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R-19

Code: 19A511T

I B.Tech. I Semester Supplementary Examinations July 2022

Problem Solving and C Programming

(Common to All Branches)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

Marks

UNIT-I

- 1. a) What is Programming Language? What is the generation of programming Language? Describe it briefly. 10M
- b) Describe Structure of C Language 4M
- OR**
- 2. a) Distinguish between printf() and scanf() in the C language 7M
- b) What is a flow chart? How it is different from an Algorithm 7M

UNIT-II

- 3. a) Explain with examples, any Four types of operators. 7M
- b) Explain for loop and nested for loop with suitable example. 7M
- OR**
- 4. a) Describe Conditional Statements Used in C Language 7M
- b) Write a program on calculating area and perimeter of square 7M

UNIT-III

- 5. a) What is a function in c? How function is declared. Explain with an example. 7M
- b) Illustrate the storage classes extern, static and auto with an example. 7M
- OR**
- 6. a) Explain the following string handling functions with examples: 8M
 (i) strcpy() (ii) strcat() (iii) strrev() (iv) strlen
- b) Explain Preprocessor commands with examples. 6M

UNIT-IV

- 7. a) What is a pointer? What are the advantages of pointers? 7M
- b) Explain dynamic memory allocation with examples 7M
- OR**
- 8. a) Explain about pointer arithmetic and arrays with example. 7M
- b) Write a c program to swap two numbers using call by value and call by reference. 7M

UNIT-V

- 9. a) Define Structure? How structures are initialized? Explain with example. 7M
- b) Write a C program read and write the content of the file using fprintf() and fscanf() functions. 7M
- OR**
- 10. a) Explain the following functions in files: 8M
 (i) fseek() (ii) ftell() (iii) foef() (iv) fopen()
- b) Define and write the syntax of the structure and union and give example for each one 7M

Code: 19AC11T

I B.Tech. I Semester Supplementary Examinations July 2022

Algebra and Calculus
(Common to All Branches)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

	Marks	CO	Blooms Level
UNIT-I			
1. Solve the system of equations by matrix method $x + y + z = 6, 2x + 3y - 2z = 2, 5x + y + 2z = 13$	14M	CO1	L3
OR			
2. Find the Eigen values and Eigen vectors of the matrix $A = \begin{bmatrix} 2 & 2 & 0 \\ 2 & 5 & 0 \\ 0 & 0 & 3 \end{bmatrix}$	14M	CO1	L3
UNIT-II			
3. Verify Cayley-Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 5 \\ 3 & 5 & 6 \end{bmatrix}$ and hence find A^{-1} using Cayley-Hamilton theorem.	14M	CO2	L2
OR			
4. Reduce the quadratic form $x_1^2 + 3x_2^2 + 3x_3^2 - 2x_2x_3$ to canonical form by using orthogonal transformation.	14M	CO2	L3
UNIT-III			
5. If $u = x^2 - y^2, v = 2xy$ where $x = r \cos \theta, y = r \sin \theta$, then show that $\frac{\partial(u,v)}{\partial(r,\theta)} = 4r^3$	14M	CO3	L2
OR			
6. Find three positive numbers whose sum is 100 and whose product is maximum.	14M	CO3	L3
UNIT-IV			
7. a) Expand $\sin x$ in powers of $(x - \frac{f}{2})$.	7M	CO4	L3
b) Using Maclaurin's series, expand $\log(1+x)$ in powers of x .	7M	CO4	L3
OR			
8. Trace the curve $x^3 + y^3 = 3axy$	14M	CO4	L4
UNIT-V			
9. a) Evaluate $\int_0^2 \int_0^3 xy dx dy$	7M	CO5	L3
b) Evaluate $\int_0^2 \int_0^x y dy dx$	7M	CO5	L3
OR			
10. a) Evaluate $\int_0^1 x^5 (1-x)^3 dx$ using Beta function.	7M	CO5	L3
b) Evaluate $\int_0^\infty x^6 e^{-2x} dx$	7M	CO5	L3

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R-19

Code: 19AC12T

I B.Tech. I Semester Supplementary Examinations July 2022

Applied Physics

(Common to EEE & ECE)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

	Marks	CO	Blooms Level
UNIT-I			
1. a) What are the conditions for sustainable interference?	4M	CO1	L1
b) Classify the thin films and Explain the interference in thin films of uniform thickness by reflected light.	10M	CO1	L4
OR			
2. Give the theory of Fraunhofer diffraction due to single slit. Using this obtain intensity distribution curve.	14M	CO1	L2
UNIT-II			
3. a) Define dielectric constant and dielectric polarization.	4M	CO2	L1
b) What is electronic polarization and derive the equation for electronic polarizability.	10M	CO2	L2
OR			
4. a) Brief about ferroelectricity?	7M	CO2	L1
b) Explain frequency dependency of polarizability of dielectric materials	7M	CO2	L2
UNIT-III			
5. a) State the Stoke's theorem.	4M	CO3	L1
b) Derive the electromagnetic wave equation in non-conducting medium	10M	CO3	L2
OR			
6. a) Derive expressions for acceptance angle and numerical aperture.	10M	CO3	L2
b) Discuss the attenuation losses in optical fiber.	4M	CO3	L3
UNIT-IV			
7. a) Define Hall effect and write its applications.	4M	CO4	L3
b) What is intrinsic semiconductor and explain the formation extrinsic semiconductors through doping?	10M	CO4	L2
OR			
8. Derive the expression for carrier concentration in n-type semiconductors.	14M	CO4	L2
UNIT-V			
9. a) Define superconductivity and Explain Meissner effect in superconductor.	8M	CO5	L2
b) Discuss the various properties of superconductors.	6M	CO5	L3
OR			
10. a) Explain synthesis of nanomaterials by ball mill method.	8M	CO5	L2
b) Analyse basic principles of nanomaterials.	6M	CO5	L4

Code: 19A411T

I B.Tech. I Semester Supplementary Examinations July 2022

Essentials of Electrical & Electronics Engineering

(Common to EEE & ECE)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

	Marks	CO	Blooms Level
UNIT-I			
1. Explain the following with neat diagrams a) Fixed value resistors b) Fixed value capacitors	14M	CO1	L2
OR			
2. a) Differentiate ideal and practical sources and draw their equivalent circuits. b) What is Inductance? Draw symbol of Inductor and write its voltage, current and energy relations.	8M 6M	CO1 CO1	L2 L2
UNIT-II			
3. a) Determine the equivalent capacitance when three capacitors with values 4F, 5F and 6F are connected in series. b) State and explain Thevenin's theorem.	5M 9M	CO2 CO2	L3 L2
OR			
4. Verify maximum power transfer theorem for the circuit shown below.			
	14M	CO2	L3
UNIT-III			
5. a) Draw and explain the energy band diagrams of intrinsic and extrinsic semiconductors b) Write the applications of Zener and PN junction diode	8M 6M	CO3 CO3	L2 L3
OR			
6. a) Explain breakdown mechanism in PN junction diode b) A Ge diode carries a current of 1mA at room temperature when a forward bias of 0.15 V is applied. Estimate the reverse saturation current at room temperature.	10M 4M	CO3 CO3	L2 L3
UNIT-IV			
7. With the help of a neat circuit diagram, input and output waveforms, describe the operation of Half-wave rectifier.	14M	CO4	L2
OR			
8. a) With neat waveforms explain the Full wave Rectifier with LC filter. b) Define the following i) Average current ii) RMS current iii) PIV	8M 6M	CO4 CO4	L2 L1
UNIT-V			
9. a) With neat diagram explain the various current components of NPN transistor. b) Derive the relation between α and β	8M 6M	CO5 CO5	L2 L3
OR			
10. With neat block diagram explain the working of CRO and list out its applications.	14M	CO5	L2
