	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE		
	Supplementary Semester Examination – Winter 2023		
	Course: B. Tech. Branch : Computer Engineering and Allied Semester : VI		
	Subject Code & Name: BTCOC601_Y23- Compiler Design		
	Max Marks: 60 Date: 16/01/2024 Duration: 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 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)	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 *n*, how many prefixes, suffixes, and proper prefixes are there?
	 ii) Write regular definitions for the following languages:
	   1. All strings of lowercase letters that contain the five vowels in order.
	   2. 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 → E+T | T T → T*F | F F → (E) | id	(Remembering) (Applying)	**6**

C)	Compute FIRST and FOLLOW and also construct the predictive parsing table for the following grammar: $$S \rightarrow +SS \mid *SS \mid a$$	(Applying)	**6**
Q.4	**Solve any Two of the following.**		**12**
A)	For the SDD given below, give annotated parse tree for the expression **3*5+4**	(Applying)	**6**

	PRODUCTION	SEMANTIC RULES
1)	$L \rightarrow E$ **n**	$L.val = E.val$
2)	$E \rightarrow E_1 + T$	$E.val = E_1.val + T.val$
3)	$E \rightarrow T$	$E.val = T.val$
4)	$T \rightarrow T_1 * F$	$T.val = T_1.val \times F.val$
5)	$T \rightarrow F$	$T.val = F.val$
6)	$F \rightarrow (E)$	$F.val = E.val$
7)	$F \rightarrow$ **digit**	$F.val = $ **digit**.lexval

B)	Consider following SDT to generate Three Address Code. Give Three Address Code for the expression **a+b*c**:	(Analyzing)	**6**

Productions   **Semantic Actions**

```
S→id=E        {gen(id.name=E.place);}
E→E₁+T        {E.place=newTemp(); gen(E.place= E₁.place + T.place);}
  |T          {E₁.place = T.place;}
T→T₁* F       {T.place=newTemp(); gen(T.place= T₁.place * F.place);}
  |F          {T₁.place + F.place;}
F→id          {F.place = id.name;}
```

C)	Explain Syntax Tree and DAG as intermediate code representations. Construct the DAG and identify the Value Numbers for the subexpression **a+b+(a+b)** assuming + associates from the left.	(Remembering) (Applying)	**6**
Q. 5	**Solve any Two of the following.**		
A)	List the issues in designing code generator. Generate code for the following three-address statements assuming all variables are stored in memory locations. $$x = b * c$$ $$y = a + x$$	(Remembering) (Applying)	**6**
B)	Define basic block and flow graph. Give basic blocks and flow graph for the following sequence of three address code statements:	(Remembering) (Applying)	**6**

	(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)		

C)	Explain with examples the following concepts with respect to code optimization:
	
	     i) Common subexpression elimination.
	
	     ii) Dead-code elimination.
	
	     iii) Algebraic transformations.
		(Remembering)	**6**

	*** End ***		

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

Subject Code & Name: BTCOC601_Y20 -Compiler Design

Max Marks: 60   Date: 16/01/2024   Duration: 3 Hr.

Instructions to the Students:
1. *All the questions are compulsory.*
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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.**		**12**
A)	Draw a neat 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 ***

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

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

Subject Code & Name: Computer Networks (BTCOC602)

Max Marks: 60   Date:17/08/2022   Duration: 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.*

		(BT Level)	Marks
Q. 1	**Solve Any Two of the following.**		12
A)	Explain network software with respect to protocol hierarchy and design issue for layer?	Understand	6
B)	Compare connection oriented and connectionless protocol?	Understand	6
C)	Define following performance metrics Bandwidth ,Latency, data rate, Delay -bandwidth product and throughput	Remember	6
Q.2	**Solve Any Two of the following.**		12
A)	Compare token ring and FDDI with their frame format.	Application	6
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?	Understand	6
C)	Explain in brief 802.11 architecture and protocol stack?	Understand	6
Q. 3	**Solve Any Two of the following.**		12
A)	Illustrate the services provided to the network layer by the data link layer.	Understand	6
B)	Calculate CRC code for Message "1110101011101010100011" if divisor polynomial is $X^5 + X^3 + X^2 + 1$	Apply	6
C)	In a block of addresses, we know the IP addresses of two hosts are 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?	Apply	6
Q.4	**Solve Any Two of the following.**		12
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?	Apply	6

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?	Understand	6
C)	Illustrate with example leaky bucket and token bucket algorithms for traffic shaping?	Understand	6

Q. 5	**Solve Any Two of the following.**		12
A)	Explain types of DNS messages?	Understand	6
B)	Compare SMTP and POP Protocols.	Understand	6
C)	Illustrate with example public key and private key cryptography?	Understand	6

*** End ***

Course: B. Tech.   Branch : EXTC   Semester : VI

Subject Code & Name: BTETC602 COMPUTER NETWORK & CLOUD COMPUTING

Max Marks: 60   Date: 17/08/2022   Duration: 3.45 Hr.

Instructions to the Students:
    1. All Questions are Compulsory
    2. Draw neat diagram wherever necessary.
    3. Figures to right indicates full marks
    4. Assume suitable data wherever necessary and mention it clearly

		(Level/ CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	Explain the OSI reference model with neat diagram	1	**06**
B)	I) Compare the Go-Back-N ARQ and Selective Repeat ARQ	2	**03**
	II) Compare the HDLC and PPP. `		**03**

C)	Explain the following networking devices in short.
	    I. HUB
	    II. Router
	    III. Bridge
		5	**06**

Q.2	**Solve Any Two of the following.**		
A)	An ISP is granted a block of addresses starting with 190.100.0.0/16 (65,536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows: i. The first group has 64 customers; each needs 256 addresses. ii. The second group has 128 customers; each needs 128 addresses. iii The third group has 128 customers; each needs 64 addresses. Design the sub-blocks and find out how many addresses are still available after these allocations.	7	**06**

B)	I) A block of addresses is granted to a small organization. We know that one of the addresses is 205.16.37.39/28.
	    i. What is the first address in the block?
	    ii. Find the last address for the block
	    iii. Find the number of addresses
		7	**04**

	II) Change the following IPv4 addresses from dotted-decimal notation to binary notation.
	    i. 111.56.45.78
	    ii. 221.34.7.82
			02

C)	I. Describe in brief the types of classfull addressing	3	**03**
	II. Compare the TCP and UDP		**03**
Q. 3	**Solve Any Two of the following.**		

A)	The UDP header in hexadecimal format is as : CB84000D001C001C
	Obtain the following from it:
	    i. Source port number
	    ii. Destination port number
	    iii. Total length
	    iv. Length of the data.
	    v. Name of client process
		7	**06**

B)	I) Compare the networking devices Router and Switch	2	**02**
	II) Explain the different types of addressing used in computer network.		**04**

C) Write Short Note on following(Any 2):   **8**   **06**
I) WWW
II) EMAIL
III) Ethernet Frame Format

Q.4 **Solve Any Two of the following.**
A) Find the sub network address and the host-ID for the following   **7**   **06**
  I. IP Address – 120.14.22.16 & Mask- 255.255.128.0
  II. IP Address – 140.11.36.22 & Mask- 255.255.255.0
  III. IP Address – 141.181.14.16 & Mask- 255.255.224.0
B) Explain any two protocols for noisy channel in DATA LINK LAYER   **2**   **06**
C) Define the following terms -   **6**
  i) Repeater   **1**
  ii) Ethernet   **1**
  iii) Bluetooth   **1**
  iv) Virtual LAN   **1**
  v) Jitter   **1**
  vi) Routing   **1**

Q. 5 **Solve Any Two of the following.**
A) Explain IPV4 Addressing and IPV6 Addressing. Also write difference between   **4**   **06**
Classful and Classless Addressing
B) What is network topology? Explain the different network topologies.   **1**   **06**
C) I. Define Framing? And Explain in brief about different framing methods.   **2**   **04**
II. Define Computer Network?   **02**

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE
Regular End Semester Examination – Summer 2022

Course: TY.　　　　　Branch : Computer Engg/CSE　　　　Semester : VI
Subject Code : BTCOE605(C)　　　Subject Name: Consumer Behavior
Max Marks: 60　　　　Date:26/08/2022　　　　Duration: 3.45 Hr.

Instructions to the Students:
1. *All the questions are compulsory.*
2. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	Explain nature and scope of consumer behavior.	**Understand**	6
B)	What are the Approaches to consumer behaviour research?	**Knowledge**	6
C)	**Illustrate and explain various buying rolls through following example.** **Eg:** You and Friend went to a Cloth shops for his/her shopping. Suddenly your mother phoned you and asked you to buy a shirt for your father.	**Application/ Evaluation**	6
Q.2	**Solve Any Two of the following.**		
A)	On what criteria would you evaluate the viability of the segment?	**Knowledge**	6
B)	What are the various levels at which segmentation can take place?	**Knowledge**	6
C)	**Write short note on** **i.** Bases of segmenting consumer markets.　**ii.** Positioning strategies	**Understand**	6
Q. 3	**Solve Any Two of the following.**		
A)	Compare the levels of consumer decision making w.r.t. EPS And LPS.	**Analysis**	6
B)	Explain stages in consumer decision making process with example.	**Understand**	6
C)	What is cognitive dissonance? How can a marketer help reduce cognitive dissonance?	**Analysis**	6
Q.4	**Solve Any Two of the following.**		
A)	Explain versatility of Maslow's Hierarchy of Needs Theory with an example	**Understand**	6
B)	List out models of Consumer Behavior. Explain economic model in brief.	**Synthesis**	6
C)	Note the differences between Organizational and Consumer Buying.	**Analysis**	6
Q. 5	**Solve Any Two of the following.**		
A)	**Write short notes on :** **i.** Social class mobility　　**ii.** Lifestyle analysis	**Knowledge**	6
B)	What is adoption process? Explain its Stages.	**Knowledge**	6
C)	Explain types of promotion. What is Promotion Mix?	**Understand**	6

*** End ***

Course: B. Tech. Branch: Computer Science & Engineering/**CE**   Semester: VI

Subject Code & Nam BTCOE605C_Y20 **Consumer Behavior**

Max Marks: 60   Date-**25-01-24**   Duration: 3 Hr.

Instructions to the Students:
1. *All the questions are compulsory.*
2. *Use of non-programmable scientific calculators is allowed.*
3. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	**What do you mean by consumer behavior? Explain the determinants or factors that influence consumer behavior .**	CO1	6
B)	Differentiate the quantitative & qualitative approach in consumer view.	CO2	6
C)	Write a short note on nature and trend of consumer behavior.	CO3	6
Q.2	**Solve Any Two of the following.**		**12**
A)	**What is decision making? State the assumption of consumer decision.**	CO1	6
B)	**Explain the different types of consumer groups.**	CO3	6
C)	Write the aspects of positioning and positioning strategies.	CO1	6
Q. 3	**Solve Any Two of the following.**		**12**
A)	**Explain the Nicosia model of consumer behavior.**	CO1	6
B)	**Explain the scope of consumer research.**	CO1	6
C)	**What are the models adopted to study consumer behavior?**	CO1	6
Q.4	**Solve Any Two of the following.**		**12**
A)	**Write a note on consumer involvement.**	CO2	6
B)	Note on surveys and customer behavior data	CO1	6
C)	**Discuss the personal factors of consumer behavior.**	CO1	6
Q. 5	**Solve Any Two of the following.**		**12**
A)	What are the advantages of consumer research?	CO2	6
B)	**Write the difference between organizational & consumer buying.**	CO3	6
C)	Discuss the various marketing strategies?	CO1	6

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Regular End Semester Examination – Summer 2022

Course: B. Tech.   Branch : Computer Science & Engineering   Semester :VI

Subject Code & Name: BTCOE604 (C)   Internet of Things

Max Marks: 60   Date: 23/08/2022   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.**		
A)	What is IoT? Explain its characteristics and application of IoT.	Application	06
B)	Explain with neat diagram different IoT communication models.	Understand	06
C)	What are the biggest challenges for IoT adoption.	Remember	06
Q.2	**Solve Any Two of the following.**		
A)	Explain communication criteria for an IoT platforms.	Understand	06
B)	What is a sensor? Explain different types of sensors.	Analysis	06
C)	Explain leading types of IoT wireless technologies.	Understand	06
Q. 3	**Solve Any Two of the following.**		
A)	Explain the need of optimization in IoT.	Understand	06
B)	Describe Message Queuing Telemetry Transport Protocol.	Understand	06
C)	Explain supervisory control and data acquisition.	Understand	06
Q.4	**Solve Any Two of the following.**		
A)	What is machine learning? Explain types of machine learning categories.	Remember	06
B)	Explain Big Data Analytics Tools and Technology.	Understand	06
C)	Explain Massively Parallel 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 security architecture with a neat diagram.	Understand	06
C)	Write a short note on smart city use-case examples.	Application	06

*** End ***

Course: B. Tech.   Branch : Computer Engineering/Computer Science & Engineering

Subject Code & Name: BTCOE604 (C)_Y20 **Internet of Things**   **Semester :** VI

Max Marks: 60   **Date:23-01-24**   **Duration: 3 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.**		
A)	What is IoT? Explain its characteristics and application of IoT.	Application	06
B)	What do you mean by M2M in IoT? Illustrate the difference between IoT and M2M.	Understand	06
C)	Explain Business processes in IoT.	Remember	06
Q.2	**Solve Any Two of the following.**		
A)	Differentiate Raspberry with Arduino. Analyze the features of Raspberry PI.	Understand	06
B)	Differentiate between MQTT and COAP Protocol.	Analysis	06
C)	What is implementation of device integration in IoT? What are the components of IoT implementation?	Understand	06
Q. 3	**Solve Any Two of the following.**		
A)	What are our fundamental integration challenges? What complications might arise if the scope of integration expands?	Understand	06
B)	What do you understand about data acquisition and integration in IoT?	Understand	06
C)	What is unstructured data storage on cloud server? Which databases is recommended for unstructured data for IoT?	Understand	06
Q.4	**Solve Any Two of the following.**		
A)	How authentication and authorization of devices is achieved in IoT?	Remember	06
B)	What is the secure authentication mechanism to increase the security of the IoT devices?	Understand	06
C)	Which protocol is used for authentication and authorization?	Understand	06
Q. 5	**Solve Any Two of the following.**		
A)	How does IoT impact industries such as healthcare agriculture and transportation?	Understand	06
B)	Which IoT technologies can be used for home automation?	Understand	06
C)	What sensors are used in IoT healthcare? How is IoT used in telemedicine & healthcare?	Application	06

*** End ***