Hall Ticket Number :										

R-17

Code: 7G221

I B.Tech. II Semester Supplementary Examinations August 2021

Basic Electrical and Electronics Engineering

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

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

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UNIT–I

1. Define the following i) Resistance ii) Inductance iii) Capacitance. Also give the V-I relationship for the above elements. 14M

OR

2. a) Derive the expression for delta to star transformation. 7M

   b) Two resistances of 4.5 Ω and 8.5 Ω are connected in parallel and their combination is connected is series with a resistance of 3.95 Ω. Find the equivalent resistance of the circuit. What current will it draw if connected to a 40V supply? 7M

UNIT–II

3. Explain classification of a DC Motors along with suitable diagrams and voltage and current relationship. 14M

OR

4. a) Explain the speed control methods of a DC shunt motor. 6M

   b) Elaborate about Swinburne's test on dc machine. 8M

UNIT–III

5. Explain the principle of operation of single phase Transformer with neat sketch. 14M

OR

6. A 225 KVA, single phase transformer has 99 % efficiency at full load and 0.8 lagging p.f. The efficiency at half load and 0.8 lagging p.f. is 98 %. Calculate the iron loss and full load copper loss. 14M

UNIT–IV

7. a) Explain the operation of transistor as an amplifier. 7M

   b) Construct the practical circuit of a transistor and elaborate it. 7M

OR

8. Derive the expressions for voltage gain, current gain, output impedance and input impedance of a CE amplifier. 14M

UNIT–V

9. Describe how voltage, current and time period are measured by using CRO. 14M

OR

10. Explain the Block diagram of CRT with a neat sketch. 14M

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Hall Ticket Number :										

R-17

Code: 7G121

I B.Tech. II Semester Supplementary Examinations August 2021

Data Structures

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

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

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UNIT–I

1. a) What is the use of command line arguments
   b) Write a program using pointers to compute the sum of all elements stored in an array.

OR

2. a) How pointers permit inter function communication.
   b) How do you simulate arrays using pointers? Illustrate.

UNIT–II

3. a) How to copy and compare structure variables? Illustrate with example.
   b) Write and Explain syntax of the following functions: (i) fopen() (ii) fclose() (iii) fread() (iv) fwrite() (v) rewind() (vi)fprintf() (vii) fscanf() (viii) feof().

OR

4. a) Explain the following:
      i. Nested structures ii. Array of structures
   b) Define union. List out the differences between unions and structures

UNIT–III

5. a) What is Data Structure? Explain in detail about different type of data structures.
   b) Write the steps for evaluating postfix expression

OR

6. Show the stack after each operation of the following sequence that starts with the empty stack: push(a), push(b), pop, push(c), push(d), pop.

UNIT–IV

7. What is a Singly Linked List.? Explain different operations of a singly linked list with suitable examples.

OR

8. Write a C function to insert and delete a node from the front end in case of doubly linked list.

UNIT–V

9. Define and describe the terms: Tree, Binary Tree, Complete Binary Tree and Degree of a tree.

OR

10. Define Graph and describe various representations of a graph with suitable examples.

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Hall Ticket Number :										

R-17

Code: 7GC24

I B.Tech. II Semester Supplementary Examinations August 2021

Engineering Mathematics-II

(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)

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UNIT–I

1. a) Trace the curve $y^2(2a-x)=x^2$. 7M

   b) Evaluate the double integral $\iint_R x\,y\,dx\,dy$ where 'R' is the region bounded by the lines $x-axis$, the line $y=2x$ and $y=\frac{x}{4a}$ 7M

OR

2. a) Trace the curve $r^2=a^2\cos 2\bar{}$ 7M

   b) Evaluate $\iint r^3 dr\,d\bar{}$, over area bound between the circles $r=2\cos\bar{}$ and $r=4\cos\bar{}$ 7M

UNIT–II

3. a) Find the Laplace Transform of t^2e^{-3t}. 7M

   b) Find the Laplace Transform of $\frac{\mathrm{Sin}\,3t\,\mathrm{Cos}\,t}{t}$ 7M

OR

4. a) Find the Laplace Transform of $\int_0^t\int_0^t\int_0^t \mathrm{Cos}\,a\,u\,du\,du\,du$ 7M

   b) Find the Laplace Transform of $\frac{\mathrm{Cos}\,2t-\mathrm{Cos}\,3t}{t}$ 7M

UNIT–III

5. a) Find the inverse transform of $\frac{s^2-3s+4}{s^3}$. 7M

   b) Find the inverse transform of $\frac{1}{s(s^2+a^2)}$. 7M

OR

6. Using Convolution Theorem, Evaluate $L^{-1}\left\{\frac{1}{s\left(s^2+2s+2\right)}\right\}$ 14M

UNIT–IV

7. a) Find the unit vector normal to the surface $x^3+y^3+3xyz=3$ at the point $(1,\,2,-1)$ 7M

   b) Prove that $div\,curl\,\bar{F}=0$ 7M

OR

8. Evaluate the line integral of $\int_c \left(xy+y^2\right)dx+x^2dy$ where 'c' is the square formed by the lines $y=\pm1$ and $x=\pm1$ 14M

UNIT–V

9. Verify Gauss Divergence theorem for $\bar{F}=x^3\bar{i}+y^3\,\bar{j}+z^3\,\bar{k}$ taken over the cube bounded by $x=0,\,x=a;\,y=0,\;y=a;\,z=0,\,z=a$ 14M

OR

10. Verify Green's Theorem for $\int_c\left[\left(3x-8y^2\right)dx+\left(4y-6xy\right)dy\right]$ where 'c' is bounded by region bounded by $x=0,\,y=0$ and $x+y=1$ 14M

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Hall Ticket Number :										

R-17

Code: 7GC23

I B.Tech. II Semester Supplementary Examinations August 2021

Engineering Physiscs

(Common to CE , ME & CSE)

Max. Marks: 70 Time: 3 Hours

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

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UNIT–I

1.	a)	Discuss the working of He-Ne laser	8M
	b)	Summarize the applications of LASER	6M
		OR	
2.	a)	Differentiate Step-Index and Graded-Index optical fibers	8M
	b)	Brief the working principle of optical fiber	6M

UNIT–II

3.	a)	Differentiate SC with BCC	8M
	b)	Discuss the rules to find Miller Indices and find Miller Indices of a plane (2a,3b,2c)	6M
		OR	
4.	a)	Explain production and detection of ultrasonics in detail	7M
	b)	Formulate applications of Ultrasonics	7M

UNIT–III

5.	a)	Derive Schrodinger's time independent wave equation	10M
	b)	Brief the physical importance of Schrodinger's equation	4M
		OR	
6.		Analyze motion of electron in periodic potential of metal	14M

UNIT–IV

7.	a)	Differentiate intrinsic and extrinsic semiconductors	8M
	b)	Explain direct and indirect band gap semiconductors	6M
		OR	
8.	a)	State and explain Hall effect	8M
	b)	Brief Joshepson's effect with types	6M

UNIT–V

9.	a)	Differentiate any three of dia , para , ferro, antiferro and ferrite	6M
	b)	classify soft and hard magnetic materials	8M
		OR	
10.	a)	Justify magnetic moment by the origin of materials	8M
	b)	classify the ferromagnetics by hysteresis property	6M

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Hall Ticket Number :										

R-17

Code: 7GC21

I B.Tech. II Semester Supplementary Examinations August 2021

Environmental Science

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

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

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UNIT–I

1. a) Define environment. What is the scope of environmental studies? 7M
   b) How would environmental awareness help to protect our environment? 7M

OR

2. a) Explain briefly the importance of environmental studies. 7M
   b) Enumerate four conceptual spheres in the earth's environment. 7M

UNIT–II

3. a) Summarize the effects of dams on forest and tribal people. 7M
   b) Discuss the changes caused by traditional agriculture. 7M

OR

4. Give a detailed account on floods. 14M

UNIT–III

5. a) Define ecosystem. Describe the structure and function of an ecosystem. 7M
   b) Discuss the salient features of a desert ecosystem. 7M

OR

6. a) Briefly discuss the values of biodiversity. 7M
   b) What is meant by in-situ and ex-situ conservation of biodiversity? Give examples. 7M

UNIT–IV

7. a) What is soil pollution? Briefly discuss the sources of soil pollution. 7M
   b) Enumerate the various methods for control of air pollution. 7M

OR

8. a) Discuss adverse effects of marine pollution. 7M
   b) Describe the causes and control measures of thermal pollution. 7M

UNIT–V

9. a) What are the effects of ozone layer depletion? 7M
   b) Give an account of water (Prevention and Control of Pollution) act 1974. 7M

OR

10. a) Discuss the methods and advantages of rain water harvesting. 7M
    b) Explain any three best practices for waste land reclamation. 7M

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