

END SEMESTER EXAMINATION, Dec-2022

Course: **B. Tech**

Time: **03 Hrs**

Semester: **VII (Regular)**

Branch: **EE**

Max. Marks: **100**

Subject Code: **EEE4128**

Subject: **Microcontrollers & Embedded System**

Note: Section A: All Questions are compulsory. [10 x 02 marks]

Section B: Answer any 8 questions. [08 x 05 marks]

Section C: Answer any 5 questions [05 x 08 marks]

Q. No.	Section [A]
Q1 a)	Write the specification of 8051 microcontroller.
Q1 b)	Name 16-bit registers of 8051 microcontroller.
Q1 c)	Explain the function of ALE pin.
Q1 d)	Define the working of \overline{RD} and \overline{WR} signal.
Q1 e)	What will be the value of A after the execution of instruction MOV A, # 65 h.
Q1 f)	What is the range of frequency on which 8051 microcontroller works?
Q1 g)	Describe the flag register of microcontroller 8051.
Q1 h)	Classify the types of embedded system.
Q1 i)	Define Stack and its working principle.
Q1 j)	Name the input and output devices that can be interface with microcontroller 8051.

Q. No.	Section [B]
Q2 a)	What is embedded system? Write its examples.
Q2 b)	Compare RISC and CISC architecture
Q2 c)	Perform the addition on following a) $(726)_8 + (172)_8$ b) $1CB\text{ h} + 2E9\text{ h}$
Q2 d)	Write short note on Timer and Counter used in 8051 microcontroller.
Q2 e)	Explain port structure of 8051.
Q2 f)	Explain addressing modes of microcontroller.
Q2 g)	Write a program to generate a square wave of 50% duty cycle.
Q2 h)	Explain in brief i) SRAM and ii) PROM
Q2 i)	Describe serial communication with its types.
Q2 j)	Interface 8 KB RAM with microcontroller 8051 and also find its address range.

Q. No.	Section [C]
Q3 a)	Define microcontroller. Explain the working of microcontroller 8051 with its architecture diagram.
Q3 b)	Discuss the memory organization of 8051 microcontroller with diagram.
Q3 c)	Discuss the applications of microcontroller 8051 in detail.
Q3 d)	Explain Harvard and Von Neumann architecture with examples.
Q3 e)	Explain the interfacing of ADC with microcontroller 8051.
Q3 f)	Write down the assembly language programs of addition, subtraction, multiplication and division of two 8-bit numbers.
Q3 g)	Define interrupt. Explain the types of interrupt with suitable example.

Course Code: SOEBEE702

O P JINDAL UNIVERSITY

I B. Tech. VIII Semester Regular Examinations

SOFT COMPUTING

(Offered to EE)



Time: 3 Hrs.

Max. Marks: 100

Answer any one question from each unit

All questions carry equal marks

M CO KL

Unit-I (20 marks)

1	a.	What is the difference between soft computing and hard computing with suitable example.	5	1	2
	b.	Explain hybrid computing with suitable example?	5	1	2

OR

2	a.	Write short notes on (i) Fuzzification (ii) Defuzzification (iii) Artificial Neural Network	5	1	2
	b.	(iv) Genetic Algorithm (v) Hard Computing (vi) Hybrid computing	5	1	2

Unit-II


3	a.	What is defuzzification? Classify defuzzification methods?	5	2	2
	b.	For fuzzy relation R find λ cut relations for the following values of λ . $R = \begin{bmatrix} 0.4 & 0.3 & 0.7 & 0.5 \\ 0.6 & 0.2 & 0.1 & 1 \\ 0.9 & 0.8 & 0.5 & 0.6 \\ 0.7 & 0.4 & 0.3 & 0.2 \end{bmatrix}$ $(a)\lambda = 0^+(c)\lambda = 0.4(e)\lambda = 0.3$ $(b)\lambda = 0.2(d)\lambda = 0.7(f)\lambda = 0.6$	5	2	2

OR

4	a.	Prove that the following statements are tautologies (i) $((P \rightarrow Q) \wedge P) \rightarrow Q$ (ii) $((P \vee Q) \wedge \bar{P}) \rightarrow Q$	5	2	2
	b.	For the given fuzzy set $A = \left\{ \frac{1}{1.0} + \frac{0.65}{1.5} + \frac{0.4}{2.0} + \frac{0.35}{2.5} + \frac{0}{3.0} \right\}$ $B = \left\{ \frac{0}{1.0} + \frac{0.25}{1.5} + \frac{0.6}{2.0} + \frac{0.25}{2.5} + \frac{1}{3.0} \right\}$ $C = \left\{ \frac{0.5}{1.0} + \frac{0.25}{1.5} + \frac{0}{2.0} + \frac{0.25}{2.5} + \frac{0.5}{3.0} \right\}$ Prove the associativity and the distributive property for the above given sets.	5	2	2

Unit-III					
5	a.	Design a fuzzy logic controller for tips in restaurant by using Takagi Sugeno approach.	5	3	4
	b.	Compare Mamdani and Sugeno method of fuzzy inference system.	5	3	4
OR					
6	a.	Design a fuzzy logic controller for tips in restaurant by using Mamdani approach.	5	3	4
	b.	Using the inference approach find the membership values for each of the triangular shapes (I, R, O) (a) $80^\circ, 75^\circ, 25^\circ$ (b) $60^\circ, 75^\circ, 45^\circ$ (c) $50^\circ, 75^\circ, 55^\circ$.	5	3	3
Unit-IV					
7	a.	What is GA. Explain each and every terminology of GA.	5	4	2
	b.	What are the benefits and applications of GA?	5	4	2
OR					
8	a.	Consider a travelling salesman problem with 8 cities to be visited by the salesman. each city is to be visited only once and the total distance travelled is to be minimized. (i) How would you represent the individuals here	5	4	3
	b.	(ii) Take two example cases of representation and perform 1st order crossover (iii) Perform mutation n the results of above section.	5	4	3
UNIT-V					
9	a.	Explain (with drawing) the following with respect to Multi-Layer Perceptron: (i) Input layer, hidden layer and output layer	5	5	2
	b.	(ii) The concept of back propagation	5	5	2
OR					
10	a.	Write down the benefits and applications of ANN.	5	5	2
	b.	Write and explain algorithm for Perceptron Learning.	5	5	2

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Course Code: SOE-B-EE703(1)						
O P JINDAL UNIVERSITY				 <small>UNIVERSITY OF SIBR TECHNOLOGY AND MANAGEMENT</small>		
B. Tech. 7 th Semester Regular Examinations						
FLEXIBLE ALTERNATING CURRENT TRANSMISSION SYSTEM (FACTS)						
ELECTRICAL ENGINEERING						
Time: 3 Hrs.		Max. Marks: 100				
Answer any one question from each unit						
All questions carry equal marks (Section-A is Compulsory)						
				M	CO	KL
Section-A						
1	a.	Define the term "FACTS"	2	1	1	
	b.	Distinguish between reactive power absorbers and reactive power suppliers.	2	1	3	
	c.	List some applications of STATCOM.	2	2	4	
	d.	State the function of converter 1 in UPFC.	2	4	1	
	e.	Draw the power angle curve of SMIB system with midpoint SVC.	2	2	1	
	f.	What is the indication of voltage collapse point	2	1	1	
	g.	Difference between VSC and CSC	2	1	4	
	h.	Difference between rotating machine based and converter based reactive power controller.	2	1	4	
	i.	Draw the V-I characteristics of STATCOM	2	2	1	
	j.	State the application of UPFC and IPFC	2	4	1	
Section-B:						
Unit-I						
2	a.	Explain in details about the series and shunt compensation.	8	1	2	
	b.	Briefly discuss the objectives of the FACTS controller.	8	1	4	
OR						
3	a.	Elaborately about the factors affecting the transmission line capacity	8	1	6	
	b.	Derive the power flow equation and draw the P-V and Q-V curve	8	1	5	
Unit-II						
4	a.	With neat sketches, explain the configuration and operating characteristics of a fixed capacitor-TCR with a step down transformer.	10	2	4	
	b.	Explain the working of STATCOM. Compare its performance with SVC.	6	2	4	
OR						
5	a.	With neat sketches, explain the current and susceptance characteristics of a TSC-TCR.	10	2	4	
	b.	Explain the method of voltage control using SVC	6	2	2	
Unit-III						
6	a.	Explain the working and characteristics of TCSC.	8	3	2	
	b.	Explain the variable reactance modelling of TCSC.	8	3	2	

OR					
7	a.	Discuss the role of TCSC in the enhancement of system damping	6	3	4
	b.	Discuss the working of SSSC in brief with its application	10	3	
Unit-IV					
8	a.	Discuss in brief about the objectives of voltage and phase angle regulators	16	4	4
OR					
9	a.	Explain the working of TCPAR	8	4	2
	b.	Explain the necessity of switching converters in phase angle regulator	8	4	2
UNIT-V					
10	a.	Explain in detail about the various control modes of UPFC.	16	4	2
OR					
11	a.	Discuss about the working principle IPFC and compare it with IPFC.	16	4	4

***** **BSET OF LUCK*******

O P JINDAL UNIVERSITY, RAIGARH (C.G.)

END SEMESTER EXAMINATION, JANUARY - 2023

HUMANITIES & SOCIAL SCIENCES [HSS4104]



UNIVERSITY OF SILENT TECHNOLOGY
AND MANAGEMENT

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B. Tech. - VII Semester

BRANCH: EEE

TIME: 02 Hrs

MAX MARKS: 20

Note: Part 1 and 2 are compulsory. Attempt any **two** questions from each part 3 and 4.

Part - 1

1. (a) Define 'Programmed Decisions'. 1
- (b) Define 'and 'Non-programmed decisions'. 1
- (c) Define 'Unity of Command' and 'Span of Control'. 1
- (d) What do you mean by 'Budget'. 1

Part - 2

- 2 (a) Write a note on Scope of Public Administration as a discipline? 1
- (b) What are the factors that influence "Span of Control"? 1
- (c) Write a note on 'Government Budgeting'? 1
- (d) Write a note on Significance of Decision Making. 1

Part - 3

- 1 Enumerate the Features of Administration. 2
- 2 What are the differences between Public and Private Administration? 2
- 3 What are the disadvantages of 'Hierarchy' in an organisation? 2

Part - 4

- 1 What do you mean by 'Delegation'? Write advantages of Delegation. 4
- 2 What do you mean by "Position Leadership"? What are the advantages of "Position Leadership". 4
- 3 What do you mean by Local Self-Government? What are the salient features of 74th Constitution Amendment Act, 1993? 4

Course Code: 01UG060

O P JINDAL UNIVERSITY

B. Tech. VII Semester Regular Examinations

High Voltage EngineeringCourse Code: **SOE-B-EE701**

Offered to EE

Time: 3 Hrs.**Max. Marks: 100**

Answer any one question from each unit

All questions carry equal marks

M CO KL

Section-A

1	a.	What do you understand by dielectrics? Explain their classifications.	2	1&2	KL1
	b.	Define: Insulation, Ionization, corona effect, Insulation breakdown.	2	1&2	KL1
	c.	What are the different voltage level? Specify the range.	2	1&2	KL1
	d.	Explain the degree of uniformity of electric field.	2	1&2	KL1
	e.	What do you understand by "Partial Breakdown" in dielectric materials?	2	2 & 3	KL1
	f.	What are the different high test voltage measurement techniques?	2	4	KL1
	g.	What are treeing and tracking?	2	2 & 3	KL1
	h.	What is corona discharge?	2	1&2	KL1
	i.	Enlist the advantages of series resonant circuit.	2	4	KL1
	j.	What do you understand by "Insulation coordination"?	2	6	KL1

Section-B:**Unit-I**

2	a.	How corona formation takes place in any conductor? Explain leader corona in detail.	8	1&2	KL1
	b.	Explain "Townsend" mechanism in detail also define Townsend first and second ionization coefficient.	8	1&2	KL1

OR


3	a.	A steady current of 650 micro ampere flows through the plane electrode separated by a distance of 0.6 cms. When a voltage of 10 KV is applied. Determine the Townsend's first ionization coefficient if a current of 60 microampere flows when the distance of separation is reduced to 0.1 cm and the field is kept constant at the previous value.	8	1&2	KL1
	b.	Explain in detail the process of development of electron avalanche.	8	1&2	KL1

Unit-II

4	a.	How dielectric power loss takes place in the insulating materials?	8	2 & 3	KL1
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	b.	Describe various mechanism of breakdown in solid.	8	2 & 3	KL1
OR					
5	a.	Explain the process of breakdowns in the liquid dielectrics.	8	2 & 3	KL1
	b.	How thermal breakdown takes places? Explain the process of breakdown in extremely non-uniform fields.	8	2 & 3	KL1
Unit-III					
6	a.	Explain the voltage doubles method of testing of transformer along with the circuit diagram.	8	4	KL1
	b.	What do you understand by transient over voltages in power system?	8	4	KL1
OR					
7	a.	How transformer testing takes place? What are the testing methods for the same.	8	4	KL1
	b.	Why single stage generator circuit is used? Derive the expression for the same.	8	4	KL1
Unit-IV					
8	a.	What are the different high test voltage measurement techniques?	8	5	KL1
	b.	What are the necessity of EHV? Write its limitations.	8	5	KL1
OR					
9	a.	Explain the electrostatic method of measurement of high voltage.	8	5	KL1
	b.	Explain the spark gap method for measurement of high D.C.	8	5	KL1
UNIT-V					
10	a.	Explain Direct measurement of insulation Resistance at room temperature by a Mega-ohm meter method.	8	6	KL1
	b.	Why "BIL" is required? Explain BIL for designing different electrical apparatus.	8	6	KL1
OR					
11	a.	Explain the measurement of partial breakdown in dielectrics.	8	6	KL1
	b.	Explain the method of dielectric loss tangent.	8	6	KL1

Course Code: EEE4130(1)							
O P JINDAL UNIVERSITY				 OPJU <small>UNIVERSITY OF STUDY, TECHNOLOGY AND MANAGEMENT</small>			
B. Tech. VIII Semester Regular Examinations							
SOFT COMPUTING							
(Offered to EEE)							
Time: 3 Hrs.		Max. Marks: 100					
Answer any one question from each unit							
All questions carry equal marks							
				M	CO	KL	
Unit-I (20 marks)							
1	a.	What is the difference between soft computing and hard computing with suitable example.			5	1	2
	b.	Explain hybrid computing with suitable example?			5	1	2
OR							
2	a.	Write short notes on (i) Fuzzification (ii) Defuzzification (iii) Artificial Neural Network			5	1	2
	b.	(iv) Genetic Algorithm (v) Hard Computing (vi) Hybrid computing			5	1	2
Unit-II							
3	a.	What is defuzzification? Classify defuzzification methods?			5	2	2
	b.	For fuzzy relation R find λ cut relations for the following values of λ . $R = \begin{bmatrix} 0.4 & 0.3 & 0.7 & 0.5 \\ 0.6 & 0.2 & 0.1 & 1 \\ 0.9 & 0.8 & 0.5 & 0.6 \\ 0.7 & 0.4 & 0.3 & 0.2 \end{bmatrix}$ (a) $\lambda = 0$ (c) $\lambda = 0.4$ (e) $\lambda = 0.3$ (b) $\lambda = 0.2$ (d) $\lambda = 0.7$ (f) $\lambda = 0.6$			5	2	2
OR							
4	a.	Prove that the following statements are tautologies (i) $((P \rightarrow Q) \wedge P) \rightarrow Q$ (ii) $((P \vee Q) \wedge \bar{P}) \rightarrow Q$			5	2	2
	b.	For the given fuzzy set $A = \left\{ \frac{1}{1.0} + \frac{0.65}{1.5} + \frac{0.4}{2.0} + \frac{0.35}{2.5} + \frac{0}{3.0} \right\}$ $B = \left\{ \frac{0}{1.0} + \frac{0.25}{1.5} + \frac{0.6}{2.0} + \frac{0.25}{2.5} + \frac{1}{3.0} \right\}$ $C = \left\{ \frac{0.5}{1.0} + \frac{0.25}{1.5} + \frac{0}{2.0} + \frac{0.25}{2.5} + \frac{0.5}{3.0} \right\}$ Prove the associativity and the distributive property for the above given sets.			5	2	2

Unit-III

5	a.	Design a fuzzy logic controller for tips in restaurant by using Takagi Sugeno approach.	5	3	4
	b.	Compare Mamdani and Sugeno method of fuzzy inference system.	5	3	4

OR

6	a.	Design a fuzzy logic controller for tips in restaurant by using Mamdani approach.	5	3	4
	b.	Using the inference approach find the membership values for each of the triangular shapes (I, R, O) (a) $80^\circ, 75^\circ, 25^\circ$ (b) $60^\circ, 75^\circ, 45^\circ$ (c) $50^\circ, 75^\circ, 55^\circ$.	5	3	3

Unit-IV

7	a.	What is GA. Explain each and every terminology of GA.	5	4	2
	b.	What are the benefits and applications of GA?	5	4	2

OR

8	a.	Consider a travelling salesman problem with 8 cities to be visited by the salesman. each city is to be visited only once and the total distance travelled is to be minimized. (i) How would you represent the individuals here	5	4	3
	b.	(ii) Take two example cases of representation and perform 1st order crossover (iii) Perform mutation n the results of above section.	5	4	3

UNIT-V

9	a.	Explain (with drawing) the following with respect to Multi-Layer Perceptron: (i) Input layer, hidden layer and output layer	5	5	2
	b.	(ii) The concept of back propagation	5	5	2

OR

10	a.	Write down the benefits and applications of ANN.	5	5	2
	b.	Write and explain algorithm for Perceptron Learning.	5	5	2

Course Code: EEE4129(2)

O P JINDAL UNIVERSITY**B. Tech. 7th Semester Regular Examinations****FLEXIBLE ALTERNATING CURRENT TRANSMISSION SYSTEM (FACTS)**

Offered to ELECTRICAL ENGINEERING (EE) (01UG060)

Time: 3 Hrs.**Max. Marks: 100**

Answer any one question from each unit

All questions carry equal marks (Section-A is Compulsory)

M CO KL**Section-A**

1	a.	Define the term "FACTS"	2	1	1
	b.	Distinguish between reactive power absorbers and reactive power suppliers.	2	1	3
	c.	List some applications of STATCOM.	2	2	4
	d.	State the function of converter 1 in UPFC.	2	4	1
	e.	Draw the power angle curve of SMIB system with midpoint SVC.	2	2	1
	f.	What is the indication of voltage collapse point	2	1	1
	g.	Difference between VSC and CSC	2	1	4
	h.	Difference between rotating machine based and converter based reactive power controller.	2	1	4
	i.	Draw the V-I characteristics of STATCOM	2	2	1
	j.	State the application of UPFC and IPFC	2	4	1

Section-B:**Unit-I**

2	a.	Explain in details about the series and shunt compensation.	8	1	2
	b.	Briefly discuss the objectives of the FACTS controller.	8	1	4

OR

3	a.	Elaborately about the factors affecting the transmission line capacity	8	1	6
	b.	Derive the power flow equation and draw the P-V and Q-V curve	8	1	5

Unit-II

4	a.	With neat sketches, explain the configuration and operating characteristics of a fixed capacitor-TCR with a step down transformer.	10	2	4
	b.	Explain the working of STATCOM. Compare its performance with SVC.	6	2	4

OR


5	a.	With neat sketches, explain the current and susceptance characteristics of a TSC-TCR.	10	2	4
	b.	Explain the method of voltage control using SVC	6	2	2

Unit-III

6	a.	Explain the working and characteristics of TCSC.	8	3	2
	b.	Explain the variable reactance modelling of TCSC.	8	3	2

OR					
7	a.	Discuss the role of TCSC in the enhancement of system damping	6	3	4
	b.	Discuss the working of SSSC in brief with its application	10	3	
Unit-IV					
8	a.	Discuss in brief about the objectives of voltage and phase angle regulators	16	4	4
OR					
9	a.	Explain the working of TCPAR	8	4	2
	b.	Explain the necessity of switching converters in phase angle regulator	8	4	2
UNIT-V					
10	a.	Explain in detail about the various control modes of UPFC.	16	4	2
OR					
11	a.	Discuss about the working principle IPFC and compare it with IPFC.	16	4	4

o/c

Course Code: SOE-B-CSE-19-F03(3)					
O P JINDAL UNIVERSITY				 <small>UNIVERSITY OF SOFTWARE ENGINEERING AND MANAGEMENT</small>	
01UG020 B. Tech. VII Semester Regular Examinations					
SOFTWARE PROJECT MANAGEMENT					
(Offered to CSE)					
Time: 3 Hrs.		Max. Marks: 100			
Answer any one question from each unit (500-1000 Words)					
All questions carry equal marks					
		M	CO	KL	
Unit-I (20 marks)					
1	a.	What are the different characteristics and components of Software? Explain in details?	10	CO1	K1
	b.	Explain Spiral Model with quadrants and its scope?	10	CO1	K1
OR					
2	a.	Compare the different SDLC models with different parameters?	10	CO1	K1
	b.	Explain RAD model with its advantages and disadvantages?	10	CO1	K1
Unit-II (20 marks)					
3	a.	Consider the problem of movie ticket booking system and design the following: a. Problem statement b. Use case diagram c. Use cases.	10	CO2	K3
	b.	Explain SRS? What are the good characteristics of SRS?	10	CO2	K2
OR					
4	a.	Consider the problem of hospital management system and design the following: a. Problem statement b. Use case diagram c. Use cases.	10	CO2	K3
	b.	Explain Unified Modeling Language?	10	CO2	K2
Unit-III (20 marks)					
5	a.	An application has the following: 10 low external inputs, 12 high external outputs, 20 low internal logical files, 15 high external interface files, 12 average external inquiries, and a value of complexity adjustment factor of 1.10. What are the unadjusted and adjusted function point counts ?	10	CO3	K3
	b.	Consider a project with the following functional units: Number of user inputs = 50 Number of user outputs = 40 Number of user enquiries = 35	10	CO3	K3

		Number of user files = 06 Number of external interfaces = 04 Assume all complexity adjustment factors and weighting factors are average. Compute the function points for the project.			
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OR

6	a.	Consider a project with the following parameters. (i) External Inputs: (a)10 with low complexity (b)15 with average complexity (c)17 with high complexity (ii) External Outputs: (a)6 with low complexity (b)13 with high complexity (iii) External Inquiries: (a) 3 with low complexity (b) 4 with average complexity (c) 2 high complexity (iv) Internal logical files: (a)2 with average complexity (b)1 with high complexity (v) External Interface files: (a)9 with low complexity In addition to above, system requires i. Significant data communication ii. Performance is very critical iii. Designed code may be moderately reusable iv. System is not designed for multiple installation in different organizations. Other complexity adjustment factors are treated as average. Compute the function points for the project.	10	CO3	K3
	b.	Suppose that a project was estimated to be 400 KLOC. Calculate the effort and development time for each of the three modes i.e., organic, semidetached and embedded.	10	CO3	K3

Unit-IV (20 marks)

7	a.	<pre> 1. int. sort (int x[], int n) 2. { 3. int i, j, save, im1; 4. /*This function sorts array x in ascending order */ 5. If (n<2) return 1; 6. for (i=2; i<=n; i++) 7. { 8. im1=i-1; </pre>	10	CO4	K1
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	<p>9. for (j=1; j<=im; j++) 10. if (x[i] < x[j]) 11. { 12. Save = x[i]; 13. x[i] = x[j]; 14. x[j] = save; 15. } 16. } 17. return 0; 18. }</p> <p>Consider the above sorting program. List out the operators and operands and also calculate the values of software science measures like η, N, V, E, λ.</p>				
	b. List out the counting rules for C language in software metrics?	10	CO4	K2	
OR					
8	a.	<pre>#include < stdio.h > #define MAXLINE 100 int getline(char line[],int max); int strindex(char source[],char search for[]); char pattern[]="ould"; int main() { char line[MAXLINE]; int found = 0; while(getline(line,MAXLINE)>0) if(strindex(line, pattern)>=0) { printf("%s",line); found++; } return found; }</pre>	10	CO4	K3

		<pre> int getline(char s[],int lim) { int c,i=0; while(--lim > 0 && (c=getchar())!= EOF && c!='\n') s[i++]=c; if(c=='\n') s[i++] = c; s[i] = '\0'; return i; } int strindex(char s[],char t[]) { int i,j,k; for(i=0;s[i] !='\0';i++) { for(j=i,k=0;t[k] != '\0',s[j] ==t[k],j++,k++); if(k>0 && t[k] =='\0') return i; } return -1; } </pre>			
		Calculate the various software science metrics.			
	b.	What are the different categories of software metrics? Explain each?	10	CO4	K2
UNIT-V (20 marks)					
9	a.	What is Capability Maturity Model? What is the need of CMM?	10	CO3	K1
	b.	Explain McCall Model?	10	CO3	K2
OR					
10	a.	Explain Software Risk Management and Types of Risks involved?	10	CO3	K1
	b.	What are the different software quality attributes? Explain in details?	10	CO3	K2

Please provide the following Table and chart to the students on demand basis.

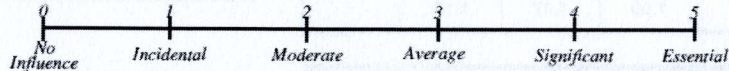
Counting function points

Functional Units	Weighting factors		
	Low	Average	High
External Inputs (EI)	3	4	6
External Output (EO)	4	5	7
External Inquiries (EQ)	3	4	6
External logical files (ILF)	7	10	15
External Interface files (EIF)	5	7	10

Table 1 : Functional units with weighting factors

Table 3 : Computing function points.

Rate each factor on a scale of 0 to 5.



Number of factors considered (F_i)

1. Does the system require reliable backup and recovery ?
2. Is data communication required ?
3. Are there distributed processing functions ?
4. Is performance critical ?
5. Will the system run in an existing heavily utilized operational environment ?
6. Does the system require on line data entry ?
7. Does the on line data entry require the input transaction to be built over multiple screens or operations ?
8. Are the master files updated on line ?
9. Is the inputs, outputs, files, or inquiries complex ?
10. Is the internal processing complex ?
11. Is the code designed to be reusable ?
12. Are conversion and installation included in the design ?
13. Is the system designed for multiple installations in different organizations ?
14. Is the application designed to facilitate change and ease of use by the user ?

Software Project	a_b	b_b	c_b	d_b
Organic	2.4	1.05	2.5	0.38
Semidetached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

Table 4(a): Basic COCOMO coefficients

Please provide the following Table and chart to the students on demand basis.

Multipliers of different cost drivers


Cost Drivers	RATINGS					
	Very low	Low	Nominal	High	Very high	Extra high
Product Attributes						
RELY	0.75	0.88	1.00	1.15	1.40	--
DATA	--	0.94	1.00	1.08	1.16	--
CPLX	0.70	0.85	1.00	1.15	1.30	1.65
Computer Attributes						
TIME	--	--	1.00	1.11	1.30	1.66
STOR	--	--	1.00	1.06	1.21	1.56
VIRT	--	0.87	1.00	1.15	1.30	--
TURN	--	0.87	1.00	1.07	1.15	--

Cost Drivers	RATINGS					
	Very low	Low	Nominal	High	Very high	Extra high
Personnel Attributes						
ACAP	1.46	1.19	1.00	0.86	0.71	--
AEXP	1.29	1.13	1.00	0.91	0.82	--
PCAP	1.42	1.17	1.00	0.86	0.70	--
VEXP	1.21	1.10	1.00	0.90	--	--
LEXP	1.14	1.07	1.00	0.95	--	--
Project Attributes						
MODP	1.24	1.10	1.00	0.91	0.82	--
TOOL	1.24	1.10	1.00	0.91	0.83	--
SCED	1.23	1.08	1.00	1.04	1.10	--

Table 5: Multiplier values for effort calculations

Project	a_i	b_i	c_i	d_i
Organic	3.2	1.05	2.5	0.38
Semidetached	3.0	1.12	2.5	0.35
Embedded	2.8	1.20	2.5	0.32

Table 6: Coefficients for intermediate COCOMO

Course Code: SOE-B-CSE-19-F04(01)					
O P JINDAL UNIVERSITY				 OPJU <small>UNIVERSITY OF STUDY TECHNOLOGY AND MANAGEMENT</small>	
B. Tech. VII Semester Regular Examinations					
SOFT COMPUTING					
COMPUTER SCIENCE					
Time: 3 Hrs.			Max. Marks: 100		
Answer any one question from each unit					
All questions carry equal marks					
			M	CO	KL
Unit-I					
1	a.	Write and explain Hill Climbing algorithm with an example.	10	CO1	K3
	b.	What is Mini-Max search. Explain with suitable diagrams.	10	CO1	K3
OR					
2	a.	Define Heuristic Function. What is the need of Heuristic Function in search algorithms?	10	CO1	K2
	b.	Explain the difference between soft computing and hard computing with suitable examples.	10	CO1	K2
Unit-II					
3	a.	Briefly describe the meaning of knowledge representation and knowledge acquisition.	10	CO2	K2
	b.	Write short note on forward chaining and backward chaining.	10	CO2	K2
OR					
4	a.	Explain inference rules with example.	10	CO2	K3
	b.	Explain resolution in propositional logic and predicate logic.	10	CO2	K3
Unit-III					
5	a.	Write and explain the algorithm for perceptron training.	10	CO3	K3
	b.	Explain the single layer Neural Network architecture using Perceptron model with suitable activation function.	10	CO3	K3
OR					
6	a.	Describe with neat diagram supervised and unsupervised learning in neural network.	10	CO3	K3
	b.	Explain Error back propagation training algorithm with the help of flowchart.	10	CO3	K3
Unit-IV					
7	a.	Explain the Mamdani method of fuzzy inference system.	10	CO4	K3
	b.	Find the relation between two fuzzy sets A and B using (i) Max-Min Composition	10	CO4	K3

		(ii) Max-Product Composition (iii) Max-Average Composition			
		$A = \begin{bmatrix} 0.3 & 0.1 & 0.6 & 0.3 \\ 0.1 & 1 & 0.2 & 0.1 \end{bmatrix}$ $B = \begin{bmatrix} 0.9 & 0.1 & 1 \\ 0.1 & 0.5 & 0.4 \\ 0.6 & 0.8 & 0.5 \\ 0.1 & 0 & 0 \end{bmatrix}$			
OR					
8	a.	Using inference approach find the membership values for each of the triangular shapes (I,R,O). (i) (80°, 75°, 25° (ii) 60°, 75°, 45° (iii) 50°, 75°, 55°	10	CO4	K3
	b.	Explain Mamdani's and Zadeh's interpretation of fuzzy rule.	10	CO4	K2
UNIT-V					
9	a.	What is Genetic algorithm (GA)? Explain in detail.	10	CO5	K1
	b.	What operators are used in a genetic algorithm to produce new concepts? Give an example of a mechanism that can be used to judge a GA concept.	10	CO5	K2
OR					
10	a.	What is optimization and multi objective optimization?	10	CO5	K1
	b.	Explain the Roulette wheel technique for traditional GA selection.	10	CO5	K2

6/1/23

Course Code: SOE-B-CSE-19-F05(3)

O P JINDAL UNIVERSITY

B. Tech. VII Semester Regular Examinations

Natural Language Processing

Computer Science & Engineering



Time: 3 Hrs.

Max. Marks: 100

Answer any one question from each unit

All questions carry equal marks

M CO KL

Section-A

1	a.	What is information extraction?	2	1	1
	b.	What is Context-Free Grammars?	2	1	2
	c.	What is NLTK?	2	1	1
	d.	What is TF-IDF?	2	1	1
	e.	What is Google Word Vectors?	2	2	2
	f.	What do you mean by a one hot encoding?	2	2	1
	g.	What is Bootstrapping?	2	1	1
	h.	What is Ambiguity problem?	2	1	2
	i.	What are the best NLP Tools?	2	2	1
	j.	What is the use of PoS (Part of Speech) tagging?	2	2	2

Section-B:

Unit-I

2	a.	What are the most commonly used models to reduce data dimensionality in NLP? Explain any one of them.	8	3	1
	b.	What are the main challenges of NLP?	8	4	3

OR

3	a.	What are some of the common NLP tasks?	8	3	3
	b.	What are unigrams, bigrams, trigrams, and n-grams in NLP? Give example.	8	2	2

Unit-II

4	a.	What is the meaning of Text Normalization in NLP? Give example	8	3	3
	b.	Explain Hidden Markov.	8	2	3

OR

5	a.	How to tokenize a sentence using the NLTK package?	8	4	2
	b.	What is the difference between NLP and NLU?	8	3	3

Unit-III

6	a.	What do you mean by Text Extraction and Cleanup?	8	4	3
	b.	List any two real-life applications of Natural Language Processing.	8	3	2

OR

7	a.	What are some metrics on which NLP models are evaluated?	8	4	2
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	b.	What are the steps to follow when building a text classification system?	8	4	3
Unit-IV					
8	a.	Explain Maximum Entropy models.	8	3	3
	b.	Explain one hot encoding with example.	8	4	4
OR					
9	a.	How can you differentiate Artificial Intelligence, Machine Learning, and Natural Language Processing?	8	4	4
	b.	How to find sentence similarity in NLP? Give example.	8	5	3
UNIT-V					
10	a.	What is parsing in Natural Language Processing? What are the different types of parsing used in NLP?	8	4	3
	b.	What is noise removal in NLP? Why is it used?	8	5	4
OR					
11		Write short note on: a) WordNet	8	4	4
		b) FrameNet	8	3	3