	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,	LONERE	
	Supplementary Semester Examination – Winter 2023		
	Course: B. Tech. Branch : Computer Engineering and Allied Ser	nester : VI	
	Subject Code & Name: BTCOC601_Y23- Compiler Design		
	Max Marks: 60 Date: 16/01/2024 Dur	ation: 3 Hr.	
	 Instructions to the Students: 1. All the questions are compulsory. 2. The level of question/expected answer as per OBE or the Course Outcombine which the question is based is mentioned in () in front of the question. 3. Use of non-programmable scientific calculators is allowed. 4. Assume suitable data wherever necessary and mention it clearly. 	come (CO) on	
		(Level/CO)	Marks
Q. 1	Solve any Two of the following.		
A)	What is a compiler? Draw a neat diagram and explain different phases of compiler.	(Remembering)	6
B)	Define patterns, lexeme, and tokens. Explain lexical errors with examples.	(Remembering)	6
C)	 i) In a string of length <i>n</i>, how many prefixes, suffixes, and proper prefixes are there? ii) Write regular definitions for the following languages: All strings of lowercase letters that contain the five vowels in order. All strings of lowercase letters in which the letters are in ascending lexicographic order. 	(Analyzing)	6
Q.2	Solve any Two of the following.		
A)	Give the significance of input buffering and sentinel in lexical analysis.	(Remembering)	6
B)	List the tokens and their types in the following C++ code fragment. float limited_square(x) {float x; /* returns 100 or x-squared */ return(x <= -10.0 x >= 10.0)?100 : x*x; }	(Applying)	6
C)	Explain with flow diagram how lexical analyzer is created with Lex. Write a Lex program for counting words, lines, and characters in a paragraph / document file.	(Remembering) (Analyzing)	6
Q. 3	Solve any Two of the following.		
A)	With neat diagram describe the role of parser.	(Remembering)	6
B)	What is left recursion? Eliminate the left recursion from the following grammar: $E \rightarrow E+T \mid T$ $T \rightarrow T^*F \mid F$ $E \rightarrow (E) \mid id$	(Remembering) (Applying)	6

C)	Compute FIRST and FOLLOW and also construct the predictive parsing			6
	table for the following	grammar:		
		$S \rightarrow +SS \mid *SS \mid a$		
Q.4	Solve any Two of the f	following.		12
A)	For the SDD given belo	ow, give annotated parse tree for the expression	(Applying)	6
	3*5+4			
	PRODUCTION	SEMANTIC RULES		
	1) $L \to E \mathbf{n}$	L.val = E.val		
	$2) E \to E_1 + T$	$E.val = E_1.val + T.val$		
	3) $E \to T$	E.val = T.val		
	4) $T \rightarrow T_1 * F$	$T.val = T_1.val \times F.val$		
	5) $I \rightarrow F$ 6) $F \rightarrow (F)$	T.val = F.val F.val = F.val		
	7) $F \rightarrow \text{digit}$	F.val = digit.lexval		
	., .,			
B)	Consider following SD	T to generate Three Address Code. Give Three	(Analyzing)	6
	Address Code for the ex	xpression a+b*c :		
	Productions Seman	tic Actions		
	<u>inductions</u> <u>semin</u>			
	S→id=E {gen(id	Iname=E.place);} e=newTemp();gen(E.place=E.place+T.place);}		
	T {E ₁ .place	ce = T.place;}		
	$T \rightarrow T_1 * F$ {T.place	e=newTemp(); gen (T.place= T ₁ .place * F.place);}		
	F {T₁.plac F→id {E plac	:e + F.place;}		
C)	Explain Syntax Tree an	d DAG as intermediate code representations.	(Remembering)	6
	Construct the DAG and	identify the Value Numbers for the subexpression	(*********************	
	a+b+(a+b) assuming +	- associates from the left.		
Q. 5	Solve any Two of the f	following.		
A)	List the issues in design	ing code generator. Generate code for the following	(Remembering)	6
	three-address statement	s assuming all variables are stored in memory	(Apprying)	
	locations.			
	x = b * c			
	$\mathbf{v} = \mathbf{a} + \mathbf{x}$			
R)	Define basic block and	flow graph Give basic blocks and flow graph for the	(Remembering)	6
	following societies of t	hras address and statements:	(Applying)	v
	ronowing sequence of t			

	(1)	prod := 0			
	(2)	i := 1			
	(3)	t ₁ := 4* i			
	(4)	t ₂ := a[t ₁] /*com	pute a[i] */		
	<mark>(</mark> 5)	t ₃ := 4* i			
	(6)	t ₄ := b[t ₃] /*com	pute b[i] */		
	(7)	$t_5 := t_2 * t_4$			
	(8)	$t_6 := prod+t_5$			
	(9)	prod := t ₆			
	(10)	t ₇ := i+1			
	(11)	i := t ₇			
	(12)	if i<=20 goto (3)			
Explain wi	ith examples the	following concepts	with respect to code	(Remembering)	6
optimizatio	on:				
i)	Common suber	pression elimination	1.		
ii)	Dead-code elin	ination.			
iii)	Algebraic trans	formations.			
		*** En	1 ***		
	Explain wi optimizatio i) ii) iii)	(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) Explain with examples the optimization: i) Common subex ii) Dead-code elim iii) Algebraic transf	(1) prod := 0 (2) i := 1 (3) $t_1 := 4*i$ (4) $t_2 := a[t_1]$ /*com (5) $t_3 := 4*i$ (6) $t_4 := b[t_3]$ /*com (7) $t_5 := t_2*t_4$ (8) $t_6 := prod+t_5$ (9) prod := t_6 (10) $t_7 := i+1$ (11) $i := t_7$ (12) if i<=20 goto (3) Explain with examples the following concepts optimization: i) Common subexpression elimination ii) Dead-code elimination. iii) Algebraic transformations. *** Energy (12) (12) (12) (12) (12) (12) (12) (12)	(1) prod := 0 (2) i := 1 (3) $t_1 := 4^* i$ (4) $t_2 := a[t_1]$ /*compute $a[i]$ */ (5) $t_3 := 4^* i$ (6) $t_4 := b[t_3]$ /*compute $b[i]$ */ (7) $t_5 := t_2^* t_4$ (8) $t_6 := prod + t_5$ (9) prod := t_6 (10) $t_7 := i+1$ (11) $i := t_7$ (12) if i<=20 goto (3) Explain with examples the following concepts with respect to code optimization: i) Common subexpression elimination. ii) Dead-code elimination. iii) Algebraic transformations. *** End ***	(1) prod := 0 (2) i := 1 (3) $t_1 := 4^* i$ (4) $t_2 := a[t_1]$ /*compute $a[i]^*$ / (5) $t_3 := 4^* i$ (6) $t_4 := b[t_3]$ /*compute $b[i]^*$ / (7) $t_5 := t_2^* t_4$ (8) $t_6 := prod + t_5$ (9) prod := t_6 (10) $t_7 := i+1$ (11) i := t_7 (12) if i<=20 goto (3) Explain with examples the following concepts with respect to code optimization: i) Common subexpression elimination. ii) Dead-code elimination. ii) Dead-code elimination. iii) Algebraic transformations. $\frac{*** End ***}{}$

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE				
	Supplementary Winter 23				
	Course: B. Tech.Branch : Computer Engineering and Allied Sem	ester : VI			
	Subject Code & Name: BTCOC601_Y20 -Compiler Design				
	Max Marks: 60 Date: 16/01/2024 Dura	tion: 3 Hr.			
	 Instructions to the Students: 1. All the questions are compulsory. 2. The level of question/expected answer as per OBE or the Course O which the question is based is mentioned in () in front of the quest 3. Use of non-programmable scientific calculators is allowed. 	outcome (CO) on ion.			
	4. Assume suitable data wherever necessary and mention it clearly.	(Level/CO)	Marks		
0.1	Solve Any Two of the following		12		
	Draw a past diagram and explain different phases of compiler	Remembering	6		
B)	What do you understand by "Input Buffering"? Explain 'Buffer pairs' and sentinels.	Remembering	6		
C)	List out and explain different compile-construction tools.	Analyzing	6		
Q.2	Solve Any Two of the following.		12		
A)	What is a finite automata? Construct transition diagram of a DFA for the string (a+b)*.	Applying	6		
B)	What is Lex? Explain.	Applying	6		
C)	Give the formal definition of Context-Free Grammar.	Analyzing	6		
Q.3	Solve Any Two of the following.		12		
A)	What is Parse Tree? Explain with example.	Remembering	6		
B)	What is LL(1) Grammar?	Remembering	6		
C)	Explain Bottom-Up parsing.	Applying	6		
Q.4	Solve Any Two of the following.		12		
A)	What is Syntax-Directed Definition?	Understanding	6		
B)	Explain type checking in detail.	Analyzing	6		
C)	What is Symbol Table? Explain the organization of symbol table in detail.	Applying	6		
Q.5	Solve Any Two of the following.				
A)	Define the DAG representation of basic blocks.	Applying	6		
B)	Explain the various storage allocation strategies?	Applying	6		
C)	What is syntax directed translation in compiler design?	Undestanding	6		
	*** End ***				

	DR. BABASAHEB AN	MBEDKAR TECHNOLOGICAL U	NIVERSI	TY, LONERE	
		Summer Examination – 2023			
	Course: B. Tech.Branch	: Computer Science & Engineering	Sem	ester : VI	
	Subject Code & Name: B	BTCOC601 - Compiler Design			
	Max Marks: 60	Date:12/07/2023	Dura	tion: 3 Hr.	
	Instructions to the Studen 1. All the questions and 2. The level of question which the question 3. Use of non-program 4. Assume suitable data	nts: re compulsory. on/expected answer as per OBE or the is based is mentioned in () in front of mmable scientific calculators is allowe uta wherever necessary and mention it	Course O the quest ed. clearly.	Putcome (CO) on ion.	
				(Level/CO)	Marks
Q. 1	Solve Any Two of the fol	lowing.			12
A)	Draw a neat diagram and e Differentiate between Inter	explain different phases of compiler. rpreter, Compiler and Hybrid compiler	ſ.	Remembering	6
B)	Define token, pattern, and pattern and lexemes forthe tribute values for the toker int main() { int a = 10, b = 20; printf ("Sum is : %d", a+b return (0) }	lexeme with suitable examples. Find the following C- program. Give reasonables.	okens, le at-	Remembering	6
C)	 i) Explain regular expressi ii) Write regular definition All strings of lowerd order. All strings of lowerd ascending lexicogra 	on and regular definition with example is for the following languages: case letters that contain the five vowels case letters in which the letters are in phic order.	e. s in	Anaryzing	0
Q.2	Solve Any Two of the fol	lowing.			12
A)	Explain the two buffer inp lexical analyzer? How the	ut scheme for scanning the source prog use of sentinels can improve its perfor	gram in mance?	Remembering	6
B)	 i) Explain the role of finite between NFA and DFA. ii) Convert the following r Construction algorithm. (a b*ab)* 	e automata in lexical analyzer and diffe regular expression to NFA using Thom	erentiate pson	Applying	6
C)	Convert the following NFA ((01 0) 1*)*	A to DFA using subset construction alg	gorithm.	Remembering Analyzing	6
Q.3	Solve Any Two of the fol	lowing.			12
L					

A)	i) What is left recursion and left factoring?	Remembering	6
	ii) Consider the CFG $S \rightarrow SS + SS^* $ a		
	a) Left factor this grammar.b) Eliminate the left recursion from the original grammar.c) Is the resulting grammar suitable for top-down parsing?		
B)	What is the difference between recursive-descent parsing and predictive	Remembering	6
	parsing?Draw and explain the model of non recursive predictive parser.	Applying	
C)	What is LL(1) grammar? Construct a LL(1) parsing table for the following grammar. Test whether following grammar isLL(1). $S \rightarrow aAB bA c$ $A \rightarrow aAb c$ $B \rightarrow bB c$	Applying	6
Q.4	Solve Any Two of the following.		12
A)	Explain stack implementation of shift reduce parsing with their four	Understanding,	6
	possible actions.	Applying	
	Consider the following grammar		
	$S \rightarrow TL$		
	$T \rightarrow int \mid float$		
	$L \rightarrow L, id \mid id$		
	Parse the input string int id, id using shift – reduce parser.		
B)	i) Differentiate between LR(0) and LR(1) grammar with suitable	Applying	6
	example.	Analyzing	
	ii)What is handle? Consider the following grammar and show the handle		
	of each right sentential form for the string (a, (a, a)).		
	$S \rightarrow (L) a$		
	$L \rightarrow L$,S S		
C)	Show that following grammar is LL(1) but not SLR(1).	Applying	6
	$S \rightarrow AaAb \mid BbBa$		
	$A \rightarrow \epsilon$		
	$B \rightarrow \epsilon$		
Q.5	Solve Any Two of the following.		
A)	For the SDD given below, give annotated parse tree for the expression	Applying	6
	3*5+4		

	PRODUCTIO	N SEMANTIC RULES		
	1) $L \rightarrow E \mathbf{n}$	L.val = E.val		
	2) $E \rightarrow E_1 +$	$T E.val = E_1.val + T.val$		
	3) $E \to T$	E.val = T.val		
	4) $T \rightarrow T_1 * F$	$T.val = T_1.val \times F.val$		
	5) $T \rightarrow F$	T.val = F.val		
	$\begin{array}{ccc} 0 & \mathbf{F} \to (\mathbf{E}) \\ 7 & \mathbf{F} \to \mathbf{digit} \end{array}$	F.val = E.val		
	$()$ $\Gamma \rightarrow \text{ugn}$	<i>F.vat</i> = digit.lexvat		
B)	List the issues in de	signing code generator. Generate code for the	Applying	6
	following three-add	ress statements assuming all variables are stored in		
	memory locations.			
	$\mathbf{x} = \mathbf{b} * \mathbf{c}$			
	y = a + y	ζ.		
C)	Define basic block	and flow graph. Give basic blocks and flow graph for	Remembering	6
	the following seque	Understanding		
	(1) prod := 0			
	(2) i := 1			
	(3) t ₁ := 4* i			
	(4) $t_2 := a[t_1]$	/*compute a[i] */		
	(5) t ₃ := 4* i			
	(6) t ₄ := b[t ₃]	/*compute b[i] */		
	(7) $t_5 := t_2 * t_4$			
	(8) t ₆ := prod+t ₅			
	(9) prod := t ₆			
	(10) t ₇ := i+1			
	(11) i := t ₇			
	(12) if i<=20 goto (3)		
		*** End ***	1	

Regular End Semester Examination – Summer 2022

Course: B. Tech.Branch: Computer EngineeringSemester: VISubject Code & Name:BTCOC601 - Compiler DesignMax Marks: 60Date: 11/08/2022Duration: 3.45 Hr.Instructions to the Students:

1. All the questions are compulsory.

- 2. The level of question/expected answer as per OBE or the Course Outcome (CO) on
 - which the question is based is mentioned in () in front of the question.
- 3. Use of non-programmable scientific calculators is allowed.
- 4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

- Q.1 Solve Any Two of the following.
 - A) Define Compiler? State some commonly used compiler-construction tools. Remembering 6
 - B) Explain how the assignment statement "position = initial + rate * 60" is Understanding, 6 grouped into the lexemes and mapped into the tokens passed on the syntax Applying
 6 Applying
 - C) What are the contents of a symbol table? Explain in detail the symbol table organization for Block-Structured languages. Remembering, 6
- Q.2 Solve Any Two of the following.
- A) Explain the concept of the transition diagram with an example transition Remembering, 6 diagram of *relop*. Write important conventions about the transition Applying diagram.
- B) In lexical analysis, explain for example how tokens, patterns, and lexemes Remembering, 6 are related.
 B) In lexical analysis, explain for example how tokens, patterns, and lexemes Remembering, 6 Analyzing
- C) Explain the structure of the lexical-analyzer generator. Show the Understanding, 6 construction of an NFA from a Lex program.
- Q.3 Solve Any Two of the following.
 - A) How Left Recursion is eliminated? Explain with algorithm and example.
 - B) What is meant by shift-reduce parsing? Explain the configuration of a Re shift-reduce parser on input id1*id2.
 - C) Construct a Predictive parsing table for the Grammar $E \rightarrow E+T | T, T \rightarrow T*F | F, F \rightarrow (E) | id.$
- Q.4 Solve Any Two of the following.
- A) Differentiate between Synthesized and Inherited attributes with suitable Analyze
 6 examples. Also, define what is meant by annotated parse tree.
- B) Explain constructing syntax trees for simple expressions involving only Understanding, binary operators + and -. State the use of *Leaf* and *Node* in this syntax tree.
 C) Explain in brief about Type checking and Type Conversion.
 C) Explain in brief about Type checking and Type Conversion.
- Remembering,6AnalyzeRemembering,6Applying
 - Applying 6

Analyze

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- Q. 5 Solve Any Two of the following.
 - A) What is the purpose of code optimization? Explain the DAG representation of basic blocks with examples.
 6 Understand
 - B) Explain the Code generation algorithm with three-address instructions. Understanding, 6
 State the four principal uses of registers.
 - C) What is a Flow Graph? Explain how a given program can be converted Understanding, 6 into a Flow graph? 6

		Supplementary Winter Examination	on – 2023		
	Course: T.Y.B. Tech. Br	anch : Computer Science & Engin	eering/CE Sem	ester : 6th	
	Subject Code & Name:	Computer Network BTCOC602_	_Y23		
	Max Marks: 60	Date: 18/01/2024	Duration: 3	Hr.	
	 Instructions to the Stud All the questions The level of que which the questi Use of non-prog Assume suitable 	lents: s are compulsory. stion/expected answer as per OBE on is based is mentioned in () in f rammable scientific calculators is data wherever necessary and men	E or the Course C front of the quest s allowed. ntion it clearly.	Dutcome (CO) on ion. (Level/CO)	Marks
Q. 1	Solve Any Two of the fol	lowing.			12
A)	What is a computer net	work? Enlist four uses of compute	r network.	CO1	6
B)	Explain network softwa	re with respect to protocol hierarc	by and design	Understand CO1	6
C)	issues for layer. State and explain the fu	nctionalities of all layers in ISO-C	SI Model.	Understand CO1 Understand	6
Q.2	Solve Any Two of the fol	lowing.			12
A)	Explain in brief 802.11	architecture and protocol stack.		CO2	6
B)	Write a short note on i)Bluetooth Architecture	e ii)RFID Technology		Understand CO2 Application	6
C)	State and explain Blueto	both Architecture		CO2 Understand	6
Q. 3	Solve Any Two of the fol	lowing.			12
A)	What is framing in netw with suitable example.	ork? Explain byte stuffing framin	g techniques	CO3 Understand	6
B)	Illustrate the service pro	ovided to the network layer by the	data link layer.	CO3 Understand	6
C)	Describe Error Detectio	n and Correction.		CO3 Apply	6
Q.4	Solve Any Two of the fol	lowing.			12
A)	Illustrate the service pro	ovided to the network layer by the	data link layer.	CO4 Understand	6
B)	What is Quality of Serv	ice? Mention various factors of Q	OS.	CO4	6
C)	Compare IPV4 / IPV6 p	protocols.		CO4	6
Q. 5	Solve Any Two of the fol	lowing.		Арргу	12
A)	What is cryptography?	Explain the working principle of p	oublic key	CO5	6
-	cryptography with suita	ble diagram.	-	Understand	
B)	Write a short note on			CO5	6
C)	DNS 2) DDNS Compare FTP and TFT	P protocols.		Application CO5 Apply	6

*** End ***

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY	, LONERE	
	Supplementary Winter 23		
	Course: B. Tech. Branch : CE/CSE	Semester : VI	
	Subject Code & Name: Computer Networks [BTCOC602_Y20]		
	Max Marks: 60 Date: 18/01/2024 D	ouration: 3 Hr.	
	 Instructions to the Students: All the questions are compulsory. The level of question/expected answer as per OBE or the Course Outcombined the question is based is mentioned in () in front of the question. Use of non-programmable scientific calculators is allowed. Assume suitable data wherever necessary and mention it clearly. 	come (CO) on	
		(Level/CO)	Marks
Q. 1	Solve Any Two of the following.		12
A)	Explain Network software in detail?	L2/CO1	6
B)	Write short note on various high speed network Technology	L2/CO1	6
C)	Explain Type of computer network	L2/CO1	6
0.2	Solve Any Two of the following		12
Q.2	Solve Any 1wo of the following.	LAIGOA	12
A)	What is FDDI? Draw and explain the frame format of FDDI.		6
B)	Explain in brief WiFi 802.11. Also explain working principle of WiFi 802.11	L2/CO2	6
C)	Draw and Explain Ethernet frame format.	L3/CO2	6
Q. 3	Solve Any Two of the following.		12
A)	A 7 bit Hamming code received as 1011011. Assume even parity and state	L3/CO3	6
	whether the received code is correct or wrong, if wrong locate the bit in error?		
B)	Consider the data unit to be transmitted is-	L3/CO3	6
	10011001111000100010010010000100		
	Consider 8 bit checksum is used		
C)	What is hamming distance? Explain with example	L2/CO3	6
0.4	Solve Any Two of the following		13
V.4	Draw and avalain IVA Haadar format	Lavood	
A)	Diaw and explain 1v4 meader format		0
B)	write Berkeley Socket primitive		0
C)	From IP Address 222.151.210.34 find out its class, Network ID, Host ID		6

Q. 5	Solve Any Two of the following.		12
A)	What do you mean of digital Signature? Define the following Term.	L2/CO5	6
	1)Symmetric and		
	Asymmetric key		
	cryptography		
	2)Public key		
	3)private key		
	4)Authentication		
	5)Integrity		
B)	Explain SMTP & amp; POP Protocol	L2/CO5	6
C)	Difference between persistence and non- persistence HTTP protocol	L2/CO5	6
	*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE					
	Course: T.Y.B. Tech.	Branch :Compute	on – 2025 er Engineering	Semester :VI	
	Subject Code & Name	e: Computer Network (B	BTCOC602)		
	Max Marks: 60	Date:	Duration: 3	Hr.	
	 Instructions to the Stud 1. All the question 2. The level of que on which the que 3. Use of non-prog 4. Assume suitable 	lents: s are compulsory. stion/expected answer as po estion is based is mentioned grammable scientific calcula e data wherever necessary a	er OBE or the Course d in () in front of the q ators is allowed. and mention it clearly.	<i>Outcome (CO)</i> <i>uestion.</i> (Level/CO)	Marks
0.1	Solve Any Two of the	following.		· · · · · · · · · · · · · · · · · · ·	12
A)	• Explain network software w	ith respect to protocol hierarchy	and design issues for layer	. CO1 Understand	6
B)	Explain ISO-OSI reference	model with diagram.		CO1 Understand	6
C)	Compare connection oriente	d and connectionless protocol.		CO1 Understand	6
Q.2	Solve Any Two of the	following.			12
A)	Explain in brief 802.11 arch	itecture and protocol stack.		CO2 Understand	6
B)	Write a short note on			CO2 Application	6
C)	1. Packet Switching, 2.Mess State and explain Bluetooth	age Switching, 3.Circuit Switchi Architecture.	ng.	CO2 Understand	6
,					
Q. 3	Solve Any Two of the	following.			12
A)	What is framing in network example.	PEXPlain byte stuffing framing to	echniques with suitable	CO3 Understand	6
B)	Illustrate the service provide	ed to the network layer by the dat	a link layer.	CO3 Understand	6
C)	Describe Error Detection an	d Correction.		CO3 Apply	6
Q.4	Solve Any Two of the	following.			12
A)	What is socket? Explain var	ious socket primitives used in cli	ent-server interaction.	CO4 Understand	6
B)	What is Quality of Service?	Mention various factors of QOS		CO4 Apply	6
C)	Compare IPV4 / IPV6 proto	cols.		CO4 Apply	6
Q. 5	Solve Any Two of the	following.			12
A)	What is cryptography? Expl suitable diagram.	ain the working principle of publ	lic key cryptography with	CO5 Understand	6
B)	Write a short note on 1)	DNS 2) DDNS		CO5 Application	6
C)	Compare FTP and TFTP pro	otocols.		CO5 Apply	6

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE
Regular End Semester Examination – Summer 2022Course: B. Tech. Branch : Computer Science and Engineering Semester : VISubject Code & Name: Computer Networks (BTCOC602)Max Marks: 60Date:17/08/2022Duration: 3.45 Hr.

Instructions to the Students:

- 1. All the questions are compulsory.
- 2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
- 3. Use of non-programmable scientific calculators is allowed.
- 4. Assume suitable data wherever necessary and mention it clearly.
- Q.1 Solve Any Two of the following.
 - A) Explain network software with respect to protocol hierarchy and design Understand 6
 issue for layer?
 - **B)** Compare connection oriented and connectionless protocol? Understand 6
 - C) Define following performance metrics Bandwidth ,Latency, data rate, Delay -bandwidth product and throughput

Q.2 Solve Any Two of the following.

12

12

Marks

12

- A) Compare token ring and FDDI with their frame format.
- B) With reference of ATM answer the following
 a. How is an ATM virtual connection identified?
 b.. Name the ATM layers and their functions.
 c. Why does ATM use small, fixed-length cells?
- C) Explain in brief 802.11 architecture and protocol stack?

Application6Understand6

(BT Level)

Understand 6

Apply

- Q.3 Solve Any Two of the following.
 - A) Illustrate the services provided to the network layer by the data link layer. Understand 6
 - B) Calculate CRC code for Message "11101010101010100011" if divisor Apply 6 polynomial is $X^5 + X^3 + X^2 + 1$
 - C) In a block of addresses, we know the IP addresses of two hosts are Apply 6 25.34.12.56/16, 182.44.82.16/26. What are the first address (network address) and the last address (limited broadcast address) in each of these blocks?
- Q.4 Solve Any Two of the following.
- A) The following is a dump of a TCP header in hexadecimal format.
 (05320017 00000001 00000000 500207FF 00000000) 16

a. What is the source port number and the destination port number?

- c. What the sequence number?
- d. What is the acknowledgment number?
- e. What is the length of the header?
- f. What is the type of the segment?
- g. What is the window size?
- **B)** Compare IPv4/IPv6 protocols?
- C) Illustrate with example leaky bucket and token bucket algorithms for
- Understand 6
- Understand 6

traffic shaping?

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- Q.5 Solve Any Two of the following.
 - A) Explain types of DNS messages?
 - **B)** Compare SMTP and POP Protocols.

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C) Illustrate with example public key and private key cryptography? Understand 6

*** End ***

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	DR. BABASAHEB AMBE	EDKAR TECHNO	LOGICAL UNIVERS	SITY, LONE	RE	
		Winter Examina	tions 2023			
	Course: B. Tech. Branch :	Computer Scien	ce & Engineering	Semester :	VI	
	Subject Code & Name: Co	mputer Network (BTCOC602)			
	Max Marks: 60	Date:	Duration:	3 Hr.		
	Instructions to the Students: 1. All Questions are C 2. Draw neat diagram 3. Figures to right ind 4. Assume suitable dat	Compulsory. 9 wherever necessar 1 licates full marks 1 a wherever necesso	y. ary and mention it clear	rly (Level	/CO)	Marks
Q. 1	Solve Any Two of the follow	ving.				
A)	Describe social issues with co	omputer network?		(Unders	stand)	06
B)	Give comparison between OS	I reference model a	and TCP/IP model?	(Unders	stand)	06
C)	Compare connectionless and	connection oriented	protocol?	(Unders	stand)	06
Q.2	Solve Any Two of the follow	ving.				
A)	Discuss Wi-MAX (802.16) an in real life?	nd Bluetooth (802.1	5.1) technology applica	ation (Unders	stand)	06
B)	Compare token ring and FDD	I with their frame f	format?	(Unders	stand)	06
C)	Describe in brief 802.11 archi	itecture and protoco	l stack?	(Unders	stand)	06
Q. 3	Solve Any Two of the follow	ving.				
A)	Illustrate byte count and bit st	tuffing framing met	hod?	(Ap	ply)	06
B)	A (7,4) hamming code is rece	ived as 1110000. D	etermine the correct co	de (Ap	ply)	06
C)	Solution when even parity is considered Justify how CRC is a stronger $msg - 11011010000$ g data input?	n kind of error-deteo gen-10101, Calc	cting code. ulate CRC for the giver	(Ana	alyze)	06
Q.4	Solve Any Two of the follow	ving.				
A)	Compare IPv4 and IPv6 addre	ess formats?		(Unders	stand)	06
B)	Describe the following co example.	ngestion control	mechanisms with sui	table (Unders	stand)	06
C)	Illustrate with example leaky shaping?	bucket and token b	ucket algorithms for tra	ffic (Unders	stand)	06
Q. 5	Solve Any Two of the follow	ving.				
A)	Describe five tuple DNS reco	rd with an example	?	(Unders	stand)	06
B)	Compare SMTP and POP Pro	ptocols?		(Unders	stand)	06

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY	, LONERE	
	Regular & Supplementary Winter Examination-2023		
	Course: B. Tech. Branch : Computer Science And Design Semes	ter : Fifth	
	Subject Code & Name: Computer Networks (BTCSD503)		
	Max Marks: 60 Date:05-01-24 Duration: 3 H	r.	
	 Instructions to the Students: 1. All the questions are compulsory. 2. The level of question/expected answer as per OBE or the Course Oute which the question is based is mentioned in () in front of the question 3. Use of non-programmable scientific calculators is allowed. 4. Assume suitable data wherever necessary and mention it clearly. 	come (CO) on	
		(Level/CO)	Marks
Q. 1	Solve Any Two of the following.		12
A)	Differentiate between TCP/IP and OSI Model	C01	6
B)	Write a note on Smart NIC	C01	6
C)	Explain different Network Connecting devices	C01	6
Q.2	Solve Any Two of the following.		12
A)	Explain in detail Hamming Code with suitable example.	C02	6
B)	Write a note on Stop and Wait protocol	C02	6
C)	Describe different services provided by Network Layer	C02	6
Q. 3	Solve Any Two of the following.	CO3	12
A)	Differentiate between Fast Ethernet, Gigabit Ethernet.	CO3	6
B)	Explain Random Access Protocols with its types.	CO3	6
C)	Write a short note on CSMA		6
Q.4	Solve Any Two of the following.		12
A)	Differentiate between IPv4 and IPv6 protocol	CO4	6
B)	Given the network address 17.0.0.0, find the class, the block, and the range of the addresses.	CO4	6
C)	Explain following terms : Unicast, Anycast, Multicast	CO4	6
0.5	Solve Any Two of the following		12
Δ)	Describe DHCP_DNS and SMTP protocol	CO5	6
R)	Explain different services provided by Transport Laver		6
D)	Differentiate between TCP and UDP protocol		U 4
			0
	*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE **Supplementary Winter Examination - 2023** Course: B. Tech. **Branch** : Computer Engineering/Computer Science & Engineering Semester : VI Subject Code & Name: BTHM605A_Y23 - Development Engineering Max Marks: 60 Date:25/01/2024 **Duration: 3 Hrs.** Instructions to the Students: 1. All the questions are compulsory. 2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question. 3. Use of non-programmable scientific calculators is allowed. 4. Assume suitable data wherever necessary and mention it clearly. (Level/CO) Marks **Q.1** Solve Any Two of the following. A) Describe, why humanitarian engineering is important? Remember 6 **B**) Define development engineering with its goal? Understand 6 C) Explain, why development engineering is necessary? Understand 6 Q.2 Solve Any Two of the following. A) Explain the role of Engineer in society? Understand 6 **B**) What is the main reason of poverty in India? Remember 6 C) Explain the Human Development Index (HDI) in detail. Understand 6 Q. 3 Solve Any Two of the following. A) Explain how inequality affects society? Remember 6 **B**) Define public reasoning and explain why it is important to justice. Understand 6 C) Explain in detail Concept of Social Justice? Analysis 6 Q.4 Solve Any Two of the following. A) Describe the global health challenges? Understand 6 **B**) Which are four main ways to achieve economic growth? Understand 6 C) Describe the Impact of Technology on Development? Analysis 6 **Q.5** Solve Any Two of the following. A) What is Teamwork and what is the role of Project Manager? Understand 6 **B**) Explain Humanitarian STEM Education? Understand 6 C) Which appropriate technologies are used to help peoples? Remember 6 *** End ***

End Semester Examination – Winter Supplementary-2023

Course: B. Tech. Branch : Computer and Allied Engineering Semester :VI

Subject Code & Name:BTCOE605A_Y20 & Development Engineering

Max Marks: 60 Date: 25 /01/2024

Duration: 3.00 Hr.

Instructions to the Students:

- *1.* All the questions are compulsory.
- 2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
- 3. Use of non-programmable scientific calculators is allowed.
- 4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q.1 Solve Any Two of the following.

A)	Explain different methods to understand world poverty.	(Understand)	6
B)	What is a timeline activity of development engineering?	(Understand)	6
C)	What are the principles of humanitarian engineering?	(Understand)	6

Q.2 Solve Any Two of the following.

A)	Write short note on Engineers' Roles: From Practice to Theory.	(Analysis)	6
B)	Define sustainable development and Describe key interconnected compo-	(Application)	6
C)	Why Cross Cultural understanding is important to an engineer?	(Understand)	6

Q. 3 Solve Any Two of the following.

A)	Discuss social justice as the objective of the Indian Constitution.	(Application))	6
B)	How the principle of equal treatment for equals serve the cause of social justice?	(Application)	6
C)	Illustrate human fulfillment based on religious perspectives.	(Understand)	6

Q.4 Solve Any Two of the following.

A)	What are global health challenges?	(Understand)	6
B)	Which factors affect access to primary education, poor attendance, drop-	(Understand)	6
C)	What is the concept of social business? Describe any two examples of Social business.	(Application)	6

Q. 5 Solve Any two of the following.

A)	Explain how Blockchain can be used for humanitarian purpose.	(Understand)	6
B)	Explain concept of participatory STEM education development.	(Understand)	6
C)	Explain Concept of Community assessment. Describe community	(Understand)	6
	assessment methods		

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE			
		Summer Examination – 2023		
	Course: T.Y. B. Tech.	Branch: Computer Engineering	Semester: VI	
	Subject Code & Name: B'	THM605A Development Engineering		
	Max Marks: 60	Date:22/07/2023	Duration: 3 Hr.	
	Instructions to the Student 1. All the questions are 2. The level of question which the question of 3. Use of non-program 4. Assume suitable data	s: e compulsory. n/expected answer as per OBE or the Cou is based is mentioned in () in front of the umable scientific calculators is allowed. ta wherever necessary and mention it clea	urse Outcome (CO) on question. urly.	
			(Level/CO)	Marks
Q. 1	Solve Any Two of the follo	owing.		12
A)	Explain different definition	s of development engineering.	Remember	6
B)	Classify and explain incom	e measure of poverty.	Understand	6
C)	What is Humanitarian Engi engineering is important?	neering? Describe Why humanitarian	Understand	6
Q.2	Solve Any Two of the follo	owing.		12
A)	Explain the Human Develo	pment Index (HDI) in detail.	Understand	6
B)	Explain why Cross-Cultura	l understanding is important?	Understand	6
C)	Explain the role of Enginee	r in society?	Remember	6
Q. 3	Solve Any Two of the follo	owing.		12
A)	Describe principles of catho	olic social doctrine.	Understand	6
B)	What is freedom? Define pr justice.	ublic reasoning and explain why it is impo	ortant to Understand	6
C)	What is social justice; expla	ain the concept of social engineering?	Remember	6
Q.4	Solve Any Two of the follo	owing.		12
A)	What is the Impact of Tech	nology on Development?	Analysis	6
B)	What are global health chal	lenges?	Analysis	6
C)	Generalize the view whether profession.	er humanitarian engineering is a helping	Understand	6
Q. 5	Solve Any Two of the folle	owing.		12
A)	Explain Humanitarian STE	M Education?	Understand	6
B)	Review the concept of Bloc	ek chain and Social Development.	Analysis	6
C)	What is Teamwork and what	at is the role of Project Manager?	Understand	6
		*** End ***	I	

Regular End Semester Examination – Summer 2023

	Course: B. Tech.		Semester : VI	
	Subject Code & Name	: BTCOE605(A)/BTHM605A Development En	gineering	
	Max Marks: 60	Date:21/07/23	Duration: 3 Hr.	
	Instructions to the Stud 1. All the questions 2. Draw neat diago 3. Use of non-prog 4. Assume suitable	lents: s are compulsory. ram wherever necessary. grammable scientific calculators is allowed. y data wherever necessary and mention it clearly	(Level/CO)	Marks
Q. 1	Solve Any Two of the	following.		12
A) B)	What is organization? E engineering ecosystem?	Explain types of organization in the development	Remember	6
C)	What is development er	ngineering? Where did development engineering	Analysis	6
	started?			
Q.2	Solve Any Two of the	following.		12
A)	What is Sustainable De	velopment, explain with example?	Remember	6
B)	What is poverty? Expla	in types of poverty in India?	Understand	6
C)	Explain the role of Engi	ineer in society?	Understand	6
Q. 3	Solve Any Two of the	following.		12
A)	Why social justice in en	ngineering is essential for sustainable development	? Understand	6
B)	What are the elements of	of religion, explain different functions of religion?	Analysis	6
C)	What is social justice? I	Explain the concept of social engineering?	Remember	6
Q.4	Solve Any Two of the	following.		12
A)	Explain different Techn	ologies used in Global Health schemes?	Understand	6
B)	What is the Impact of T	echnology on Development?	Remember	6
C)	What are the different d	levelopment strategies?	Understand	6
Q. 5	Solve Any Two of the	following.		12
A)	What is Teamwork and	what is the role of Project Manager?	Understand	6
B)	What is Blockchain and	l Social Development?	Understand	6
C)	Explain Humanitarian S	STEM Education?	Remember	6

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE **Regular End Semester Examination – Summer 2022 Branch : Computer Engineering/CSE** Course: B. Tech. Semester : VI Subject Code & Name: BTCOE605(A) Development Engineering Max Marks: 60 Date:26/08/2022 Duration: 3.45 Hr. Instructions to the Students:

- 1. All the questions are compulsory.
- 2. Draw neat diagram wherever necessary.
- 3. Use of non-programmable scientific calculators is allowed.
- 4. Assume suitable data wherever necessary and mention it clearly

(Level/CO) Marks

Q.1 Solve Any Two of the following.

- What is development engineering and explain how it is different? **A**) Remember 0
- What are organization types in the development engineering ecosystem? **B**) Understand 6
- What is a timeline activity of development engineering? **C**)

Analysis 0

Q.2 Solve Any Two of the following.

- What is poverty and types of poverty?
- What is Sustainable Development, explain with example? **B**)
- Explain the role of Engineer in society? **C**)

- Remember 0 Understand 6
- Understand 6

Q.3 Solve Any Two of the following.

- What is social justice; explain the concept of social engineering? **A**) Understand 6
- What are the elements of religion, explain different functions of religion? **B**) Analysis 6
- Why social justice in engineering is essential for sustainable development? **C**) Remember 6

Q.4 Solve Any Two of the following.

- Explain different Technologies used in Global Health schemes? **A**) Understand
- What are the different development strategies? **B**)
- What is the Impact of Technology on Development? **C**)

- 6 Remember 0
- Analysis 0

Q.5 Solve Any Two of the following.

- What is Teamwork and what is the role of Project Manager? **A**)
- **Explain Humanitarian STEM Education? B**)

What is ICT?

*** End ***

Analysis 6 Understand 6 Remember 0

Supplementary - Winter 23

	Course: B. Tech. Branch : Computer Engineering/Computer Science & Engineering					
	Subject Code & Name	e: BTCOE604 (B)_Y23 Internet of Things	Semester	:VI		
	Max Marks: 60	Date:23-01-24 Du	ration: 3 Hr.			
	Instructions to the Stud 1. All the questions 2. Draw neat diago 3. Use of non-prog 4. Assume suitable	dents: s are compulsory. ram wherever necessary. grammable scientific calculators is allowed. e data wherever necessary and mention it clearly.	(Level/CO)	Marks		
Q. 1	Solve Any Two of the	following.				
A)	What is IoT? Explain it	s characteristics and application of IoT.	Application	06		
B)	What are the biggest ch	allenges for IoT adoption?	Understand	06		
C)	Explain with neat diagr	am different IoT communication models.	Remember	06		
Q.2	Solve Any Two of the	following.				
A)	Explain communication	n criteria for an IoT platforms.	Understand	06		
B)	What is actuator? Give	classification of actuators.	Analysis	06		
C)	Explain leading types o	f IoT wireless technologies.	Understand	06		
Q. 3	Solve Any Two of the	following.				
A)	List and explain key ad	vantages of Internet protocol (IP).	Understand	06		
B)	Describe Message Que	uing Telemetry Transport Protocol.	Understand	06		
C)	Explain supervisory con	ntrol and data acquisition.	Understand	06		
Q.4	Solve Any Two of the	following.				
A)	What is machine learning	ng? Explain types of machine learning categories	. Remember	06		
B)	What is Edge analytics?	? Describe Edge Analytics Core Functions.	Understand	06		
C)	Explain Massively Para	Illel Processing Shared-Nothing Architecture.	Understand	06		
Q. 5	Solve Any Two of the	following.				
A)	Explain smart city IoT	architecture with a neat diagram.	Understand	06		
B)	Explain smart city secu	rity architecture with a neat diagram.	Understand	06		
C)	Discuss an IoT Strategy	v for Smarter Cities.	Application	06		
		at at at T 1 at at at				

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE			
	Summer Examination – 2023			
	Course: B. Tech. Branch : Computer Science & Engineering			
	Semester :VI			
	Subject Code & Name: BTCOE604B - Internet of Things			
	Max Marks: 60 Date: /07/2023 Dur	ation: 3 Hr.		
	 Instructions to the Students: 1. All the questions are compulsory. 2. The level of question/expected answer as per OBE or the Course Outcombine which the question is based is mentioned in () in front of the question. 3. Use of non-programmable scientific calculators is allowed. 4. Assume suitable data wherever necessary and mention it clearly. 	rome (CO) on		
		(Level/CO)	Marks	
Q. 1	Solve Any Two of the following.		12	
A)	Differentiate between IT and OT networks.	(Understand)	6	
B)	Draw and explain core IoT functional Stack.	(Understand)	6	
C)	Draw & explain IoT World Forum (IoTWF) Standardized Architecture.	(Understand)	6	
0.2	Solve Any Two of the following.		12	
A)	Explain different types of sensors.	(Remember)	6	
B)	Explain components of smart objects.	(Understand)	6	
C)	Describe various Communications Criteria	(Understand)	6	
Q. 3	Solve Any Two of the following.		12	
A)	Explain Key Advantages of Internet Protocol.	(Remember)	6	
B)	Discuss Message Queuing Telemetry Transport (MQTT).	(Understand)	6	
C)	Illustrate any two techniques of IP Optimization for IoT.	(Application)	6	
04	Solve Any Two of the following		12	
A)	What is HDES in Hadoon? Explain namenode and datanode	(Understand)	6	
B)	What is Machine Learning? Explain the role of Machine Learning in IoT	(Understand)	6	
D)	What is Edge analytics? Describe Edge Analytics Core Functions	(Understand)	6	
C)	That is Dage analytics. Describe Dage Analytics Core Functions.		U	
Q. 5	Solve Any Two of the following.		12	
A)	Illustrate basic structure of Arduino programming with LED blink program?	(Application)	6	
B)	What is Raspberry pi? Draw hardware layout of raspberry pi.	(Remember)	6	
C)	What is Temperature Sensor? Draw interfacing of any one temperature	(Remember)	6	
	sensor with Arduino with code.			

*** End ***	
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	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE				
	Reg	ular End Semester Exam	nination – Summer 2022		
	Course: B. Tech. Branch : Computer Science & Engineering				
	Semester : VI				
	Subject Code & Name	: BTCOE604B-Internet (of Things		
	Max Marks: 60	Date:	Duration: 3 H	r .	
	Instructions to the Stud 1. All the questions 2. The level of quest which the question 3. Use of non-prog 4. Assume suitable	ents: are compulsory. stion/expected answer as p on is based is mentioned in rammable scientific calcul data wherever necessary o	er OBE or the Course Outc 1 () in front of the question lators is allowed. and mention it clearly.	come (CO) on	
			i.	(Level/CO)	Ma
					rks
Q. 1	Solve Any Two of the f	collowing.			
A)	Differentiate between	IT and OT networks.		(Understand)	06
B)	Explain IOT and Digit	ization in detail.		(Understand)	06
C)	Draw and Explain core	e IOT functional Stack.		(Understand)	06
Q.2	Solve Any Two of the f	collowing.			
A)	Explain different types	s of Sensors.		(Understand)	06
B)	What are Actuators? I	Explain in brief.		(Remember)	06
C)	Explain in brief about	IOT Access Technologies	5.	(Understand)	06
Q. 3	Solve Any One of the f	ollowing.			
A)	Write short notes on A	Application Protocols for	IOT.	(Remember)	06
B)	Discuss Message Queu	ing Telemetry Transport	(MQTT)Protocol.	(Understand)	06
C)	Explain in brief about	the need of optimization	in iot.	(Understand)	06
Q.4	Solve Any Two of the f	collowing.			
A)	What is Machine learn	ing? Explain the role of I	Machine learning in	(Remember)	06
	ЮТ.				
B)	Explain in brief about	OCTAVE and FAIR.		(Understand)	06
C)	Write short notes on S	ecuring IOT.		(Understand)	06
Q. 5	Solve Any One of the f	ollowing.			
A)	What is Raspberry pi?	Draw hardware layout	of Raspberry pi.	(Remember)	06
B)	Explain Smart city sec	urity architecture with a	neat diagram	(Understand)	06

C)	Explain Smart city IOT architecture with a neat diagram.	(Understand)	06
	*** End ***		

	DR. BABASAHE	B AMBEDKAR TECHNOLOGICA	AL UNIVERSIT	Y, LONERE	
		Winter Examination – 202	22		
	Course: B. Tech.	Branch : Computer Science & F	Engineering	Semester :VI	
	Subject Code & Nar	ne: BTCOE604B Internet of Thing	S		
	Max Marks: 60	Date:	Duration: 3 H	lr.	
	 Instructions to the St 1. All the question 2. The level of que which the question 3. Use of non-print 4. Assume suitable 	udents: ons are compulsory. uestion/expected answer as per OBE of stion is based is mentioned in () in fro ogrammable scientific calculators is a ole data wherever necessary and ment	or the Course Out ont of the question allowed. ion it clearly.	tcome (CO) on n. (Level/CO)	Marks
Q. 1	Solve Any Two of th	e following.			12
A)	Draw and explain lay	ered architecture of IoT.		Remember	6
B)	Explained four intern	et of things connectivity models.		Understand	6
C)	Demonstrate the IOT	Components with neat diagram.		Analyze	6
Q.2	Solve Any Two of th	e following.			12
A)	What do you mean by and M2M.	M2M in IoT. Illustrate the difference	e between IoT	Understand	6
B)	Define is sensor? Stat	e and explain different types of sensor	rs.	Understand	6
C)	Define smart object in	n IoT. Explain classification of smart of	object in detail.	Understand	6
Q. 3	Solve Any Two of th	e following.			12
A)	What are different co	mmunication modes in IoT?		Understand	6
B)	What is Network Opt	imization? Write network optimizatio	n importance .	Remember	6
C)	Differentiate between	n MQTT and COAP Protocol.		Analyze	6
Q.4	Solve Any Two of th	e following.			12
A)	What is Big data? What is big data? What is big data?	nat is the relation between Big data an ata?	nd IoT? What are	Understand	6
B)	Illustrate IoT security	challenges and solutions.		Create	6
C)	Describe risk assessm	ent with OCTAVE.		Analyze	6
Q. 5	Solve Any Two of th	e following.			12
A)	Differentiate Raspber	ry with Arduino. Analyze the feature	s of Raspberry	Analyze	6
B)	Discuss in detail about	tt Arduino with neat sketch.		Analyze	6
C)	Construct the Design	of Smart home with Raspberry Pi and	l other hardware	Evaluate	6
	devices with neat ske	tch.			

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103 Winter Semester Examination – December - 2019

Sem.:-V **Branch:** B. Tech.(COMPUTER ENGINEERING) Subject with Subject Code: - MACHINE LEARNING (BTCOC503) Marks: 60 Date:- 13/12/2019 Time:-3 Hr. **Instructions to the Students** 1. Each question carries 12 marks. 2. Attempt any five questions of the following. 3. Illustrate your answers with neat sketches, diagram etc., wherever necessary. 4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly (Marks) 0.1. a) Define Machine Learning and Enlist Applications of Machine Learning (4)b) Differentiate between Supervised and Unsupervised Learning (4) c) List the issues in basic ID3 Decision Tree Algorithm. (4) Interpret the algorithm with respect to overfitting the data Q.2. a) Classify Fruit={Yellow, Sweet, Long} using Bayes learning, Data as given in table (6)Fruit Yellow Long Total Sweet 350 450 0 650 Orange Banana 400 300 350 400 Other 50 100 50 150 OR a) Predict the class of new data point x=1 and y=1 using K-NN algorithm assume k=3 (6)x class v -1 1 _ +0 1 2 0 _ -1 1 0 +1 1 2 +2 2 _ 2 3 +Page 1 of 2

	b) Discuss Maximum Likelihood and Least Square Error Hypothesis.	(6)
Q.3.	a) How does SVM works?	(6)
	b) What is logistic regression? Differentiate between Linear and Logistic Regression	(6)
Q.4.	a) Explain the concept of a Perceptron with a neat diagram	(4)
	b) What is back propagation?c) Explain how to learn Multilayer Networks	(4)
	c) Explain now to learn Multinayer Networks	
Q.5.	a) What is PAC learning model?	
	Explain the sample complexity for Finite hypothesis spaces	(6)
	b) Define and explain "Shattering a set of Instances" with suitable example.	(6)
$\mathbf{O}(\mathbf{C})$		

(6)

(6)

Q.6. a) What is Hierarchical Clustering? Consider following distance matrix and apply hierarchical clustering to cluster the objects u,v,w,x,y

	u	v	W	X	у
u	0	1	2	2	3
v	1	0	2	4	3
W	2	2	0	16	5
Х	2	4	1	ିଠି	36
у	3	3	5	3	0

b) Given that the Observations are already clustered in two clusters C1 and C2 as shown in table

$\sim \sim \sim$								
Ch	uster C	21	Cluster C2					
Obs.	X1	X2	Obs.	X1	X2			
А	2	4	С	9	3			
В	8	2	Е	8.5	1			
D	1	5						

Apply K-Mean clustering algorithm to find and Plot initial and final distribution of observations in C1 and C2

Paper End

Page 2 of 2

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE						
	Supple	mentary Su	mmer Examination -	- 2023			
	Course: B. Tech. Br	ranch : Con	nputer Engineering	Semester: V			
	Subject Code & Name: Mach	ine Learnin	g [BTCOC503]				
	Max. Marks: 60	Date:	11/08/2023	Duration:03:00	Hrs.		
Instru 1 2 3 4	ctions to the Students: All the questions are compulsor The level of question/expected of question is based is mentioned i Use of non-programmable scien Assume suitable data wherever	y. Inswer as pe in () in front ntific calcula necessary al	r OBE or the Course t of the question. ttors is allowed. nd mention it clearly.	Outcome (CO) on which	(Level /	Marks	
Q. 1	Solve Any Two of the followin	g.			CO)	12	
	a) Explain Linear Regression al	gorithm.					
A)	b) Explain following terms with1. Cost function2. Gradient Decent	respect to li	near regression:		1		
B)	Explain different splitting techn decision tree.	iques of dec	ision tree. Explain the	e basic terminologies of	1		
C)	What do you mean of under fitti under fitting in model can be rec	ng? What ar luced.	e the different reasons	s of under fitting? How	1		

Q. 2 Solve Any Two of the following.

Solve the following problem to find out whether car is stolen or not using the Naive A) Baye's algorithm.

Example No.	Color	Туре	Origin	Stolen?
1	Red	Sports	Domestic	Yes
2	Red	Sports	Domestic	No
3	Red	Sports	Domestic	Yes
4	Yellow	Sports	Domestic	No
5	Yellow	Sports	Imported	Yes
6	Yellow	SUV	Imported	No
7	Yellow	SUV	Imported	Yes
8	Yellow	SUV	Domestic	No
9	Red	SUV	Imported	No
10	Red	Sports	Imported	Yes

- Explain the features and types of Logistic Regression. B)
- Explain the working of the Support Vector Machine algorithm. C)

2

12

Q. 3	Solve Any Two of the following.		12
A)	Explain the working of Perceptron with suitable diagram.	4	
B)	What is backpropagation? Explain in brief. Also, discussed what are the needs of backpropagation.	4	
C)	Explain working of the multilayer network.	4	
Q. 4	Solve Any Two of the following.		12
A)	What is ensemble learning? Describe in detail the types of ensemble learning.	3	
B)	Explain any one ensemble learning algorithm.	3	
C)	Write note on Computational Learning Theory.	3	
Q. 5	Solve Any Two of the following.		12
A)	Explain the how K-Means Clustering Algorithm works? Explain the elbow method.	2	
B)	What is unsupervised machine learning? Explain with suitable example. What is clustering?	1	
C)	Explain Hierarchical Clustering Technique and its types in detail.	2	
	*** End ***		

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE				
	Supplementary Winter Examination – 2023				
	Course: B. Tech. Branch: Computer Science and Engineering/CE Sem-	ester: VI			
	Subject Code & Name: BTCOC603_Y23 Machine learning				
	Max Marks: 60 Date:20/01/24 2to5pm. Duration: 3 Hr.				
	 Instructions to the Students: All the questions are compulsory. The level of question/expected answer as per OBE or the Course Outcon which the question is based is mentioned in () in front of the quest Use of non-programmable scientific calculators is allowed. Assume suitable data wherever necessary and mention it clearly. 	come (CO) ion.			
		(Level/Co)	Marks		
Q.1	Solve Any Two of the following.		12		
	a) Define Machine Learning and Enlist Future scope of Machine	B1/CO1	6		
	Learning with appropriate example?				
	b) Explain different types of learning using suitable real-world ex- amples.	B3/CO1	6		
	c) Explain Overfitting and methods to avoid Overfitting.	B2/CO1	6		
Q. 2	Solve Any Two of the following.		12		
	a) Explain Naïve Bayes classifier with its advantages and	B1/CO2	6		
	disadvantages?				
	b) Define kernel functions and Kernel SVM.	B2/CO2	6		
	c) Define the following- i) Probability Density Function. ii) Probability Mass Function.	B3/CO2	6		
Q. 3	Solve Any Two of the following.		12		
	a) What is Perceptron, what are the basic Components of the	B6/CO3	6		
	Perceptron.				
	b) Define back propagation and error function.	B1/CO3	6		
	c) What are Types of Deep Learning Networks and enlist applications for it.	B4/CO3	6		
0.4	Solve Any Two of the following		12		
• • •	a) Difference between DAC and DI C	B2/CO4	<u> </u>		
	a) DIIICICIICE DELWEEN I AU AILU I LU.	D2/UU4	U		

	b)	Explain Unrestricted hypothesis space and Restricted hypothesis space.	B5/CO4	6
	c)	Justify Solvable vs. Unsolvable Problems with Computational theory.	B6/CO4	6
Q. 5	Solve	Any Two of the following.		12
	a)	How to choose value of "K number of clusters" in k-mean clustering.	B1/CO5	6
	b)	Define dendrogram and approaches hierarchical clustering technique.	B4/CO5	6
	c)	Define Gaussian Mixture Model (GMM) and Maximum Likelihood Estimation with respect with GMM?	B2/CO5	6
		*** End ***		

	DR. BABASAHEB A	MBEDKAR TEO	CHNOLOGICAL UNIVERSIT	Y, LONERE	
		Summer Regula	r Examination – 2023		
	Course: B. Tech.	Branch :CSE/	Computer Engineering	Semester : VI	
	Subject Code & Name:	BTCOC603	Machine Learning		
	Max Marks: 60	Date:17/	07/2023 Durati	on: 3 Hr.	
	 Instructions to the Studen 1. All the questions of 2. The level of question which the question 3. Use of non-program 4. Assume suitable description 	nts: are compulsory. on/expected answ a is based is menti ammable scientific ata wherever nece	ter as per OBE or the Course Ou foned in () in front of the questic c calculators is allowed. essary and mention it clearly.	tcome (CO) on on. (Level/CO)	Marks
Q. 1	Solve Any Two of the fo	llowing.			12
A)	Define machine learning	g. Explain its com	mon areas of applications.	(Remember)	6
B)	Describe working of dec	ision tree with su	uitable example.	(Apply)	б
C)	State the purpose of	confusion metr	ics. Elaborate various term	s (Understand)	6
	associated with it.				
Q.2	Solve Any Two of the fo	llowing.			12
A)	State Bayestheorem. Der	monstrateit with	suitable example.	(Apply)	6
B)	With respect to SVM e	explain the terms	s: 1. Hyperplane 2. Maximun	n (Understand)	6
	Margin Hyperplane (MI	MH) 3. Support V	Vector.		
C)	Differentiate between lin	near and non-line	ear SVM.	(Analyze)	6
Q. 3	Solve Any Two of the fo	llowing.			12
A)	Compare between Biol	logical Neural N	Network (BNN) and Artificia	l (Analyze)	6
	Neural Network (ANN).				
B)	Explain reinforcement l	earning in Artifio	cial Neural Network (ANN).	(Understand)	6
C)	Describe feedforward	and feedback	neural network with prope	r (Understand)	6
	diagram.				
Q.4	Solve Any Two of the fo	llowing.			12
A)	Explain concept of VC d	limensions with e	example.	(Remember)	6
B)	Discuss Ensembled Lear	rning. State appli	cations of ensembled learning.	(Understand)	б
C)	Describe terms: Bagging	g, Boosting and S	tacking.	(Understand)	6
Q. 5	Solve Any Two of the fo	llowing.			12
A)	Explain clustering with	example. State n	eed of clustering.	(Understand)	6

- B) State the working of K-means clustering algorithm.
- C) Differentiate between Agglomerative and Divisive hierarchical (Analyze) 6 clustering.

(Remember)

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