working of lead-acid battery.	7M	CO1	L2
3(a)	State the conditions that cause wet corrosion. Explain the mechanism of it.	7M	CO2	L2
(b)	How nature of metal influences rate of corrosion?	7M	CO2	L2
(OR)				
4(a)	When does differential aeration corrosion occur? How corrosion of metal rod partially immersed in water occur?	7M	CO2	L2
(b)	State the principle of cathodic protection. How sacrificial anodic protection controls corrosion?	7M	CO2	L2
5(a)	List out the applications of nano materials.	7M	CO3	L2
(b)	Outline types of materials that make CPU and PCBs.	7M	CO3	L1
(OR)				
6(a)	Why rotaxanes and catenanes are used as artificial molecular machines? Discuss their structural features in brief.	7M	CO3	L2
(b)	How to prepare nano-materials using gas phase synthesis?	7M	CO3	L2
7(a)	How thermotropic liquid crystals are formed? Explain types of thermotropic liquid crystals.	7M	CO4	L2
(b)	Summarize applications of liquid crystals in various fields.	7M	CO4	L2
(OR)				
8(a)	Differentiate thermosets and thermoplasts.	7M	CO4	L1
(b)	How to prepare Teflon? List out its properties and uses.	7M	CO4	L2
9(a)	State the principle of conductometry. Describe the conductometric 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
(OR)				
10(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

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B.Tech. (I Semester) ~~Regular~~/Supplementary 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.	Explain storage classes with suitable example each.	14M	CO1	L2
(OR)				
2(a)	Discuss Break and Continue statements with example each.	7M	CO1	L1
(b)	Write a C program to convert a binary number into its equivalent decimal number.	7M	CO3	L3
3(a)	Explain declaration and accessing of elements of 1D and 2D arrays.	7M	CO1	L1
(b)	Develop a C program to count total number of duplicates in an array of integers.	7M	CO3	L3
(OR)				
4(a)	Discuss operations on strings with example.	7M	CO2	L2
(b)	Write a C program to find given string is palindrome or not.	7M	CO3	L3
5.	List and Explain different types of functions with example each.	14M	CO1	L1
(OR)				
6(a)	What is recursive function? Write a recursive C program to find the sum of the first N natural numbers.	7M	CO2	L2
(b)	Explain briefly the following terms with example. (i) Null pointer (ii) Generic pointer (iii) pointer to pointer.	7M	CO2	L2
7(a)	Explain initialization and accessing of structures and nested structures.	7M	CO1	L1
(b)	List differences between structure and union.	7M	CO2	L2
(OR)				
8.	Given a set of student records where each record contains SName, SID, Perc and Address details. Write a C program to implement the following: (i) Read and print the student records (ii) Find all student IDs whose Perc is >70 (iii) Find all student details whose SID is a palindrome.	14M	CO4	L3
9(a)	Explain read data from files and writing data to files with example each.	7M	CO5	L3
(b)	Discuss error handling during file operations.	7M	CO2	L2
(OR)				
10(a)	Explain time and space complexity with suitable example.	7M	CO2	L2
(b)	Analyze the time complexity of binary search algorithm.	7M	CO3	L4

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B.Tech. (I Semester) ~~Regular~~/Supplementary 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)	How do you perform BCD addition? Perform BCD addition for $(256)_{10} + (764)_{10}$.	7M	CO1	L2
(b)	Convert the following. (i) $(AB)_{16} = ()_{10}$, (ii) $(1234)_8 = ()_2$ (iii) $(10110011)_2 = ()_8$ (iv) $(772)_{10} = ()_{16}$	7M	CO1	L2
(OR)				
2.	"NAND and NOR are the Universal gates". Justify the statement.	14M	CO1	L2
3(a)	Prove that $A[B+C(AB+AC)'] = AB$ $AB'(C+BD) + A'B' = B'C$	7M	CO2	L3
(b)	Simplify the Boolean function $F(W,X,Y,Z) = \sum m(1,3,7,11,15) + d(0,2,5)$ for minimal Sum Of Product (SOP) form using K-map and implement using NAND gates.	7M	CO2	L3
(OR)				
4(a)	Reduce the following Boolean expression to 3 literals. $((CD)'+A)'+A+CD+AB$.	7M	CO2	L3
(b)	Using Quine-McCluskey method, obtain minimal expression for the following Boolean function $F(A,B,C,D) = \sum m(0,1,3,7,8,9,11,15)$.	7M	CO2	L3
5(a)	Implement Full adder circuit using decoder and logic gates.	7M	CO3	L3
(b)	Design a 4-bit binary to gray code converter and implement using only NAND gates.	7M	CO3	L3
(OR)				
6(a)	Implement $F(A,B,C,D) = \sum m(0,1,3,4,8,9,15)$ using Multiplexer, choose A as input line.	7M	CO3	L3
(b)	Draw and explain the operation of 3 to 8 decoder.	7M	CO3	L2
7(a)	Differentiate Latch and Flip-Flop. Explain the construction of SR Latch.	7M	CO4	L3
(b)	State and explain the procedure to perform the conversion of JK Flip-Flop to T Flip-Flop.	7M	CO4	L2
(OR)				
8.	Describe the concept of Master Slave JK Flip Flop with neat diagram.	14M	CO4	L2
9(a)	Implement the following Boolean functions using PLA. $A=XY+XZ'$ $B=XY'+YZ+XZ'$	7M	CO5	L3
(b)	Realize the following functions using a PROM of size 8x3. $F1 = \sum m(0,4,7)$ $F2 = \sum m(1,3,6)$ $F3 = \sum m(1,2,4,6)$	7M	CO5	L3
(OR)				
10.	A combinational circuit is defined by the functions, $F1 = \sum m(0,3,5,7)$, $F2 = \sum m(4,5,7)$. Implement the circuit with a PLA having 3 inputs, 3 product terms and two outputs.	14M	CO5	L3

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B.Tech. (I Semester) ~~Regular~~ / Supplementary 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)	How can you say that water treated using lime-soda process damages the boiler material?	7M	CO1	L2
(b)	A sample of hard water contains the following dissolved salts. $\text{CaCl}_2=11.1\text{mg/l}$, $\text{CaSO}_4=1.36\text{mg/l}$, $\text{Ca}(\text{HCO}_3)_2=16.2\text{mg/l}$, $\text{Mg}(\text{HCO}_3)_2=14.6\text{mg/l}$. Calculate the total and permanent hardness.	7M	CO1	L3
(OR)				
2 (a)	List out W.H.O standards of potable water.	7M	CO1	L1
(b)	How water softened using Ion-exchange process?	7M	CO1	L2
3 (a)	How to carry proximate analysis of coal? Give its significance.	7M	CO2	L2
(b)	Summarize the characteristics of good fuel.	7M	CO2	L2
(OR)				
4 (a)	How to synthesize gasoline using Fischer-Tropsch's process?	7M	CO2	L2
(b)	List out the characteristics of bio fuel and explain the process of making biodiesel from rape seed oil.	7M	CO2	L2
5 (a)	Find the concentration of Cd^{+2} ions in the given electro chemical cell. $\text{Zn}/\text{Zn}^{+2} (0.1\text{M}) // \text{Cd}^{+2} (\text{M1})/\text{Cd}$ Given $E^0_{\text{Zn}^{+2}/\text{Zn}} = -0.76\text{V}$; $E^0_{\text{Cd}^{+2}/\text{Cd}} = -0.40\text{V}$; $E_{\text{cell}} = 0.3305\text{V}$.	7M	CO3	L3
(b)	Summarize applications of electrochemical series.	7M	CO3	L2
(OR)				
6 (a)	Describe the construction of fuel cell with a neat diagram and explain working process of it.	7M	CO3	L2
(b)	Explain the construction and working of lead-acid battery.	7M	CO3	L2
7 (a)	State the conditions that cause wet corrosion. Explain the mechanism of it.	7M	CO4	L2
(b)	How nature of metal influences rate of corrosion?	7M	CO4	L2
(OR)				
8 (a)	When does differential aeration corrosion occur? Explain corrosion of metal rod partially immersed in water.	7M	CO4	L2
(b)	State the principle of cathodic protection. How sacrificial anodic protection controls corrosion?	7M	CO4	L2
9 (a)	Differentiate thermosets and thermoplasts.	7M	CO5	L1
(b)	Explain preparation, properties and applications of PVC.	7M	CO5	L2
(OR)				
10 (a)	State the characteristics of good lubricant.	7M	CO5	L1
(b)	How to prepare nano materials using gas phase synthesis?	7M	CO5	L2

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B.Tech. (I Semester) ~~Regular~~/Supplementary Examinations**20ME01-ENGINEERING GRAPHICS**

(ASE&ME)

Time : 3 hours

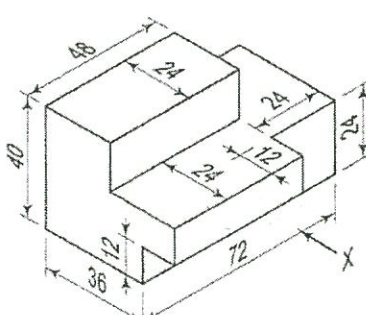
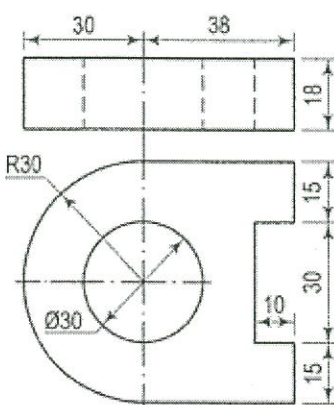
Max.Marks: 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Construct a Heptagon of side 35mm using any special method.	7M	CO1	L1
(b)	Draw an epicycloid, given the generating and directing circles of radius are 30mm and 70mm respectively	7M	CO1	L1
(OR)				
2(a)	Draw an Ellipse inside a rectangle of dimensions 120mm x 80mm using Oblong method and draw a tangent and normal at any point on it.	7M	CO1	L1
(b)	Write the following text "LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING" using BIS standards.	7M	CO1	L1
(OR)				
3(a)	Draw the projection of a point "A" lies in the 3 rd quadrant at a distance of 30mm from vertical plane and 50mm from the origin. Identify the distance from the horizontal plane.	7M	CO2	L2
(b)	A line AB 100 mm long is 45° and 30° inclined to VP and HP respectively. End "A" is 10 mm above HP and its VT is 20 mm below HP. Draw projections of the line and its HT.	7M	CO2	L2
(OR)				
4(a)	Draw the projection of a point "P" lies in the 4 th quadrant at a distance of 30mm from vertical plane and 50mm from the horizontal plane.	7M	CO2	L2
(b)	Line AB 75mm long makes 50° inclination with VP while its FV makes 60°. End A is 18 mm above HP and 12 mm in front of VP. Draw its projections and find its inclination with HP.	7M	CO2	L2
(OR)				
5.	Draw the projections of a circle of 60 mm diameter resting in the HP on a point A on the circumference, its plane inclined at 30° to the HP and (i) The top view of the diameter AB making 45° with the VP (ii) The diameter AB making 45° angle with the VP.	14M	CO3	L2
(OR)				
6.	A semi-circular plate of negligible thickness with 75 mm diameter has its straight edge on the VP and inclined at 45° to the HP. The surface of the plate makes an angle of 30° with the V.P. Draw its projections.	14M	CO3	L2

20ME01-ENGINEERING GRAPHICS

7.	A hexagonal prism, base 40 mm side and height 40 mm has a hole of 40 mm diameter drilled centrally through its ends. Draw its projections when it is resting on one of its comers on the HP with its axis inclined at 60° to the HP and two of its faces parallel to the VP.	14M	CO4	L3
(OR)				
8.	A hexagonal pyramid, base 25 mm side and axis 60 mm long, has one of its slant edges on the ground. A plane containing that edge and the axis is perpendicular to the HP and inclined at 30° to the VP. Draw its projections when the apex is nearer the VP than the base.	14M	CO4	L3
9(a)	Draw the isometric view of a pentagonal pyramid with side of base 35mm and axis 70mm long. When its axis is vertical.	7M	CO5	L2
(b)	Draw the front and top view for the isometric view shown in here. 	7M	CO5	L2
(OR)				
10(a)	Draw the isometric view of a cone, base 40 mm diameter and axis 60 mm long (i) when its axis is horizontal.	7M	CO5	L2
(b)	Develop the isometric view for the views given in figure below. All dimensions are in mm 	7M	CO5	L2

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

20ME02-ENGINEERING MECHANICS

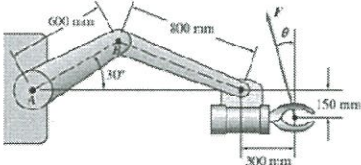
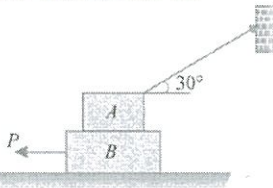
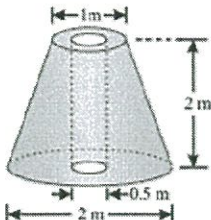
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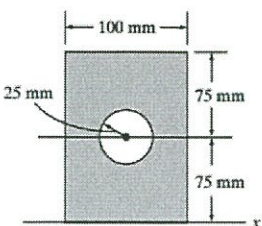
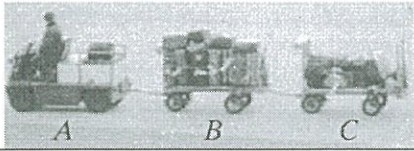
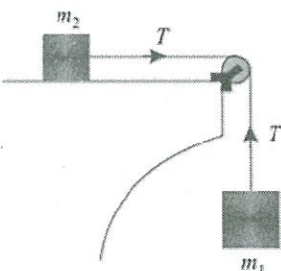
Time : 3 hours

Max. Marks :70

Answer one question from each unit

All questions carry equal marks

Q.No.	Questions	Marks	CO	BL
1(a)	Find the magnitude of the two forces, such that if they act at right angles, their resultant is $\sqrt{10}$ N. But if they Act at 60° , their resultant is $\sqrt{13}$ N.	7M	CO1	L3
(b)	An electric light fixture weighting 15 N hangs from a point C, by two strings AC and BC. The string AC is inclined at 60° to the horizontal and BC at 45° to the horizontal. Determine the forces in the strings AC and BC.	7M	CO1	L3
(OR)				
2(a)	The force F acts on the gripper of the robot arm. The moments of F about points A and B are 210 N-m and 90 N-m, respectively both counter clock wise. Determine F and the angle θ . 	7M	CO1	L3
(b)	State and prove Lami's Theorem.	7M	CO1	L3
3(a)	List any 3 applications, where friction is helpful in day-to-day life. 4 applications where friction is disadvantage.	7M	CO2	L2
(b)	It is observed that when the bed of a dump truck is raised to an angle of 25° (to the ground) the vending machines will begin to slide of the bed. Determine the static coefficient of friction between vending machine and the surface of the truck bed. Consider the vending machine dimensions (Height= 2m and width=1m).	7M	CO2	L3
(OR)				
4(a)	Deduce the expression for the minimum force along the inclination, that will keep the body in equilibrium (b) when the body is at the point of sliding downwards.	7M	CO2	L2
(b)	Two blocks A and B of weights 500 N and 1kN respectively are in equilibrium position as shown in the Figure. If the coefficient of friction between the two blocks as well as the block B and the floor is 0.27, find the force (P) required to move the block B. 	7M	CO2	L3
5(a)	Determine the centre of gravity of the frustum of a solid right circular cone has an axial hole of 50 cm diameters shown in Figure. 	7M	CO3	L3

(b)	Find the centroid of the right-angle triangle area by analytical method.	7M	CO3	L3
(OR)				
6(a)	State and describe the Perpendicular-Axis theorem.	7M	CO3	L3
(b)	Determine the moment of inertia of the area shown in the figure about the X axis.	7M	CO3	L3
				
7(a)	A motor car takes 10 seconds to cover 30 meters and 12 seconds to cover 42 meters. Find the uniform acceleration of the car and its velocity at the end of 15 seconds.	7M	CO4	L2
(b)	A horizontal bar 1.5 m long and of small cross-section rotates about vertical axis through one end. It accelerates uniformly from 30 r.p.m. to 45 r.p.m. for 10 seconds. What is the linear velocity at the beginning and end of this interval? What is the tangential component of the acceleration of the mid-point of the bar after 10 seconds.	7M	CO4	L2
(OR)				
8(a)	A wheel rotates for 5 seconds with a constant angular acceleration and describes during this time 100 radians. It then rotates with a constant angular velocity and during the next five seconds describes 80 radians. Find the initial angular velocity and the angular acceleration.	7M	CO4	L2
(b)	A car moves along a straight line whose equation of motion is given by $S = 12t + 3t^2 - 2t^3$. Where (S) is in meters and (t) is in seconds. Calculate (i) velocity and acceleration at start, and (ii) acceleration, when the velocity is zero.	7M	CO4	L2
9(a)	State D'Alembert's principle and relate with Newton's law of motion.	7M	CO5	L3
(b)	The baggage truck A shown in figure has weight of 900 N and tows a 550 N cart B and 325 N cart C. For a short time the driving frictional force developed at the wheels of the truck is $F_A = (40t)$ N, where t is in seconds. If the truck starts from the rest, By ignoring the sizes of the truck and carts, determine the force acting on the coupling between the truck and the cart B at 2 seconds.	7M	CO5	L3
				
(OR)				
10(a)	Deduce the expression for the acceleration of the body lying on the smooth surface and tension in the string for the system shown in the figure.	7M	CO5	L3
				
(b)	Explain the reason for the tension in both the strings to be equal, when two masses are attached to its ends, and the inextensible string is made to pass over a smooth pulley.	7M	CO5	L3

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B.Tech. (I Semester) ~~Regular~~/Supplementary 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)	What are different tape corrections?	7M	CO1	L1
(b)	Convert the whole circle bearing into reduced bearing: 50°, 176°, 10°, 232°, 150°, 76°, 310°, 242°.	7M	CO1	L2
(OR)				
2(a)	Compare the advantages and disadvantages of plane table surveying with those of chain surveying.	7M	CO1	L4
(b)	Classify and explain about the method of Surveying based upon the instruments used.	7M	CO1	L3
3(a)	The following staff readings were observed successively with level, the instrument having been moved forward after the second, fourth and eighth readings: 0.875, 1.235, 2.310, 1.385, 2.930, 3.125, 4.125, 0.120, 1.875, 2.030, 3.765. The first reading was taken with the staff held upon a benchmark of elevation 132.135. Enter the readings in level book-form and reduce the levels. Apply the usual checks. Find also the difference in level between the first and the last points.	7M	CO2	L4
(b)	List out the methods of contouring and explain any one method in detail.	7M	CO2	L1
(OR)				
4(a)	Differentiate between simple levelling and contour levelling.	7M	CO2	L2
(b)	Compare Rise and Fall method with Height of plain of collimation method on any four points.	7M	CO2	
5(a)	An embankment of width 10 m and side slopes 1 ½:1 is required to be made on a ground which is level in a direction transverse to the centre line. The central heights at 40 m intervals are as follows: 0.90, 1.25, 2.15, 2.50, 1.85, 1.35, and 0.85. Calculate the volume of earth work according to (i) Trapezoidal formula (ii) Prismoidal formula.	7M	CO3	L4
(b)	State and explain Trapezoidal's rule.	7M	CO3	L1
(OR)				
6(a)	List out the formulas for computing volumes.	7M	CO3	L1
(b)	What are the merits of computing area using Simpson's rule?	7M	CO3	
7(a)	What are the principles of electronic theodolite?	7M	CO3	L2
(b)	Derive distance equation for staff vertical condition and explain the role of anallactic lens in stadia tacheometry.	7M	CO3	L3
(OR)				
8(a)	State the principle of Tacheometric Surveying.	7M	CO3	L1
(b)	Write the permanent and temporary adjustments of a transit theodolite.	7M	CO3	L3
9(a)	With a neat sketch show the different parts of a simple circular curve.	7M	CO4	L4
(b)	State the relationship between the radius of a curve and the degree of the curve.	7M	CO4	L4
(OR)				
10(a)	What are the elements of simple circular curve? What are the units and sub-chords?	7M	CO4	L1
(b)	Differentiate between simple and compound curves.	7M	CO4	L2

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B.Tech. (I Semester) ~~Regular~~/Supplementary 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)	Explain the various factors that cause deterioration of stone work and the preservation of stones.	7M	CO1	L1
(b)	Explain dressing of stones and what are the requirements of good building stones.	7M	CO1	L2
(OR)				
2(a)	Mention the different test conducted on bricks and explain any two tests.	7M	CO1	L3
(b)	Enumerate the importance of good building stone.	7M	CO1	L4
3(a)	Write methods of manufacture of lime.	7M	CO2	L2
(b)	Write short notes on rapid hardening cement.	7M	CO2	L3
(OR)				
4(a)	Write methods of manufacture of lime.	7M	CO2	L1
(b)	What is mean by setting time of cement?	7M	CO2	L1
5(a)	Discuss the general principles in Brick Masonry Construction.	7M	CO3	L1
(b)	Enumerate the functions of good motor.	7M	CO3	L4
(OR)				
6(a)	Compare stone masonry with brick masonry with neat sketches.	7M	CO3	L2
(b)	Draw the elevation of English and Flemish bond and compare English and Flemish.	7M	CO3	L1
7(a)	What are the functions of good foundation?	7M	CO3	L2
(b)	Draw a neat sketch of an arch and explain various technical terms related to an arch.	7M	CO3	L3
(OR)				
8(a)	List the types of roofs and explain any two with neat sketches.	7M	CO4	L1
(b)	Define Lintel. Explain different types of lintels with neat sketches.	7M	CO4	L2
9(a)	Briefly explain the constituents of a paint, and defects in painting.	7M	CO4	L1
(b)	Explain damp proofing. What are the causes of dampness?	7M	CO4	L2
(OR)				
10(a)	Mention and explain different types of paints.	7M	CO4	L3
(b)	Explain the procedure of painting iron and steel surfaces.	7M	CO4	L4

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

B.Tech. (I Semester) ~~Regular~~ / Supplementary 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)	List out the necessary conditions for obtaining interference fringes.	7M	CO1	L1
(b)	Discuss the theory of Newton's rings with relevant diagram; hence estimate the diameter of dark and bright rings.	7M	CO1	L2
(OR)				
2(a)	Discuss diffraction due to single slit. Obtain the expression for the width of central maximum.	7M	CO1	L2
(b)	A slit of width 1.5 mm is illuminated by a light of wavelength 500 nm and diffraction pattern is observed on a screen 2 m away. Determine the width of the central maximum.	7M	CO1	L3
3(a)	Describe the construction and working of He-Ne laser.	7M	CO2	L2
(b)	List out the applications of LASER.	7M	CO2	L1
(OR)				
4(a)	Classify different types of Optical fibers.	7M	CO2	L1
(b)	Define and derive the expressions for acceptance angle and numerical aperture.	7M	CO2	L2
5(a)	Derive Schrodinger's time independent wave equation.	7M	CO3	L2
(b)	Deduce the expression for de-Broglie wavelength of a moving particle.	7M	CO3	L2
(OR)				
6(a)	Illustrate the salient features of classical free electron theory. Derive the expression for conductivity of the metal in terms of mobility of the electrons.	7M	CO3	L2
(b)	Distinguish conductors, semiconductors and insulators basing on the band theory of solids.	7M	CO3	L1
7(a)	Discuss the drift and diffusion currents in a semiconductor.	7M	CO4	L2
(b)	Obtain the Einstein's relation.	7M	CO4	L2
(OR)				
8(a)	State Hall Effect. Obtain the expression for Hall coefficient.	7M	CO4	L2
(b)	The Hall coefficient of a specimen of doped silicon is found to be $4 \times 10^{-4} \text{ m}^3/\text{C}$. The resistivity of the specimen is $8 \times 10^{-3} \Omega\text{m}$. Estimate the mobility and density of the charge carriers.	7M	CO4	L3
9(a)	Classify different types of magnetic materials.	7M	CO5	L1
(b)	The magnetic susceptibility of a material is 0.5. Estimate the relative permeability and permeability of the material.	7M	CO5	L3
(OR)				
10(a)	Define internal field (E_i). Derive an expression for Lorentz electric field in dielectrics.	7M	CO5	L2
(b)	Argon gas contains $2.7 \times 10^{25} \text{ atoms m}^{-3}$ at 0°C and at normal pressure. Calculate the dielectric constant of the Ar gas at this temperature, if the diameter of the Ar atom is 0.384 nm.	7M	CO5	L3

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B.Tech. (I Semester) ~~Regular~~/Supplementary 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)	Define an identifier (variable). What are the rules to construct identifier? Classify the following as valid/invalid Identifiers.(i) num2 (ii) \$num1 (iii) +add33 (iv) a_2 (v) 199_space (vi) _apple (vii) #12.	7M	CO1	L2
(b)	What is an expression? Evaluate the following expressions. (i) 100%20<= 20-5+100%10-20==5>=1!=20 (ii) a+=b*=C-=5 where a=3, b=5 and c=8.	7M	CO1	L2
(OR)				
2(a)	List all conditional control statements used in C. Explain with syntax and example.	7M	CO1	L2
(b)	Differentiate between break and continue statements in C language. Give examples.	7M	CO1	L2
3(a)	Design a C program that reads input marks of 60 students from the user, find and display sum and mean.	7M	CO2	L3
(b)	Develop a C program that reads N integer numbers and arrange them in ascending order using bubble sort.	7M	CO2	L3
(OR)				
4(a)	Write a C program to concatenate two strings without using built-in function strcat().	7M	CO2	L3
(b)	Define preprocessor directive. Discuss #define and #include preprocessor directives.	7M	CO2	L2
5(a)	Define a function. List and explain the categories of user defined functions.	7M	CO3	L2
(b)	With proper examples discuss different operations performed on pointers.	7M	CO3	L2
(OR)				
6(a)	Develop a C program to find the smallest and largest element in an array using pointers.	7M	CO3	L3
(b)	Distinguish between the following. (i) Global and local variables (ii) Automatic and static variables.	7M	CO3	L3
7(a)	Discuss the use of enumerated data type with example.	7M	CO4	L2
(b)	Design 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 information of an organization. Use the appropriate methods to define the above details and define a function that will display their contents.	7M	CO4	L4
(OR)				
8(a)	Define union. Give the general template for union. How data elements are stored under unions? Explain with example.	7M	CO4	L2
(b)	Calculate the total marks and grade of a student using structures.	7M	CO4	L3
9(a)	Discuss the process of handling errors during file operations.	7M	CO5	L2
(b)	Write a C program to count number of characters, spaces, lines, words of a file.	7M	CO5	L3
(OR)				
10(a)	Discuss command line arguments in detail with example.	7M	CO5	L2
(b)	Demonstrate the use of fread() and fwrite() in file handling.	7M	CO5	L2

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

20EE02-BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

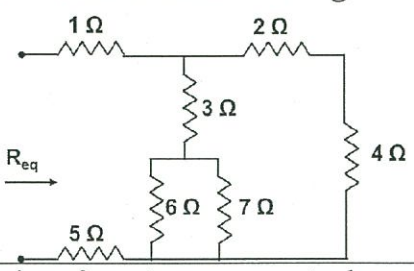
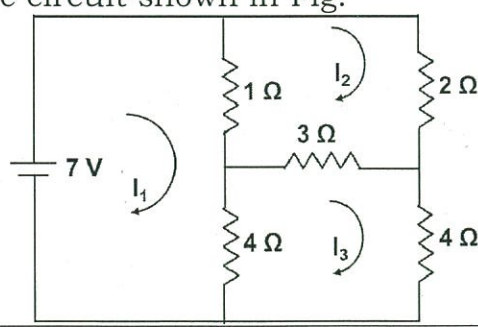
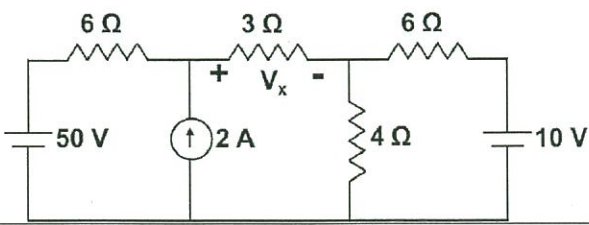
(CSE,IT&ME)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

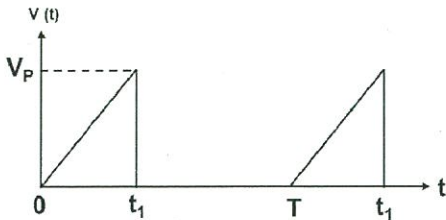
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Find the R_{eq} for the circuit shown in Fig. 	7M	CO1	L3
(b)	Derive the expression for star connected resistances in terms of delta connected resistances.	7M	CO1	L3
(OR)				
2(a)	Two $50\ \Omega$ resistors are connected in series. When a resistor R is connected across one of them, the total circuit resistance is $60\ \Omega$. Calculate the value of R . Then, 60 V battery is connected across the circuit. Find the current passing through individual resistances.	7M	CO1	L3
(b)	Determine voltage drop across $2\ \Omega$ resistor using mesh analysis for the circuit shown in Fig. 	7M	CO1	L3
3(a)	State and explain Thevenin's theorem.	7M	CO2	L3
(b)	Use Superposition theorem to find the value of V_x in the given circuit shown in Fig. 	7M	CO2	L3

(OR)

1 of 2

20EE02-BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

4(a)	Derive the average value of waveform shown in Fig. 	7M	CO2	L3
(b)	A coil that has an inductance of 180mH and a resistance of 35Ω is connected to a 230 V, 50Hz AC supply. Calculate the (i) impedance of the coil, (ii) current, (iii) power factor and (iv) apparent power consumed.	7M	CO2	L3
5(a)	Elaborate commutation in a DC motor.	7M	CO3	L2
(b)	Explain the principle of operation of DC generator.	7M	CO3	L2
(OR)				
6(a)	Explain the construction of core type transformer.	7M	CO3	L2
(b)	Explain the working of single-phase transformer on load.	7M	CO3	L2
7(a)	Explain the theory of PN junction diode.	7M	CO4	L2
(b)	Describe the VI characteristics of PN Junction diode.	7M	CO4	L2
(OR)				
8(a)	Explain the characteristics of Zener diode as a regulator.	7M	CO4	L2
(b)	Explain the working of full wave rectifier with necessary circuit diagram and waveforms.	7M	CO4	L2
9(a)	With neat structure, explain the working of PNP transistor.	7M	CO5	L2
(b)	Draw and explain the input and output characteristics of a transistor in CB configuration.	7M	CO5	L2
(OR)				
10(a)	With neat diagram, explain the construction and working of N-channel depletion type MOSFET.	7M	CO5	L2
(b)	Explain the voltage divider biased CB amplifier with circuit diagram.	7M	CO5	L2

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20EE01-BASIC ELECTRICAL ENGINEERING

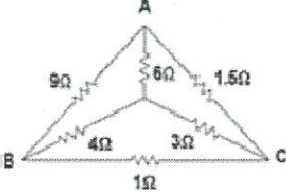
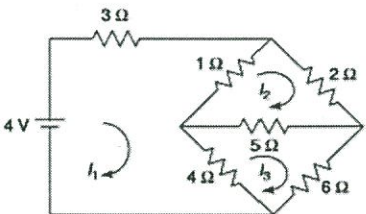
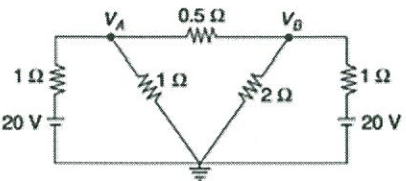
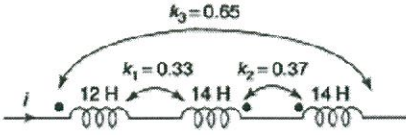
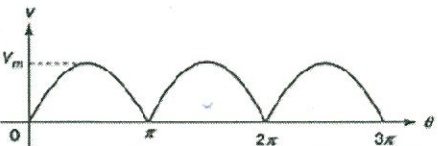
(ECE)

Time : 3 hours

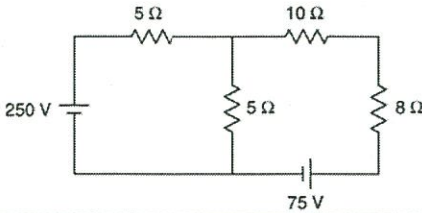
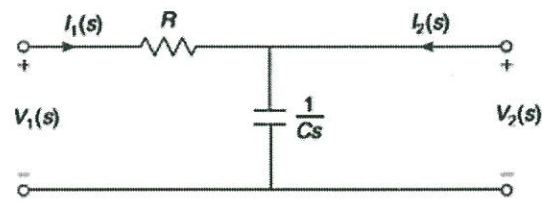
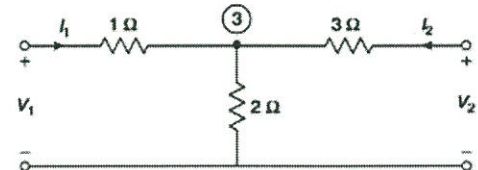
Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Illustrate the transformation from star connection to delta connection.	7M	CO1	L2
(b)	Determine the equivalent resistance between A and B from the given circuit. 	7M	CO1	L3
(OR)				
2(a)	Calculate the current delivered by the voltage source. 	7M	CO3	L3
(b)	Obtain the voltage at nodes A and B for the network. 	7M	CO3	L3
3(a)	Summarize an expression for coefficient of coupling k for a magnetic circuit.	7M	CO1	L2
(b)	Find the equivalent inductance of the network given below. 	7M	CO1	L3
(OR)				
4(a)	Discuss about instantaneous power, active power, reactive power and apparent power in series RL circuit.	7M	CO2	L2
(b)	Find the Average value, R.M.S value, Form factor and Peak factor of the given signal. 	7M	CO2	L3

20EE01-BASIC ELECTRICAL ENGINEERING

5(a)	Examine the procedure to obtain Thevenin's voltage and Thevenin's resistance in network analysis.	7M	CO3	L2
(b)	Use Thevenin's Theorem to find current through the 8Ω resistor. 	7M	CO3	L3
(OR)				
6(a)	Outline the concept of bandwidth and quality factor of series RLC circuit.	7M	CO4	L4
(b)	Calculate the resonant frequency, bandwidth, lower and upper frequencies of the band width for series RLC circuit having $R=10\Omega$, $L=0.01H$ and $C=100\mu F$.	7M	CO4	L4
(OR)				
7(a)	Differentiate between one-port network with two port network and write two-port network equations of Z, Y, ABCD and h- Parameters.	7M	CO1	L2
(b)	Find voltage transfer function of a given two-port network. 	7M	CO1	L3
(OR)				
8(a)	Discuss about short-circuit admittance parameters of a two-port network.	7M	CO1	L2
(b)	Find Y-parameters for the network given below. 	7M	CO1	L3
(OR)				
9(a)	Explain the working principal and operation of single-phase transformer.	7M	CO2	L2
(b)	Interpret about induced EMF equations in primary winding and secondary winding of the single phase transform.	7M	CO2	L2
(OR)				
10(a)	Restate different types of DC Generators based on excitation.	7M	CO2	L2
(b)	The core of a 100 KVA, 11000/550V, 50Hz single phase core type transformer has a cross section of 20cm x 20cm. Find: (i) The Number of H.V. and L.V. turns per phase. (ii) The emf per turn if the maximum core density is not to exceed 1.3 Tesla. Assume a stacking factor of 0.9.	7M	CO2	L3

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B.Tech. (I Semester) ~~Regular~~ / Supplementary 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)	Draw the V- I characteristics of diode and explain the procedure to calculate its static and dynamic resistance.	7M	CO1	L1
(b)	The reverse saturation current of Silicon p-n junction diode is 10μ Amps. Calculate the diode current for forward bias voltage of 0.6V at 25°C .	7M	CO3	L3
(OR)				
2 (a)	Why PN junction diode cannot be used as Regulator and Zener diode can be as Regulator.	7M	CO3	L3
(b)	Enumerate the construction procedure and operation of SCR.	7M	CO2	L2
3 (a)	How a portion of an input signal can be clipped by using diode circuit.	7M	CO3	L3
(b)	A Full wave rectifier is supplied from a 230V, 50Hz supply with a step down ratio of 6:1 to a resistive load of $1\text{K}\Omega$. The diode forward resistance is 75Ω and transformer secondary resistance is 10Ω . Estimate maximum, average, RMS values of current and DC output voltage.	7M	CO4	L4
(OR)				
4 (a)	Sketch the Half wave rectifier circuit using center tapped transformer and summarize its operation with applied sinusoidal signal as input.	7M	CO2	L2
(b)	Derive the expressions for the Full wave rectifier DC Output current, RMS current and Rectifier efficiency.	7M	CO1	L1
5 (a)	For a BJT Base current $I_B = 100\mu\text{A}$ and collector current $I_C = 2\text{mA}$. Estimate β , α , Emitter current I_E .	7M	CO2	L2
(b)	Identify the current components of NPN Transistor.	7M	CO3	L3
(OR)				
6 (a)	Describe the operation of transistor CE configuration with its input and output characteristics.	7M	CO2	L2
(b)	Common base DC current gain is 0.97, if the emitter current is 10mA, estimate the base current I_B .	7M	CO3	L3
7 (a)	Identify the constructional procedure of P Channel Enhancement mode MOSFET.	7M	CO3	L3
(b)	Demonstrate the construction and operation of N channel JFET with neat sketch.	7M	CO2	L2
(OR)				
8 (a)	Interpret the operation of N Channel Depletion mode MOSFET with its diagram.	7M	CO2	L2
(b)	List the advantages of MOSFET over BJT.	7M	CO1	L1
9 (a)	Draw the circuit of Self bias and derive the expression for stability factor S.	7M	CO2	L2
(b)	What is Q-point, Explain the procedure to fixing Q-point.	7M	CO2	L2
(OR)				
10 (a)	What are the advantages of Self bias over other biasing techniques?	7M	CO1	L1
(b)	In a Fixed bias circuit a Si transistor with $\beta = 100$ is used, $V_{CC} = 6\text{V}$, $R_C = 3\text{K}\Omega$, $R_B = 530\text{K}\Omega$. Determine the coordinates of Q point.	7M	CO4	L4

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

20CE04-BASIC CIVIL AND MECHANICAL ENGINEERING

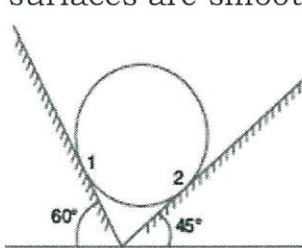
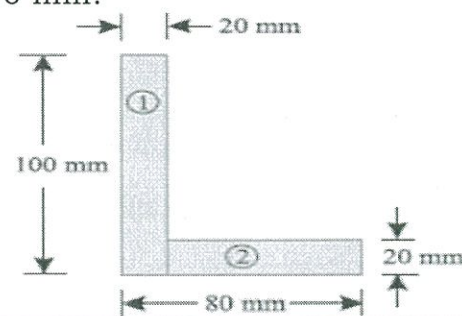
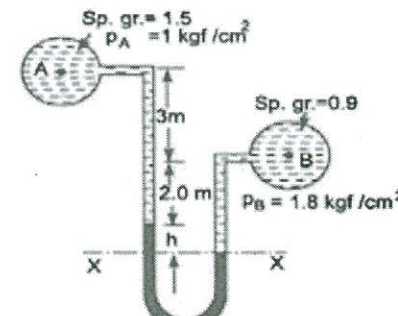
(EEE)

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)	How do you define engineering mechanics and explain the Newton's laws of mechanics.	7M	CO1	L2
1(b)	<p>A 400 N sphere is resting in a trough as shown in Fig. Determine the reactions developed at contact surfaces. Assume all contact surfaces are smooth.</p> 	7M	CO1	L3
(OR)				
2(a)	<p>Calculate the centroid of an unequal angle section of 100 mm × 80 mm × 20 mm.</p> 	7M	CO1	L3
(b)	Demonstrate the Varignon's theorem.	7M	CO1	L3
3(a)	<p>A differential manometer is connected at the two points A and B of two pipes as shown in fig. The pipe A contains a liquid of sp. gr.=1.5 while pipe B contains a liquid of sp. gr.= 0.9. The pressures at A and B are 1 kgf/cm² and 1.80 kgf/cm² respectively. Calculate the difference in mercury level in the differential manometer.</p> 	7M	CO2	L3

20CE04-BASIC CIVIL AND MECHANICAL ENGINEERING

(b)	Discuss the physical properties of fluids with mathematical formulae.	7M	CO2	L2
(OR)				
4(a)	Discuss the different types of flows.	7M	CO2	L2
(b)	Derive the equation of continuity for one dimensional flow.	7M	CO2	L3
5(a)	Explain the working of Pelton wheel hydraulic turbine with neat sketch.	7M	CO3	L2
(b)	Discuss the following briefly. (i) Draft tube theory (ii) Cavitation	7M	CO3	L2
(OR)				
6.	Derive the numerical relation for specific speed of hydraulic turbines.	14M	CO3	L3
7(a)	Differentiate the S.I and C.I Engines.	7M	CO4	L2
(b)	Analyse the performance indices for heat engine and refrigerator.	7M	CO4	L4
(OR)				
8(a)	What do you know about valve and port timing diagrams?	7M	CO4	L1
(b)	Explain the working of four stroke petrol engine with the help of strokes.	7M	CO4	L2
9(a)	Classify the gas turbines and list out the applications.	7M	CO5	L4
(b)	Contrast the impulse and reaction steam turbines.	7M	CO5	L2
(OR)				
10(a)	Classify the steam turbines.	7M	CO5	L4
(b)	Differentiate between open cycle and closed cycle gas turbines.	7M	CO5	L2

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

20EE03-ELECTRONIC CIRCUITS AND DEVICES

(EEE)

Time : 3 hours

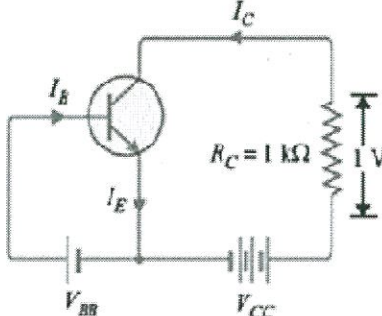
Max.Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1 (a)	(i) Define static and dynamic resistance of P-N diode. (ii) For a Germanium diode, the diode current is $2\mu\text{A}$ when the voltage across the diode is 0.26V is applied. Calculate the forward and reverse dynamic resistance values at room temperature.	7M	CO1	L3
(b)	Explain about the different current components in a p-n junction diode.	7M	CO1	L1
(OR)				
2 (a)	Explain PN diode characteristics in forward bias and reverse bias regions.	7M	CO1	L2
(b)	Write a short-notes on Zener diode, Tunnel diode and Varactor diode.	7M	CO1	L2
3 (a)	Draw the circuit diagram of full-wave rectifier with L-section filter and explain it.	7M	CO2	L2
(b)	A sinusoidal voltage whose peak value of 12V is applied to half-wave rectifier. The diode may be considered to be ideal and load resistance is $1.5\text{ k}\Omega$ is connected as load. Find out peak value of current, RMS value of current, DC value of current and Ripple factor.	7M	CO2	L4
(OR)				
4 (a)	Compare the operation of half wave rectifier and full wave rectifier and derive the expressions for the peak inversion voltage in both of the cases.	7M	CO2	L3
(b)	Define ripple factor and compare various types of filter circuit.	7M	CO2	L2
5 (a)	In a bipolar junction transistor, explain about punch through, thermal runaway and base width modulation.	7M	CO3	L1
(b)	Explain the operation of common emitter configuration of BJT and derive the input and output characteristics.	7M	CO3	L3
(OR)				

20EE03-ELECTRONIC CIRCUITS AND DEVICES

6(a)	 <p>For a transistor connected in a common emitter configuration as shown in figure, determine the value of base current. α for this transistor is given as 0.98.</p>	7M	CO3	L4
(b)	Discuss the difference between n-channel and p-channel JFET by comparing their transfer characteristics.	7M	CO3	L2
7(a)	Explain any two bias compensation techniques in transistor circuits.	7M	CO4	L1
(b)	Draw and explain the voltage divider bias in a transistor circuit.	7M	CO4	L3
(OR)				
8(a)	In a transistor circuit what is biasing? Explain the need of it. List out different types of biasing methods.	7M	CO4	L3
(b)	Explain the terms bias stabilization and bias compensation.	7M	CO4	L1
9(a)	Draw and explain h-parameter model of BJT.	7M	CO4	L2
(b)	Write short notes on Small Signal Model of JFET.	7M	CO4	L1
(OR)				
10(a)	The hybrid parameters for a transistor used in common-emitter configuration are $h_{ie}=5k\Omega$; $h_{fe} = 180$; $h_{re}=1.25 \times 10^{-4}$; $h_{oe} = 16 \times 10^{-6}$ ohms. The transistor has a load resistance of $20 k\Omega$ in the collector and is supplied from a signal source of resistance $5 k\Omega$. Compute the value of input impedance, output impedance, current gain and voltage gain.	7M	CO4	L4
(b)	With neat sketch, discuss about common source FET amplifier.	7M	CO4	L2
