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Total No. of Pages : 3

Seat No.	

S.E. (Computer Science & Engineering) (Semester-IV) Examination, May - 2018

AUTOMATA THEORY

Sub. Code: 63531

Day and Date : Friday, 04 - 05 - 2018 **Total Marks : 50**

Time : 9.30 a.m. to 11.30 p.m.

Instructions :
1) **Question no. 1 and 4 are compulsory.**
2) **Solve any one question out of question no. 2 and 3.**
3) **Solve any one question out of question no. 5 and 6.**
4) **Assume suitable data wherever necessary.**
5) **Figures to the right indicate full marks.**

Q1) Solve any three questions : **[15]**

a) Write a Regular expression for :

i) The strings over {a, b} with an even number of a's?

ii) String over {a, b} in the infinite sequence:
aba, a^5,(aba)a^6,a^{11},aba^{13},a^{17},.....?

b) Design a DFA for strings containing at least two a's and ending with an even number of b's.

c) Find unreachable, dead and useful variables from the grammar.

$S \rightarrow ABC|AC$

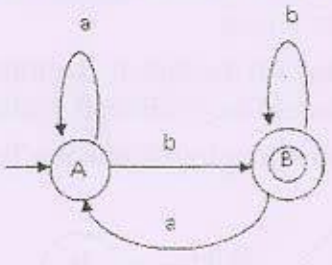
$A \rightarrow aA|a$

$B \rightarrow Bb|Ba$

$C \rightarrow Cc|c$

$D \rightarrow DB|d$

d) Give the regular grammar of the language accepted by following FA:



P.T.O.

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Seat No. 007

S.E. (CSE) (Part - II) (Semester - IV) Examination, May - 2018
COMPUTER ORGANIZATION
Sub. Code: 63533

Day and Date : Friday, 11 - 05 - 2018 **Total Marks : 50**

Time : 9.30 a.m. to 11.30 a.m.

Instructions :
1) Solve all questions.
2) Q. No. 1 and Q. No. 4 is compulsory.
3) Solve any one from Q. No. 2, 3 and one from Q. No. 5, 6.
4) Figures to right indicate full marks.

Q1) a) Write the IEEE 754 32 bit floating point number format. [1]

b) Illustrate Booth multiplication algorithm for X = 10110011 Y = 11010101. [6]

c) Write Non-restoring division algorithm for unsigned integres. [6]

Q2) a) Explain basic features of third generation computer. [6]

b) Explain VLSI era. [6]

Q3) a) Write HDL format for Z = X + Y using single address instruction. [6]

b) Explain a typical CPU with general register organization. [6]

Q4) a) Explain structure of a Set-associative memory. [6]

b) Explain all page replacement policies for the paging system in which M1 has a capacity of 3 pages. The execution of a program Q requires reference to five distinct pages Pi, i < = 5 and i is page address. The page address stream formed by executing Q is

2 3 2 1 5 2 4 5 3 2 5 2 [6]

P.T.O.

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Seat No.	

S.E. (C.S.E) (Part - II) (Semester - IV) (Revised) Examination, May - 2018
OPERATING SYSTEM-I
Sub. Code : 63534

Day and Date : Monday, 14-05-2018 **Total Marks : 50**

Time : 9.30 a.m. to 11.30 a.m.

Instruction :
1) **Q.No.3 and Q.No. 6 are compulsory.**
2) **Solve any one from Q.No. 1 and 2 and any one from Q.No. 4 and 5.**
3) **Assume suitable data wherever necessary.**

SECTION-I

Q1) a) What is an Operating System? Explain user view and system view. **[5]**

b) Explain Multiprogramming operating systems. **[5]**

Q2) a) Define and explain race condition. **[5]**

b) Describe the difference among short-term, medium-term and long term scheduling. **[5]**

Q3) Write short notes on (any three): **[15]**

1) Scheduling Criteria

2) Semaphore

3) Thread.

4) Round-Robin Scheduling.

P.T.O.

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Total No. of Pages : 2

Seat No.	

S.E.(CSE) (Semester - IV) (Revised) Examination, May - 2018
SOFTWARE ENGINEERING (Theory)
Sub. Code : 63535

Day and Date : Wednesday, 16-05-2018 **Total Marks : 50**
Time : 9.30 am. to 11.30 a.m.

Instructions : 1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**

SECTION-I

Q1) a) What are the major factors of software engineering? State various software quality attributes. **[6]**

b) Define the term software process. With the help of appropriate diagram. Briefly explain two major. Components in a software process. **[4]**

Q2) a) Who are system analysts? What do they do? **[4]**

b) State and explain principles of project scheduling. **[5]**

Q3) Write short note on (any 2) **[3+3]**

a) CPM

b) Non-functional requirements.

c) Project planing process.

P.T.O.

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Total No. of Pages : 3

Seat No.	

S.E. (Computer Science and Engg.) (Semester - III) (Revised) Examination, April - 2018

APPLIED MATHEMATICS (Theory)

Sub. Code : 63524

Day and Date : Tuesday, 24 - 4 - 2018 **Total Marks : 50**

Time : 2.30 p.m. to 4.30 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Use of calculator is allowed.**

SECTION-I

Q1) Attempt any two: **[12]**

a) Considering following data find equation of regression to estimate total units produced when number of workers is known

Number of workers (X)	122	140	165	170	183	194	180
Total units produced (Y)	40	65	71	95	104	111	102

b) Find value of following integral using Simpson's $3/8^{th}$ rule $\int_0^{\pi/4} x^2 \cos x \, dx$.

c) Determine root of the equation correct up to four decimal places using Newton-Raphson Method $\sin x + 2e^x - 0$.

Q2) Attempt any two: **[12]**

a) If a worker has to repair on an average 2 machines out of 25 every day, what is the probability that

i) The worker will free on any day.

ii) Worker will have to repair at the most one machine.

b) Number of customers visiting the bank in one minute follows Poisson probability distribution average 2 customers per minute, find probability that in certain minute number of visitors will be more than 1 or less than 1.

P.T.O.

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Total No. of Pages : 2

Seat No.	

S.E. (C.S.E.) (Part-I) (Semester - III) (Revised) Examination, April - 2018

DATA STRUCTURES (Theory)

Sub. Code : 63526

Day and Date : Thursday, 26 - 04 - 2018 **Total Marks : 50**

Time : 02.30 p.m. to 04.30 p.m.

Instructions :
1) **All questions are Compulsory.**
2) **Figures to the right indicate full marks.**
3) **Assume suitable data wherever necessary.**

Q1) a) Explain with suitable examples following terms: **[6]**

i) Structure

ii) Functions

iii) Pointers

b) What are Hash Functions? Explain different types of Hash Functions. **[7]**

OR

Write Algorithm for Heap Sort. **[7]**

Q2) Attempt **any two** from following questions. **[12]**

a) Write Algorithm for enqueue and dequeue operation of circular queue, to be implemented using array.

b) Write algorithm for binary Search. Explain it with suitable example.

c) With the help of suitable example, explain working of Selection Sort.

Q3) a) What is doubly Linked List? Explain algorithm for inserting a node in the middle of doubly linked list. **[7]**

b) Explain recursive algorithm for in-order and post-order traversal of a binary tree. **[6]**

OR

Write algorithm for finding a minimum and maximum value from a Binary Search Tree. **[6]**

P.T.O.

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Total No. of Pages : 2

Seat No.	

S.E. (C.S.E.) (Part-II) (Semester - III) (Revised) Examination, April - 2018

DATA COMMUNICATIONS (Theory)

Sub. Code : 63527

Day and Date : Friday, 27 - 04 - 2018 **Total Marks : 50**

Time : 02.30 p.m. to 04.30 p.m.

Instructions : 1) **Solve any TWO questions from each Section.**
2) **Figures to the right indicate full marks.**

SECTION - I

Q1) a) With a neat diagram, explain about Simplex, Half-duplex and Full-duplex. **[6]**

b) With neat diagram for transport layer discuss about the any four responsibilities of transport layer in OSI model. **[6]**

Q2) a) Explain Shannon Capacity for Noisy channel.

A telephone line normally has a bandwidth of 3000 Hz (300 to 3300 Hz) assigned for data communications. The signal-to-noise ratio is usually 3162. Find the channel capacity. **[6]**

b) Explain about AMI line coding scheme. Draw diagram for 010010 using AMI scheme. **[6]**

Q3) a) Write about any five advantages and any two disadvantages of optical fiber. **[7]**

b) Explain in brief about any TWO about following: **[6]**

i) Repeaters

ii) Bridges

iii) Switches

P.T.O.

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Total No. of Pages : 2

Seat No.	

S.E. (CSE) (Part - II) (Semester - III) Examination, April - 2018

MICROPROCESSORS

Sub. Code : 63528

Day and Date : Saturday, 28 - 04 - 2018 **Total Marks : 50**

Time : 2.30 p.m. to 4.30 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**

SECTION - I

Q1) a) Explain all Program Memory addressing Mode of advanced microprocessors. **[5]**

b) Write and explain program of Addition between two 16-bit no. **[4]**

Q2) a) Explain Flag register for entire 80X86 and Pentium microprocessor family. **[4]**

b) Explain architecture of 8085 Microprocessors in detail. **[6]**

Q3) Write Short Note on (Any Two): **[6]**

a) PUSH and POP Instruction.

b) Arithmetic Instructions of 8085.

c) Descriptor.

P.T.O.

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Total No. of Pages : 4

B.Sc., B.Sc. (Biotech), B.Sc. (Sugar Tech.), B.Sc. (I.T.), B.Sc. (Animation Science), B.Sc. (Forensic Science), B.Sc. (Food Processing), B.C.A., B.B.A., Law, B. Tech., B.Sc. (Nano Science), B.I.D., B.F.T.M.,B. Desh., B.D.F.C., B.C.S., B.Form, S.E.,B. Architecture, B. Textiles, B.M.M.,B.Voc. (All Degree) (Semester - IV) Examination, May - 2018

ENVIRONMENTAL STUDIES (New) (Compulsory)

Day and Date : Sunday, 20 - 05 - 2018 **Total Marks : 70**

Time : 11.00 a.m. to 02.00 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**

Q1) Select correct answer from the given alternatives. [10]

i) Ozone in the atmosphere is present in the layer _____ .
   a) Stratosphere b) Troposphere
   c) Thermosphere d) Inosphere

ii) Maharashtra has large mineral deposits of _____.
   a) Mica b) Iron
   c) Bauxite d) Gold

iii) Following is a man-made disaster.
   a) Rain b) Cyclone
   c) Nuclear hozard d) Drought

iv) Environmental day is celebrated on _____.
   a) 15 August b) 5 June
   c) 22 April d) 16 September

v) Air pollution (preventation and control) Act in India was enacted in the year.
   a) 1972 b) 1986
   c) 1989 d) 1981

vi) Following is Ex-situ biodiversity conservation method.
   a) National Park b) Seed bank
   c) Biosphere reserve d) None of the above

vii) Following is non-renewable resource.
   a) Wind b) Water
   c) Sunlight d) Petroleum

P.T.O.

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Total No. of Pages : 2

Seat No.	

S.E. (Computer Science and Engg.) (Semester - III) (New) Examination, April - 2018

DISCRETE MATHEMATICAL STRUCTURES

Sub. Code : 63525

Day and Date : Wednesday, 25 - 4 - 2018 **Total Marks : 50**

Time : 2.30 p.m. to 4.30 p.m.

Instructions :
1) **Q. 3 and Q. 6 are compulsory from Section - I and Section - II.**
2) **Attempt any one questions from Q. 1 and Q. 2.**
3) **Attempt any one questions from Q. 4 and Q. 5.**

SECTION-I

Q1) a) Write the following statement in symbolic form **[4]**

i) Indians will win the world cup if their fielding improves.

ii) If I am not in a good mood or I am not busy then I will go for a movie.

iii) If you know object oriented programming and oracle then you will get a job.

iv) I will score good marks in the exam if and only if I study hard.

b) Show that **[4]**

$$(\sim P \wedge (\sim Q \wedge R)) \vee (Q \wedge R) \vee (P \wedge R) \Leftrightarrow R$$

c) Draw Venn diagram **[5]**

i) $A - (B - C) = (A - B) \vee (A \cap B \cap C)$

ii) $(A - B) - C = A - (B \cup C)$

Q2) a) $A = \{\alpha, \beta\}$ $B = \{1, 2, 3\}$ what are $A \times B$, $B \times A$, $B \times B$, $(A \times B) \cap (B \times A)$. **[4]**

b) What is Monoid Homomorphism? Explain with example. **[4]**

c) Demonstrate that R is a valid inference from the premises $P \rightarrow Q$, $Q \rightarrow R$ and P. **[5]**

P.T.O.