Total No. of Questions : 6]

SEAT No. : ____

P5417

[Total No. of Pages : 2

[5562]-278
M.E. (Computer Engineering)
Research Methodology
(2017 Pattern) (Semester - I)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicates full marks.***
3) ***Draw neat diagrams where necessary.***

Q1) a) Explain the terms research Methodology and research method. What is research process? Can type of research change the research process? **[9]**

OR

b) What are specific characteristics of Engineering Research? State the IEEE and ACM code of ethics for engineering research. **[9]**

Q2) a) What is significance of following in literature survey **[8]**

i) Shodhganga

ii) Google Scholar

iii) Citations

iv) Plagiarism

OR

b) What is a research plan? Explain with example contents and the process of writing a research proposal. **[8]**

Q3) a) What are types of errors and sources of errors in analysis? How statistical analysis is used to address uncertainty and errors? **[8]**

OR

b) What is hypothesis and Null hypothesis? How statistical analysis helps for testing of hypothesis? Explain use of partial coefficients in multi-dimensional analysis. **[8]**

P.T.O.

Q4) a) Explain the need of optimization in engineering research. What are local and global optimums? Justify with example the use of monte Carlo technique to find the optima. **[9]**

OR

b) State the steps in simplex method for optimization. what are constraints and cost function? Comment on similarity and differences in simplex and gradient methods used for optimization. **[9]**

Q5) a) Which types of research need surveys? How respondents are identified? What are ergonomic and human factors associated with surveys conducted for research? **[8]**

OR

b) Write short notes on : **[8]**

i) Open MDAO

ii) AQAD

iii) CAT

iv) SOFA

Q6) a) What are various reports used for reporting the research? Discuss organization of thesis and style of writing thesis. **[8]**

OR

b) Explain the following research outcomes and when to use respective method of publishing research with example of each. **[8]**

i) Conference paper publication

ii) Copyright

iii) Patent

iv) Poster Presentation

Total No. of Questions : 7]

SEAT No. :

P5418

[Total No. of Pages : 2

[5562]-279
M.E. (Computer Engineering)
Bio-Inspired Optimization Algorithms
(2017 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Q. No. 7 is compulsory, solve any 5 from Q. No. 1 to Q. No. 6.***
2) ***Neat diagram must be drawn wherever necessary.***
3) ***Figures to the right indicates full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) What is self organization? Describe alternatives to self organization. **[4]**

b) Summarize interpretation of physics domain and simulated annealing algorithm. **[4]**

Q2) a) Explain with example roulette wheel selection in Genetic Algorithm. **[4]**

b) Define **[4]**

i) Evolution

ii) Phenotype

iii) Mendelian Factor

iv) Genotype

Q3) a) Which are the basic features of ACO Algorithm, write and explain pseudo code of standard ACO. **[4]**

b) Define swarm intelligence. Which are two main lines of research identified in swarm intelligence? List down basic principles of swarm intelligence.**[4]**

Q4) a) Write pseudocode of Bat algorithm and discuss idealized rules of Bat algorithm. **[4]**

b) Discuss self tuning framework and self tuning of firefly algorithm. **[4]**

P.T.O.

Q5) a) Describe procedure to implement the censoring phase of the real-valued negative selection algorithm. **[4]**

b) Summarize aiNet learning algorithm. **[4]**

Q6) a) Illustrate the response generated by the three rules governing the behavior of boid. **[4]**

b) Discuss architecture of Framstick. **[4]**

Q7) a) Illustrate any one application of Genetic Algorithm. **[6]**

b) Discuss scope of Artificial Immune System. **[4]**

Total No. of Questions : 12]

SEAT No. :

P5419

[Total No. of Pages : 2

[5562]-280
M.E. (Computer Engineering) (Semester - I)
Software Development and Version Control
(2017 Pattern)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
2) ***Neat diagram must be drawn wherever necessary.***
3) ***Figures to the right side indicates full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) What are the design representations used for behavioural and constructional view points of a software system? Explain. **[4]**

b) Explain the component based design process. **[4]**

OR

Q2) a) Explain the two design strategies applied to a software system design. **[4]**

b) How the quality concepts are mapped to measurements for quality assessment? **[4]**

Q3) How architecture view models are used to design the architecture of a software system? **[8]**

OR

Q4) Explain the various hierarchical architecture styles with their advantages. **[8]**

Q5) a) Explain the architecture style selection method with evaluation. **[5]**

b) Explain the quality attributes for the design of software architecture. **[4]**

OR

Q6) a) With suitable example and design model give the documentation of component and its interfaces for the software architecture. **[5]**

b) Describe two techniques for keeping code and architecture consistent. **[4]**

P.T.O.

Q7) a) State the principles of Environment Configuration Control. **[4]**

b) What is Release Management? Why is it important? **[4]**

OR

Q8) a) Explain the Configuration management framework in brief. **[4]**

b) Explain the following terms. **[4]**

i) Sandboxes and workspaces

ii) Variant management

Q9) Explain in detail the advantages a distributed version control can provide over the centralized tools. **[8]**

OR

Q10) Explain the following commands with respect to centralized version control. **[8]**

a) Checkout

b) Diff

c) Log

d) Tag

Q11) Write short notes on: **[9]**

a) GitHub

b) Mercurial

c) SVN

OR

Q12) Explain the setup of a version control tool with respect to **[9]**

a) Basic configuration

b) Naming

c) History

Total No. of Questions : 12]

SEAT No. :

P5420

[Total No. of Pages : 2

[5562]-281
M.E. (Computer Engineering)
EMBEDDED AND REAL TIME OPERATING SYSTEMS
(2017 Pattern)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt : Q.No.1 or Q.No.2, Q.No.3 or Q.No.4, Q.No.5 or Q.No.6, Q.No.7 or Q.No.8, Q.No.9 or Q.No.10, Q.No.11 or Q.No.12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) Define Embedded System. Explain different characteristics and challenges of Embedded System. **[8]**

OR

Q2) Explain Embedded System with considering following units **[8]**

i) ADC

ii) DAC

iii) LCD&

iv) LED

Q3) What do you mean by System On Chip (SOC)? Explain its components.**[8]**

OR

Q4) What are the advantages offered by an ASIC for designing an embedded system. **[8]**

Q5) Discuss various communication ports used in serial data communication.**[9]**

OR

Q6) Explain types of I/O communication with example. **[9]**

P.T.O.

Q7) What is RTOS? List and explain Typical Real Time applications. **[8]**

OR

Q8) List and explain how functional parameters affect scheduling & resource control decisions. **[8]**

Q9) What are the advantage and disadvantage of disabling interrupts during the running of a critical section of a process. **[8]**

OR

Q10) What are the situations which lead to priority inversion problems? How an OS does solves this problem by a priority inheritance mechanism? **[8]**

Q11) Explain in Detail of Windows CE and RTLinux. **[9]**

OR

Q12) What are the synchronization primitives and explain in brief. **[9]**