

**Class Test I**  
**BE III year Sec. - A, B**  
**Information Technology**  
**ITR6C1 Wireless Protocols and Mobile Networks**

**Max. Marks: 20**

**Time - 70 min.**

**Note: Attempt Any Four**

- Q.1 Explain Open System Interconnection Model with the help of diagram. 5
- Q.2 Enlist and Explain the Difference between wired and wireless connection? 5
- Q.3 What are the applications of wireless Network explain any five. 5
- Q.4 Explain the Following 5  
(i) ARP  
(ii) RARP
- Q.5 What is the difference between “Follow on Services” and “ Location aware Services” Explain? 5

**Class Test II**  
**BE III year Sec. - A, B**  
**Information Technology**  
**ITR6C1 Wireless Protocols and Mobile Networks**

**Max. Marks: 25**

**Time - 70 min.**

**Note: Attempt Any Four**

- |     |   |   |
|-----|---|---|
| Q.1 | What is Signal Propagation? Explain all five effects of Signal Propagation.                   | 5 |
| Q.2 | What is Antennas? Explain All four types with the help of Diagram.                            | 5 |
| Q.3 | Draw functional architecture of GSM and explain any of one either “RSS or NSS”.               | 5 |
| Q.4 | What do you understand by cellular System? What are the advantages and Disadvantages Explain? | 5 |
| Q.5 | Explain the working of FHSS transmitter and receiver.   | 5 |

**Class Test III**  
**BE III year Sec. - A, B**  
**Information Technology**  
**ITR6C1 Wireless Protocols and Mobile Networks**

**Max. Marks: 20**

**Time -70 min.**

**Note: Attempt Any Four**

- Q.1 What is Localization? Explain Mobile station international ISDN number (MSISDN). 5
- Q.2 What do you mean by Security in terms of GSM? Explain security services offered by GSM. 5
- Q.3 Enlist the application of Satellite System. 5
- Q.4 Explain DVB Data broadcasting with the help of Diagram. 5
- Q.5 What do you mean by infrared Transmission? What the advantages and disadvantages over radio transmission. 5

**BE III Examination June, 2021**  
**Information Technology**  
**Wireless Protocols & Mobile Networks (ITR6C1)**

## Time: 3 Hours

Max. Marks: 60

**Attempt any two parts in each question.**

- |     |    |  |   |
|-----|----|--|---|
| Q.1 | a. | What are the differences between Wired and Wireless connections? Enlist and explain about some of the wireless devices.  | 6 |
|     | b. | What do you mean by Signal and how antennas are must require for the transmission of signal?   | 6 |
|     | c. | Explain the working model of Multipath propagation with the help of proper diagram.  | 6 |
| Q.2 | a. | What do you understand by multiplexing? What is the difference between frequency division multiplexing and Code division multiplexing? Explain with the help of diagram. | 6 |
|     | b. | Explain the following: (a) Frequency shift keying.<br>(b) Phase shift keying   | 6 |
|     | c. | What do you understand by Spread Spectrum? Explain Direct sequence spread spectrum (DSSS).   | 6 |
| Q.3 | a. | Explain the problem of “Hidden and exposed terminals” and “Near and Far Terminals”.  | 6 |
|     | b. | What do you understand by term “Cellular system”? What are the advantages and disadvantages enlist.  | 6 |
|     | c. | Explain the following: (a) Borrowing channel allocation (BCA)<br>(b) Dynamic channel allocation (DCA)  | 6 |
| Q.4 | a. | Draw the functional architecture of GSM architecture and explain “Radio subsystem” part of the architecture.   | 6 |
|     | b. | In UTRAN architecture, what are the tasks listed for “Radio Network Controller” Enlist any six tasks.  | 6 |
|     | c. | Draw and explain the Bluetooth protocol stack. What are the elements available in core protocol in Bluetooth?  | 6 |
| Q.5 | a. | What is Mobile IP? Draw and explain the network of Mobile IP.  | 6 |
|     | b. | Explain indirect TCP (i-TCP) with the help of diagram also enlist the advantages offered by the same.  | 6 |
|     | c. | What is Content exchange? What are the features wireless session protocol offers for the same?   | 6 |

Institute of Engineering & Technology  
Class Test: 1, March 2021  
ITR6C2  
Analysis of Algorithms  
III-year IT A/B

Time: 70 Min

Max Marks: 20

Note: Attempt all the four questions.

- Q1 Show that the following equalities are correct or incorrect. Also justify your answer. 5  
(i)  $10n^3 + 15n^4 + 100n^22^n = O(100n^22^n)$  (ii)  $33n^3 + 4n^2 = \Omega(n^2)$

Q2 By first finding the smallest element of A and exchanging it with the element in A[1]. 5  
Then find the second smallest element of A, and exchange it with A[2]. Continue in this manner for the first n-1 elements of A. Write pseudocode for this algorithm. Give the best case and worst case running times of this in  $\Theta$  notation.

Q3 Solve the following recurrence relations: 5  
(i)  $T(n) = T(n/3) + T(2n/3) + n$  (using recursion tree)  
(ii)  $T(n) = 7T(n/3) + \sqrt{n}$  (using Master method)  
(iii)  $T(n) = 2T(n/2) + cn$  (using substitution method)

Q4 Give the general plan for analysing the recursive algorithms. Write recursive and non-recursive versions of the algorithm for tower of Hanoi problem, clearly indicating the steps and comment on its complexity. 5

Devi Ahilya University, Indore  
Institute of Engineering & Technology  
Analysis of Algorithm ITR6C2  
III IT  
Class Test: 2, 2021

Time: 70 Min

Max Marks: 20

Note: Attempt all the questions.

Q1 Find optimal solution to the knapsack problem instance n=6, m=15, (p<sub>1</sub>... p<sub>6</sub>) = (10,5,15,7,6,18), (w<sub>1</sub>... w<sub>6</sub>) = (2,3,5,7,1,4) 5

Q2 Solve the all-pair shortest-path problem for the digraph with the following weight matrix. Write the algorithm and analyze it. 5

0	2	$\infty$	1	8
6	0	3	2	$\infty$
$\infty$	$\infty$	0	4	$\infty$
$\infty$	$\infty$	2	0	3
3	$\infty$	$\infty$	$\infty$	0

Q3 Write a recursive algorithm for Fibonacci series. Analyze it. What is memoization? How the running time of this algorithm can be improved using memoized dynamic programming. How does it reduce the complexity and memory requirement? 5

Q4 Illustrate the operation of PARTITION on the array A = <13, 19, 9, 5, 12, 8, 7, 4, 21, 2, 6, 11> Show that the running time of QUICKSORT is  $\Theta(n^2)$  when the array A contains distinct elements and is sorted in decreasing order. 5

Devi Ahilya University, Indore  
Institute of Engineering & Technology  
Design and Analysis of Algorithm ITR6C2  
III IT  
Class Test: 3, 2021

Time: 70 Min

Max Marks: 20

Note: Attempt all the questions.

- Q1 Newspapers and magazines often have crypt-arithmetic puzzles of the form: 5

$$\begin{array}{r} \text{SEND} \\ + \text{MORE} \\ \hline \text{-----} \\ \text{MONEY} \\ \hline \end{array}$$

The goal here is to assign each letter a digit from 0 to 9 so that the arithmetic works out correctly. The rules are that all occurrences of a letter must be assigned the same digit, and no digit can be assigned to more than one letter. Solve problem using backtracking approach.

- Q2 Write a non-deterministic algorithm for clique decision problem. Also show that satisfiability problem reduces to clique decision problem. 5
- Q3 Explain how string-matching automaton algorithm works. Write and analyze algorithm for string matching using Finite Automaton. Draw a state transition diagram for a string matching automaton for the pattern ababbabbababbabb over the alphabet  $\Sigma = \{a, b\}$ . 5

- Q4 Study and write a short note on the following: 5
- (i) Decision and optimization problems,
  - (ii) Tractable and Intractable Problems,

**BE. EXAMINATION June 2021**  
**INFORMATION TECHNOLOGY**  
**ITR6C2**  
**Design and Analysis of Algorithm**

Duration: 3hrs.

Max Marks: 60

Note: All questions are compulsory. Each question has three parts A, B and C. Attempt any two parts from each question. Make suitable assumptions wherever necessary and clearly state the same.

- Q1(A)** State master's theorem and find the time complexity for the following recurrence: 6

$$T(n) = 2T[n^{1/2}] + \log n$$

- (B)** (i) Calculate the Average case time complexity of  $f(n) = 3n(n^2 - n) + 2n + 5$  using running time 6 complexity.  
(ii) Prove that  $(n + b)^b = O(n^b)$
- (C)** Explain Divide and Conquer method. Give recursion version of merge sort algorithm. Determine its 6 worst case and best case. Illustrate its operation on the array  $A = <3, 41, 52, 26, 38, 57, 9, 49>$

- Q2(A)** Write the algorithm for Counting sort. Illustrate the operation of Counting sort on the array  $A = (6, 0, 2, 0, 1, 3, 4, 6, 1, 3, 2)$ . Prove that Counting sort is stable. 6

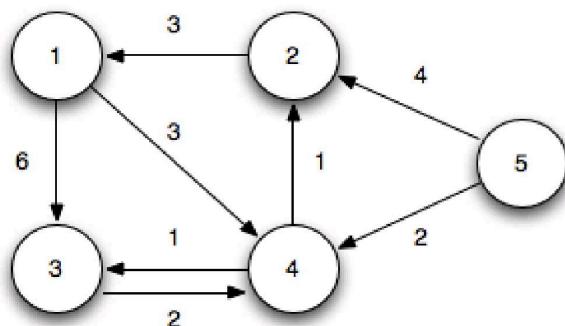
- (B)** Compute the multiplication of given two matrices using divide and conquer method and Strassen's matrix multiplication method: 6

$$\begin{array}{cccc} 1 & 0 & 2 & 1 \\ 4 & 1 & 1 & 0 \\ \hline A = & 0 & 1 & 3 & 0 \\ & 5 & 0 & 2 & 1 \end{array} \quad \begin{array}{ccccc} 0 & 1 & 0 & 1 \\ 2 & 1 & 0 & 4 \\ \hline B = & 2 & 0 & 1 & 1 \\ & 1 & 3 & 5 & 0 \end{array}$$

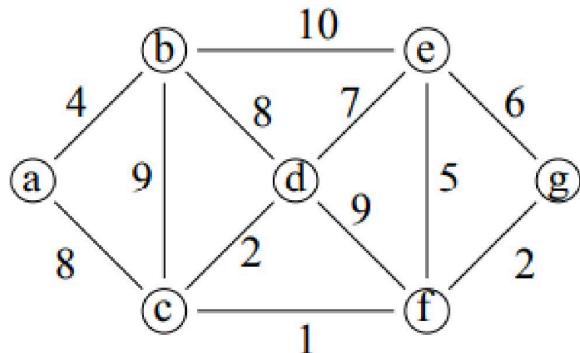
- (C)** Illustrate the operation of MAX-HEAP-INSERT ( $A, 10$ ) on the heap  $A = (15, 13, 9, 5, 12, 8, 7, 4, 0, 6, 2, 1)$ . 6

Write pseudocode for the procedures HEAP-MINIMUM, HEAP-EXTRACT-MIN, HEAP-DECREASE-KEY, and MIN-HEAP-INSERT that implement a min-priority queue with a min-heap.

- Q3(A)** Give all steps for finding Single Source Shortest path in a weighted graph using Bellman Ford 6 algorithm. Describe how the solution to this problem can be formulated using dynamic programming principle. Establish the time complexity of algorithm. Also apply this algorithm on the following graph.



- (B) What is greedy technique? Explain how the different steps of this technique are taken care in generating a minimum spanning tree through a sequence of expanding subtree. Write an algorithm and apply this algorithm to the following graph. 6



- (C) Explain the characteristics of a problem that can be solved efficiently using Dynamic programming technique. Suppose that you have an infinite supply of coins of denomination 50p, 25p, 10p, 5p and 1p. In how many ways can change be generated for amount Rs.100/- Given that a function  $d(n)$  is available which gives the denomination of the  $n$ th type of coin, develop a recursive algorithm to count the number of ways to generate change for a given amount. What are the number of steps required for the computations? 6

- Q4(A) Give control abstraction for the backtracking algorithm. Apply backtracking to solve the following instance of the subset sum problem  $S = \{2, 3, 4, 5\}$ , and  $d=11$ . Will the backtracking algorithm work correctly if we use just one of the two inequalities to terminate a node as non-promising? 6
- (B) Explain how string-matching automaton algorithm works. Write and analyze algorithm for string matching using Finite Automaton. Draw a state transition diagram for a string-matching automaton for the pattern ababbabbababbabb over the alphabet  $\Sigma = \{a, b\}$ . 6
- (C) Explain KMP string matching algorithm for finding a pattern on a text, and analyze the algorithm. Apply it on the following string 6

String |b|a|c|b|a|b|a|b|a|c|a|a|b|

Pattern |a|b|a|b|a|c|a|

- Q5(A) Show that satisfiability of Boolean formulas in 3-CNF form is NP Complete. Write a nondeterministic algorithm for 3-CNF satisfiability. 6
- (B) (a) Give a polynomial algorithm for the LONGEST PATH problem or show that it is NP-HARD. 6  
(b) State the relationships among the complexity class algorithms with the help of neat diagrams
- (C) Define “Max Clique” problem. Write a non-deterministic algorithm for clique decision problem. 6  
Also show that satisfiability problem reduces to clique decision problem.

**BE 3<sup>rd</sup> Year Information Technology**  
**Test 3**  
**ITR6C3 Network and Information Security**

**Maximum Marks: 20**

- |   |   |
|---|---|
| Q-1 Explain the security features required in the cyber world in detail?  | 5 |
| Q-2 Explain IP Spoofing attack in detail?                                 | 5 |
| Q-3 Explain the working of Play fair cipher in detail?                    | 5 |
| Q-4 Explain Deffie Helman key exchange with a suitable example in detail? | 5 |

## Test 2

### BE 3<sup>rd</sup> Year IT, Network and Information Security

Maximum Marks: 20

Q-1 Explain double and Triple Data Encryption Standard algorithm and meet in middle attack in detail? 4

Q-2 Explain RSA Algorithm using suitable example in detail? 4

Q-3 Explain the concept of Digital Signature in detail? 4

Q- 4 Explain the working of Digital Certificates in detail? 4

Q- 5 Explain the working of Secure Socket Layer in detail? 4

### Test 3

#### BE 3<sup>rd</sup> Year IT, Network and Information Security

Maximum Marks: 20

- |   |   |
|---|---|
| Q-1 Explain the process to check digital certificates in detail?                  | 4 |
| Q-2 Explain the concept of cross certification in digital certificated in detail? | 4 |
| Q-3 Explain the concept of of generation of psudo random generation in detail?    | 4 |
| Q- 4 Explain the working of Key Encryption Key in detail?                         | 4 |
| Q- 5 Explain the difference between Secure Socket Layer and HTTPS in detail?      | 4 |

**B.E. EXAMINATION JUNE, 2021**  
**INFORMATION TECHNOLOGY**  
**ITR6C3 NETWORK & INFORMATION SECURITY 21190**

Duration: 3 Hrs

Max. Marks: 60

Note: All question carry equal marks. Attempt any two parts from every question.

- Q-1** (a) Explain various principles of security in detail? 6  
(b) Explain the working of Trojan horses in detail? 6  
(c) Explain IP spoofing attack in detail? 6
- Q-2** (a) Explain various Substitution techniques in cryptography with suitable examples? 6  
(b) Explain Diffie-Hellman key exchange algorithm in detail? 6  
(c) Explain the Hill cipher technique using suitable example in detail? 6
- Q-3** (a) Explain the concept of Output Feed-back (OFB) in detail? What are the draw backs of this scheme? Explain. 6  
(b) Explain the concept and working Data Encryption Standard (DES) in detail? 6  
(c) Explain the working of meet in middle attack inDouble Data Encryption Standard (DES) in detail? 6
- Q-4** (a) Explain the concept Secure Socket layer in detail? Discuss? 6  
(b) Explain various user authentic mechanism schemes such as password based encryption in detail? 6  
(c) Explain the working of Digital Certificates in detail? 6
- Q-5** (a) Explain the working of RSA algorithm in detail with suitable example? 6  
(b) Explain concept of firewall in detail? 6  
(c) Explain the concept of DOS attack in detail? 6

**BE III year Sec. - A, B**  
**Information Technology**  
**ITR6E1 Software Testing & Quality Assurance**  
**Class Test I**

Max. Marks: 20

Time - 70 min.

**Note : Attempt any FOUR questions.**

Q. 1	<p>Select the most appropriate answer for the following questions:</p> <ol style="list-style-type: none"> <li>1. Software testing is             <ol style="list-style-type: none"> <li>(a) the process of establishing that errors are not present</li> <li>(b) the process of establishing confidence that a program does what it is supposed to do</li> <li>(c) the process of executing a program to show that it is working as per specifications</li> <li>(d) the process of executing a program with the intent of finding errors</li> </ol> </li> <li>2. Alpha and Beta testing techniques are related to:             <ol style="list-style-type: none"> <li>(a) Unit testing</li> <li>(b) Integration testing</li> <li>(c) System testing</li> <li>(d) Testing by Customer</li> </ol> </li> <li>3. Which phase consumes maximum effort to fix an error?             <ol style="list-style-type: none"> <li>(a) Requirements analysis and specifications</li> <li>(b) Design phase</li> <li>(c) Coding phase</li> <li>(d) Feasibility study phase</li> </ol> </li> <li>4. Alpha testing is carried out at the:             <ol style="list-style-type: none"> <li>(a) Developer's site in a controlled environment</li> <li>(b) Developer's site in a free environment</li> <li>(c) Customer's site in a controlled environment</li> <li>(d) Customer's site in a free environment</li> </ol> </li> <li>5. Which one of the following is true of a pure topdown integration testing process?             <ol style="list-style-type: none"> <li>(a) Requires only stubs for testing</li> <li>(b) Requires only drivers for testing</li> <li>(c) Requires both stubs and drivers for testing</li> <li>(d) Requires neither stubs nor drivers for testing</li> </ol> </li> </ol>	5
Q. 2	What is software testing? What are the principles of Software Testing? What are the limitations of testing? Discuss with the help of examples.	5
Q. 3	Discuss the significance of the V-shaped software life cycle model and also establish the relationship between its development and testing parts.	5
Q. 4	Explain Software Testing Lifecycle with activities and deliverables of each phase.	5
Q. 5	What are the various levels of testing? Explain the objectives of every level. Who should do testing at every level and why?	5

**BE III year Sec. - A, B**  
**Information Technology**  
**ITR6E1 Software Testing & Quality Assurance**  
**Class Test II**

Max. Marks: 20

Time - 70 min.

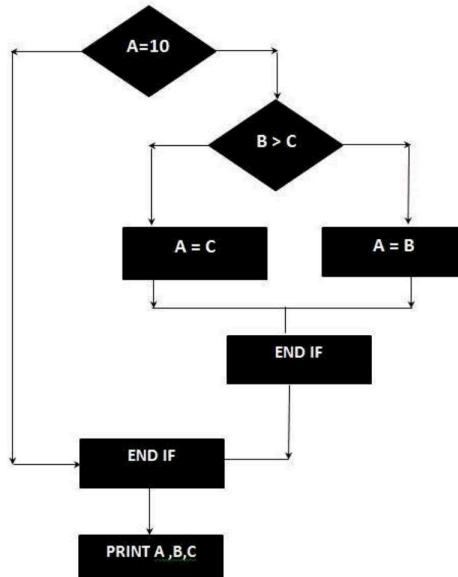
**Note : Attempt any FOUR questions.**

**Q. 1 True or False?:**

**5**

1. It's an unfair test to perform stress testing at the same time you perform load testing.
2. Configuration and compatibility testing must begin after the functional testing is complete.
3. The usability testing is performed in one phase that is design validation.
4. Fuzz testing alone cannot provide a complete picture of an overall security threat or bugs.
5. Unit/code functional testing is not Structural Testing.

**Q. 2 Explain Code Complexity Testing? Calculate the Cyclomatic Complexity for below graph by all formulae and identify set of possible execution path of a program:**



**Q. 3 What is Black Box Testing? Why is it used? List all the techniques of Black Box Testing and explain any one of them.** 5

**Q. 4 What is a Software Bug? Explain Software Bug Lifecycle.** 5

**Q. 5 What is Performance Testing? Explain Methodology for Performance Testing.** 5

**BE III-year Sec. - A, B**  
**Information Technology**  
**ITR6E1 Software Testing & Quality Assurance**  
**Class Test III**

Max. Marks: 20

Time - 70 min.

**Note : Attempt any FOUR questions.**

**Q. 1 Choose the appropriate one:**

**5**

1. What is the best time to perform Regression testing?
  - a. After the software has been modified
  - b. As frequently as possible
  - c. When the environment has been modified
  - d. Both option a & c
2. What is/are **not** the type(s) of Mobile Emulators,
  - a. Device emulator
  - b. Browser emulator
  - c. Kernel emulator
  - d. Operating system emulator
3. Which of the mobile testing tools is **not** used for both Android and iOS:
  - a. Robotium
  - b. MonkeyTalk
  - c. Calabash
  - d. Appium
4. Which step is **not** of Automated Testing Process?
  - a. Define scope of Automation
  - b. Planning, Design and Development
  - c. Deployment of automated testing results
  - d. Test Execution
5. Which of the following is not a SQA plan for a project?
  - a. Purpose section
  - b. Reference section
  - c. Code control section
  - d. Amount of technical work

**Q. 2 What is Regression Testing? Explain the common Methodology for Regression** 5  
**testing.**

**Q. 3 What is Mobile Application Testing? What are its types? Explain Mobile** 5  
**Testing Process.**

**Q. 4 Explain Software Quality Assurance. And explain Capability Maturity Model** 5  
**for Software.**

**Q. 5 Briefly explain the following (Any two):** 5

1. ISO 9000
2. Risk Management
3. Selenium

**III B.E. Examination June 2021**  
**Information Technology**  
**ITR5E1 Software Testing & Quality Assurance**

**Duration: 3 Hrs.**

**Max. Marks: 60**

**Note:** All 5 questions are compulsory. Attempt **any two parts** from each question. All parts of a question must be solved in sequence.

- Q. 1 (a) What is Software Testing? Describe ‘V’ concept of testing with a neat **6** diagram.  
(b) State and explain Testing Principles, Concepts and challenges. Explain **6** fundamental test process.  
(c) Explain different phases of software testing life cycle (STLC). Also describe **6** testing roles and their responsibilities.
- Q. 2 (a) Explain different levels of testing in detail. **6**  
(b) Why do we need Integration Testing? Explain various approaches of **6** Integration testing.  
(c) What are the primary objectives when we test the software? Briefly outline **6** the requirement specification of ATM machine. How will you prepare the test cases? Write the test cases on ATM transactions.
- Q. 3 (a) Consider the following code: **6**  
A = 10  
    IF B > C THEN  
        A = B  
    ELSE  
        A = C  
    ENDIF  
Print A  
Print B  
Print C  
• Construct Control flow graph for above code  
• Calculate the Cyclomatic Complexity for the same  
• List all independent paths  
(b) What is Code Coverage Testing? Explain different types of Code Coverage. **6**  
(c) What is Black Box Testing? Briefly explain all the techniques of black box **6** testing by taking an example.
- Q. 4 (a) Discuss about load testing, stress testing, and performance testing. What are **6** the Guidelines for Configuration and Compatibility Testing?  
(b) What is the need to do Regression Testing? Explain how to perform regression **6** testing.  
(c) What are different types of mobile application testing? Discuss different test **6** strategies for all the quality and performance guidelines to be met.

- Q. 5** (a) What is the role of Quality Assurance in software development? Differentiate between Quality assurance and Quality Control. Explain Risk Management Process. **6**
- (b) Discuss various types of Software Metrics. Briefly explain Defect severity and priority. **6**
- (c) Write the short note on any two: **6**
1. Selenium
  2. Automation Testing
  3. ISO 9000 standards

**Mid Semester Test – I (March-2021)**  
**B. E. III Year (IT-A, IT-B)**  
**Subject – Compiler Design (ITR6G4)**

Duration: 70 Min

Max Marks: 20

Note: Attempt all questions and answer should be to the point.

- Q.1 Explain the following tools: 5
- (i) Structure Editors
  - (ii) Preety Printers
  - (iii) Static Checkers
- Q.2 Unsigned numbers in Pascal are strings such as **4276, 0.04786, 4.223E5, or 2.45E-5.** 5  
Give a regular definition that provides a precise specification for this class of strings.
- Q.3 Construct a transition diagram for the token **relop** (Relational Operator). 5
- Q.4 What are the advantages of : 5
- (a)** A compiler over an interpreter.
  - (b)** An interpreter over a compiler.

**Mid Semester Test – II (May-2021)**  
**B. E. III Year (IT-A, IT-B)**  
**Subject – Compiler Design (ITR6G4)**

Duration: 70 Min

Max Marks: 20

Note: Attempt all questions and answer should be to the point.

- Q.1 Write down rules to compute FOLLOW(A) for a grammar G, Where A is a nonterminal. Use specific symbols and notations while writing rules. 5
- Q.2 Write an algorithm for constructing SLR-parsing table. Algorithm should include input, output and method. 5
- Q.3 Consider the following grammar G with productions. 5  
S  $\rightarrow$  L = R | R  
L  $\rightarrow$  \* R | id  
R  $\rightarrow$  L      Prove that the above grammar G is unambiguous but not SLR(1).
- Q.4 Consider the following augmented grammar G' with productions. 5  
S'  $\rightarrow$  S  
S  $\rightarrow$  C C  
C  $\rightarrow$  c C | d  
Construct sets of LR(1) items for the above grammar G'.

**Mid Semester Test – III (June-2021)**  
**B. E. III Year (IT-A, IT-B)**  
**Subject – Compiler Design (ITR6G4)**

Duration: 70 Min

Max Marks: 20

Note: Attempt all questions and answer should be to the point.

- Q.1 Write ***Three Address Code*** for an equivalent **C** program that takes a number as input and gives its factorial as output. **5**
- Q.2 Explain loop unrolling and copy propagation with the help of example. **5**
- Q.3 Explain implementation techniques for ***three address code***. **5**
- Q.4 When estimating each of the following sets, tell whether too-large or too-small estimates are conservative. Explain your answer in terms of the intended use of the information. **5**
- a) Available expressions.
  - b) Variable changed by a procedure.
  - c) Variable not changed by a procedure.
  - d) Induction variable belonging to a given family.
  - e) Copy statement reaching a given point.

**B. E. III Examination June-2021**  
**Information Technology**  
**ITR6G4: Compiler Design**

**Duration: 3 Hrs****Max. Marks: 60****Total No. of questions: 05**

**Note:** All questions are compulsory. Attempt any two parts from each question. Make suitable assumptions if necessary. Answer should be to the point.

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- Q1.** A. Explain **LEX** and **YACC**. Also describe various allocation data structures that are useful in Compiler Design. **06**
- B. Language Processing = Analysis of Source Program + Synthesis of Target Program.  
What does this statement mean? **06**
- C. Classify grammars on the basis of the nature of productions they use. **06**
- Q2.** A. Explain the need of lexical analysis. Also explain what difficulties would arise if lexical analysis is not performed before syntax analysis. **06**
- B. Draw a transition diagram that recognizes the lexemes matching the token **relop**, **06**  
Where **relop** represents **relational operators**.
- C. Draw a **NFA N** for **(a|b)\*abb** using Thompson's construction method. **06**
- Q3.** A. In Bottom-up parsing "*The leftmost substring that matches the body of some production need not to be a handle*". What does this statement mean show by an example? **06**
- B. Consider the following grammar G with productions. **06**  
 $S \rightarrow L = R \mid R$   
 $L \rightarrow * R \mid id$   
 $R \rightarrow L$   
Prove that the above grammar G is **unambiguous** but not **SLR(1)**.
- C. There are context-free grammars for which **shift-reduce parsing** cannot be used, Why? **06**
- Q4** A. Show the **three-address code** and its **quadruple representation** for the given assignment:  
 $a=b^*-c+b^*-c$  **06**
- B. Explain various rules for **Type Checking** in intermediate code generation. **06**
- C. What is **Garbage Collection** in compiler? Also give difference between Static and Dynamic Storage Allocation in context of compiler. **06**

**Q5.** A. Consider the program to calculate primes given below:

**06**

```
begin
    read n;
    for i:=2 to n do
        a[i]:=true; /*initialize*/
        count:=0;
    for i:=2 to n/2 do
        if a[i] then /*i is a prime */
            begin
                count:=count+1;
                for j:=2*i to n by i do
                    a[j]:=false /* j is divisible by i */
            end;
        print count
end
```

(1). Construct a flow graph from the three-address-statements.

(2). Move the invariant computations out of loops.

**B.** (1). Consider the program of **Question Number 5 (A)** and eliminate induction variable wherever possible. **06**

(2). Write short note on **HiPE** Compiler.

**C.** Write in brief about: **06**

(1). The LLVM Modular and Reusable Compiler Technologies.

(2). The Sun Compilers for SPARC.

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**B.E. –III INFORMATION TECHNOLOGY**

**Class Test I- MAR 2021**

**SIR6S6: Entrepreneurship Development &IPR**

**Time: 70 min]**

**[Max. Marks: 20**

Attempt any **TWO** questions.

1.	Explain Entrepreneurial process in detail.	10
2.	What are the different functions performed by Entrepreneurs? Explain in detail.	10
3.	What are different types of entrepreneurs?	10

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**B.E. –III INFORMATION TECHNOLOGY**

**Class Test II- MAY 2021**

**SIR6S6: Entrepreneurship Development &IPR**

**Time: 70 min]**

**[Max. Marks: 20**

Attempt any **TWO** questions.

1.	Explain Marketing plan in detail along with examples.	10
2.	What are operational plans? How these plans differ from productional plans?	10
3.	How Entrepreneurs take financing and investment decisions?	10

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**B.E. –III INFORMATION TECHNOLOGY**

**Class Test III- JUNE 2021**

**SIR6S6: Entrepreneurship Development &IPR**

**Time:** 70 min]

**[Max. Marks:** 20

Attempt any **TWO** questions.

1.	Explain Trademarks elaborately.	10
2.	How NABARD helps SMSE?	10
3.	What is patent? Explain with example.	10

**Roll No.,.....**

**21193**

**B. E. III EXAMINATION JUNE 2021**  
**Information Technology**  
**SIR6S6: Entrepreneurship & IPR Development**

**Duration: 3 Hrs]**

**[Max. Marks: 60**

**Note:** Attempt any **TWO** parts from each question. Each carries 06 marks.

Q.1.	a)	Discuss the Herzberg Theory of motivation for Entrepreneurship. Give suitable example.	(06)
	b)	What are the various functions of an entrepreneur?	(06)
	c)	Explain the entrepreneurial process with suitable example.	(06)
Q.2.	a)	Explain PESTEL analysis with examples.	(06)
	b)	What is the value of Creativity and Innovation and entrepreneurship?	(06)
	c)	Explain various ways of generating Ideas.	(06)
Q.3.	a)	What is Business Plan? Write down the format for writing business plans.	(06)
	b)	Write down the components and characteristics of Financial plan	(06)
	c)	Discuss the importance of market planning in business.	(06)
Q.4.	a)	Write short note on importance of government support to entrepreneurship.	(06)
	b)	What is the objective and functions of NABARD?	(06)
	c)	Write short note on SIDBI.	(06)
Q.5.	a)	Define Patent rights with suitable example.	(06)
	b)	Discuss the difference between Trademarks and Copyrights.	(06)
	c)	Explain Trademarks in detail.	(06)
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