3RD SEM./ AE & IE /CSE /EE(I& C) / ETC & COMM./ ETC & TELECOMM./ IT/ MECHATRONICS/ 2022(W)

Th-3 Digital Electronics

Full Marks: 80 Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

   a. Define Racing conditions.

   b. Covert the decimal number $(1000)_{10}$ into hexadecimal.

   c. Write down the difference between synchronous and asynchronous Counter.

   d. Design a Half adder using basic logic gates.

   e. Perform 2's complement subtraction of 1000011 – 1010111.

   f. What is difference between weighted and non-weighted binary code?

   g. What is Max term and Min term?

   h. State two difference between counter and register.

   i. Write down the truth table of Exclusive-NOR gate.

   j. Convert $(101011110.1011)_2$ to Octal and hexadecimal number.

2. Answer **Any Six** Questions 6 x 5

   a. Which gates are referred as universal gates and why? How other gates can be realized using NAND gate?

   b. Design an 8:3 Encoder with neat circuit diagram.

   c. Distinguish between combinational and sequential logic circuit.

   d. Describe the operation of full subtractor with the help of truth table and circuit diagram.

   e. Convert D-type flip flop to SR flip flop.

   f. Explain the operation of seven segments displays.

   g Design a 2 bit magnitude comparator circuit for whose outputs are A>B, A<B and A=B where A and B are 2 bits binary numbers

3	Define SOP and POS term. Obtain the canonical SOP and POS form and draw the truth table of the given function. Y(A,B,C)=A+$\overline{BC}$	10
4	What is shift register? Explain the working of SISO and PISO register with the help of suitable logic diagram	10
5	Sketch the logic diagram of clocked JK flip flop. Explain it's working with the functional table.	10
6	With neat circuit diagram explain the function of 4:1 multiplexer and 1:4 demultiplexer.	10
7	What is Karnaugh map? Simplify the given expression using Karnaugh's map and draw the logic Circuit using NAND gate only. F(a,b,c,d)=∑m(5,6,7,8,9)+d(10,11,12,13,14,15).	10

3RD SEM./ CS&E / IT / 2022(W)

Th-2 Data Structure

Full Marks: 80 Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

   a. Name two linear and nonlinear data structure.

   b. What are the methods to implement queue in memory?

   c. Convert the infix expression (A-B/C)*(D/E-F) into a postfix.

   d. Name two searching technique. In a sorted array, which searching technique can be used?

   e. Write the output.
   int a[] = {1,2,3,4}; int b[4] = {5,6,7,8};
   printf("%d,%d", a[0], b[0]);

   f. char str1[20]=”hello”, str2=”world”;
   printf(“%s\n”,strcat(str2,str1));

   g. Define garbage collection.

   h. What is complete binary tree?

   i. Define adjacent nodes?

   j. What do you mean by open addressing?

2. Answer **Any Six** Questions 6 x 5

   a. Define array. Write an algorithm for insertion in an array.

   b. State the difference between stack and queue.

   c. Define string and discuss about different string function with example.

   d. Define tree. Discuss how tree can represent in memory.

   e. Define linked list. Discuss about different type of linked list. Write the advantages of Linked List over an array.

   f. Discuss about different hashing functions.

   g Explain complexity of an algorithm and the space time trade off of an algorithm.

3 Write an algorithm for bubble sort and explain it with an example. 10

4 List various fundamental file organization techniques and explain each in brief. 10

5 Define queue and write an algorithm for insertion and deletion from a queue. Discuss about circular queue insertion and deletion with example. 10

6 Discuss following with reference to graphs. 10
   (i) Directed graph (ii) Undirected graph (iii) Degree of vertex
   (iv)Null graph (v) Acyclic Graph.

7 Create a Binary Search Tree for the following data and do in-order, Preorder and Post-order traversal of the tree. 50, 60, 25, 40, 30, 70, 35, 10, 55, 65, 5 10

3RD SEM./ CS&E/IT/2022(W)

Th4 OBJECT ORIENTED METHODOLOGY

Full Marks: 80 **Time- 3 Hrs**

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer All questions **2 x 10**

a. Define Data Abstraction.

b. Define JVM.

c. Write the difference between widening and narrowing type casting.

d. What are the different access modifiers in Java?

e. string s=" OBJECT ORIENTED METHODOLOGY".
system.out.println(s.length());
Write the output.

f. Classify between final and finally statement.

g. Define package.

h. Write any two methods of input stream.

i. What is polymorphism?

j. What is the use of NEW keyword?

2. Answer Any Six Questions **6 x 5**

a. Define inheritance. Why multiple inheritance is not supported in Java?

b. Define constructor. Classify the different types of constructor.

c. Differentiate between compile time polymorphism and run time polymorphism.

d. Explain the structure of a java program with example.

e. Define stream. Describe the output stream of Java.

f. Define variable. Discuss different types of variable in Java.

g Write the object oriented and procedure oriented program.

3 Differentiate between String, String Buffer and String Builder. 10

4 Define package. Write a program to create an user defined package and import it. 10

5 Define exception. Classify the different types of java exception. Write a program using java exception. 10

6 Briefly explain the concepts of OOPS. 10

7 Compare all looping statements available in java with example. 10

3RD SEM. / COMMON / 2022(W)

Th-5 Environmental studies

Full Marks: 80 Time- 3 Hours

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

   a. Define natural resources.

   b. Write down two examples of non-renewable resources.

   c. Define soil erosion.

   d. Define producers in eco system.

   e. What is bio diversity?

   f. What do you mean by poaching of wild life?

   g. What is the unit of sound intensity?

   h. What is endangered species.

   i. Define greenhouse effect.

   j. What are the various objectives of family welfare programme.

2. Answer **Any Six** Questions 6 x 5

   a. What are the environmental effects of mining?

   b. Give a brief description of man wild life conflict.

   c. What are the effects of acid rain.

   d. Define rainwater harvesting? State the objective of rain water harvesting?

   e. Describe about Bio gas plant.

   f. Write down the role of an individual protecting environment.

   g What are the effects of modern agriculture?

3 Define Global warming, write down the causes and effect of global warming. 10

4 Explain sources of solid waste and solid waste management. 10

5 Describe aquatic ecosystem. 10

6 Write down the effect, prevention and control of noise pollution. 10

7 Write short notes on 10
   a. Pyramid of energy
   b. Green house effect

5TH SEM./ COMMON / 2022(W)

Th-1 ENTREPRENEURSHIP AND MANAGEMENT & SMART TECHNOLOGY

Full Marks: 80 Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right-hand margin indicates marks.

1.		Answer **All** questions	2 x 10
	a.	Name two barriers in entrepreneurship.	2
	b.	Write two advantages of preliminary project report.	2
	c.	Write two techniques /models of inventory management.	2
	d.	How does branding helps manufacturers, retailer and consumers?	2
	e.	Name two symptoms of bad management.	2
	f.	Write two primary responsibilities of Human Resource Department in an industry.	2
	g.	Write two functions of a leader.	2
	h.	Name four personal protective equipment used in industry.	2
	i.	Write two applications of break-even analysis.	2
	j.	Write two applications of smart agriculture.	2
2.		Answer **Any Six** Questions	6 x 5
	a.	Compare between an entrepreneur and manager	5
	b.	Write a short note on a successful Indian Entrepreneur. Mention any five quality in him/her.	5
	c.	Explain the role of District Industry Center in promoting enterprises. List any five supports provided by DIC to entrepreneur.	5
	d.	What are the parameters used to decide the plant capacity in a project?	5
	e.	What is TQM? Explain the need of TQM in small enterprises.	5
	f.	Write any five safety provisions in Factory Act,1948?	5
	g	Explain the techniques of motivation.	5
3		a. What is Technology Business Incubator? Explain with example. b. Explain the success story of an Indian start up.	10
4		Explain the components of Techno economic feasibility report.	10
5		Explain delivery schedule, market need and inventory control in production planning and control.	10
6		Write the Concept of IoT and how does it work.	10
7		Explain the management of working capital	10

5TH SEM ./ CS&E / 2022(W)

Th-4 Computer Hardware and Maintenance

Full Marks: 80 Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
   a. What is the Purpose of CMOS battery?
   b. Name four Major Vendors of Computer Hardware.
   c. List various types of ROM.
   d. Write the Function of South Bridge.
   e. What is POST?
   f. Define Memory Speed.
   g. What is the Purpose of SMPS?
   h. Name four Antivirus Software available in the market.
   i. What are the different types of Network Connector?
   j. What is the PCI slot in a Mother Board used for?

2. Answer **Any Six** Questions 6 x 5
   a. Why Computer Centre is needed? Explain the Hierarchy of personal engaged in different levels in an Organisation.
   b. Describe about the two main chipset in Mother Board.
   c. Explain the steps in Assembling a Computer System.
   d. Write the Difference between Core 2 Duo and Quad Core processor.
   e. Describe the Different types of Printer.
   f. Write the difference between Primary Memory and Secondary Memory.
   g Explain the need for training of Staff in a Computer Centre.

3 Describe the factors which can be taken into account while preparing the computer room. 10

4 Describe different components and slots of Mother Board, 10

5 What is trouble shooting? Explain Systematic ways of trouble shooting versus ad hoc trouble shooting. 10

6 Describe Hard Disk Construction and its Working Principle. 10

7 What is ROM BIOS? Explain the function of BIOS. 10

5TH SEM / CS & E /IT/ 2022(W)
Th-2 Internet & Web Technology

Full Marks: 80 Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1.		Answer **All** questions	2 x 10
	a.	What are the different data types used in PHP?	
	b.	What is the responsibility of Internet layer in TCP/IP?	
	c.	Define proxy server.	
	d.	What is the difference between authentication & authorization?	
	e.	Define FTP.	
	f.	What does RSS stand for?	
	g.	Name the protocols used in the application layer of TCP/IP.	
	h.	Write any four tags required to create a table in HTML. Give example.	
	i.	Which keyword is used to declare a variable in JavaScript?	
	j.	Name four popular server side scripting languages.	
2.		Answer **Any Six** Questions	6 x 5
	a.	Differentiate between client side scripting and server side scripting.	
	b.	Write down the different tags used in HTML document with their purpose. Give suitable example.	
	c.	Classify different types of firewall.	
	d.	What do you mean by search engines? Explain the searching techniques.	
	e.	What is IP Address? Explain the original classful addressing scheme.	
	f.	What is DOM? What is the use of document object? How to access a field value by document object? Give example	
	g	i)What is the role of ISP? ii)Mention different types of connectivity. iii)How many bits are there in an IP Address?	2+2+1
3		Describe the function of TCP/IP internet layering model by a suitable diagram.	10
4		What do you mean by web portals? Differentiate between webpage and website.	10
5		Why E-mail is used? Identify E-mail protocol. Explain the working principle & format of E-mail message.	10
6		Write short notes on (any two) (i) Encryption & Decryption (ii) CGI (iii) E-Commerce	10
7		Explain the GET and POST method used in PHP with suitable example.	10

5^{TH} SEM / CS&E / IT / 2022(W)

Th5 Mobile Computing

Full Marks: 80 Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

   a. Define GPRS.

   b. What is the purpose of HLR?

   c. What is Ad-Hoc Network?

   d. Define DHCP.

   e. What do you mean by SGSN?

   f. What is Tunnelling Process?

   g. Define I-mode.

   h. Write the difference between Client-Server & Peer to Peer Architecture.

   i. What is UMTS?

   j. Define IEEE 802.11.

2. Answer **Any Six** Questions 6 x 5

   a. Explain N-Tier architecture with suitable diagram.

   b. Write the difference between IPV_4 & IPV_6 mobile IP.

   c. What is WLAN? Write down the advantages and disadvantages of WLAN.

   d. What do you mean by Rear-far & Hidden- exposed terminal?

   e. Explain GPRS operations with its architecture.

   f. What is Mobile IP and how it works?

   g Write the difference between SMS & MMS.

3 Define GSM. Explain with schematic diagram the system architecture of GSM with brief description of different components. 10

4 Explain all types of Multiple Access Techniques. 10

5 How does WAP work? Describe WAP protocol stack. Write the advantage of WAP. 10

6 Explain the types of Multiplexing Techniques. Write the Advantage of Multiplexing. 10

7 Write short notes on 10

   i) Bluetooth
   ii) WML

5TH SEM / CSE / IT/ 2022(W)

TH3 SOFTWARE ENGINEERING

Full Marks: 80 Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

   a. Distinguish between a program and a software product.

   b. What are the basic attributes for estimating a project?

   c. Why SRS document is known as black box specification of a system?

   d. Define Fan-in and Fan-out in Module Designing.

   e. Why GANT chart is used?

   f. Write a advantage and disadvantages of a command language Interface.

   g. Name different types of System Testing.

   h. What is context diagram?

   i. Define Software reliability.

   j. Define test suit.

2. Answer **Any Six** Questions 6 x 5

   a. Discuss about Spiral Model.

   b. Describe empirical estimation techniques.

   c. Explain different Integration testing.

   d. Define coupling? Explain classification of coupling.

   e. Differentiate between Hardware reliability and Software reliability.

   f. Discuss different types of menu used in menu based user interface.

   g Define SRS.Discuss the characteristics of a Good SRS Document.

3 What is a prototype? Discuss about Prototype model? Under what circumstances it is beneficial to construct a prototype? 10

4 Define DFD? Explain different level of DFD.Draw DFD for Root Mean Square calculating Software. 10

5 What is testing? Discuss about various black box testing with example. 10

6 Define UID? Explain different types of User interface. 10

7 What is COCOMO model of estimation? Discuss features of different COCOMO model. 10