Total No. of Questions : 6]

SEAT No. :

P6796

[Total No. of Pages : 2

[5872]-201
M.E.
(Computer Engg/AIDS/Computer Engg. Master Data Science)
RESEARCH METHODOLOGY
(2017 Pattern) (Semester - I) (510101)

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

Instructions to the candidates:

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

Q1) a) What is Research Methodology? What is the research process? Elaborate on the importance of objectives and outcomes of research? **[9]**

OR

b) What is the significance of the code of ethics in research? What are the characteristics of engineering research? **[9]**

Q2) a) What is a research plan? What is the use of mathematical modeling in a research plan? **[8]**

OR

b) What is the significance of following in literature survey **[8]**

i) Shodhganga
ii) Google Scholar
iii) Citations
iv) Paraphrasing

Q3) a) What is the hypothesis and the Null hypothesis? How statistical analysis helps in testing of hypothesis? **[8]**

OR

b) State the use of the following tools **[8]**

i) PSPP
ii) SOFA
iii) AQUAD
iv) CAT

P.T.O.

Q4) a) State the importance of optimization in engineering research? With the help of an example, explain what gradient optimization is? **[8]**

OR

b) State the simplex optimization steps? What are constraints and cost function? State the similarity and differences in simplex and gradient methods of optimization? **[8]**

Q5) a) What are the guidelines for conducting surveys? How are respondents identified? What are human factors associated with surveys conducted for research? **[8]**

OR

b) When to use surveys in research? Comment on survey delivery, timelines and questionnaire formation? **[8]**

Q6) a) What are various reports used for compiling research findings? Discuss the thesis organization with the significance of the appendix in the thesis? **[9]**

OR

b) Elaborate following research outcomes and when which publication is to be attempted. **[9]**

i) Patent

ii) Copyright

iii) Research Paper

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Total No. of Questions : 7]

SEAT No. : ____

P3082

[Total No. of Pages : 1

[5872]-202

M.E. (Computer Engineering)

BIO-INSPIRED OPTIMIZATION ALGORITHMS

(2017 Pattern) (Semester - I) (510102)

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) ***Figure to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable data, if necessary.***

Q1) a) Explain the philosophy of natural computing. **[4]**

b) Illustrate the process of problem solving as a search track. **[4]**

Q2) a) Explain the term standard evolution algorithm and its advantages. **[4]**

b) Explain the term Evolutionary biology. **[4]**

Q3) a) Give basic principle of Swarm Intelligence system. **[4]**

b) Interpret the biological terminology into Ant Colony Optimization and Ant Clustering Algorithm. **[4]**

Q4) a) Explain CUCKOO search algorithm. **[4]**

b) Explain Bat algorithm and discuss rules of Bat algorithm. **[4]**

Q5) a) Summarize aiNet learning algorithm. **[4]**

b) Discuss procedure to implement monitoring phase of negative selection Algorithm. **[4]**

Q6) a) Discuss architecture of framStick. **[4]**

b) Illustrate boid flocking. **[4]**

Q7) a) Explain any one application of Genetic algorithm. **[6]**

b) What is artificial life & what are the goal of artificial life. **[4]**

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Total No. of Questions : 8]

SEAT No. :

P3083

[Total No. of Pages : 2

[5872]-203
M.E. (Computer Engineering)
SOFTWARE DEVELOPMENT AND VERSION CONTROL
(2017 Pattern) (Semester - I) (510103)

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

Instructions to the candidates:

1) ***Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) Explain incremental design of software development process with diagram. **[5]**

b) Explain data centered architecture with example. **[4]**

OR

Q2) a) Explain software architecture design models. **[5]**

b) Explain quality attributes of the design product. **[4]**

Q3) a) Explain software architecture in agile projects. **[5]**

b) Explain configuration management tools evaluation and selection. **[4]**

OR

Q4) a) Why source code management is important? **[5]**

b) Explain risk based testing in detail. **[4]**

Q5) a) Explain in detail source management models with advantages and disadvantages of distributed version control. **[8]**

b) Differentiate between centralized version control and distributed version control. **[8]**

OR

P.T.O.

Q6) a) Explain file locking and version merging. **[8]**

b) Explain graph structure in detail with types of version control in detail. **[8]**

Q7) a) Write a note on open source version control tools. **[8]**

i) GIT

ii) GitHub

iii) SVN

b) Explain facilities offered by advanced version control tools. **[8]**

OR

Q8) a) Write a note on open source version control tools. **[8]**

i) CVS

ii) Apache subversion

iii) Mercurial

b) Write a note on terminology related revision control tools in terms of baseline, branch, commit, merge, repository, tag, trank. **[8]**

i) Integration

ii) Common vocabulary

Total No. of Questions : 12]

SEAT No. :

P3084

[Total No. of Pages : 2

[5872]-204

M.E. (Computer Engineering)

EMBEDDED AND REAL TIME OPERATING SYSTEMS

(2017 pattern) (Semester-I) (510104)

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

Instructions to the candidate:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10, Q11 or Q12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Black figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) With a diagram explain classification of embedded systems. **[5]**

b) What is the use of watchdog timer in embedded system. **[3]**

OR

Q2) a) Explain the software tools used for embedded system development. **[5]**

b) Give the characterstics of embedded systems. **[3]**

Q3) a) Explain embedded systems on chip with neat diagram. **[4]**

b) Breifly explain about the ARM processor & its features. **[4]**

OR

Q4) a) Give the various features of SHARC and TigerSHARC processors. **[4]**

b) Explain any two networked embedded systems with their application. **[4]**

Q5) a) Explain any two mobile system protocols. **[5]**

b) Enlist the differences between ISA and PCI buses. Give example systems supported by these buses. **[4]**

OR

Q6) a) Explain about parallel port interfacing with switches & keypad. **[5]**

b) Give the brief description of SPI and SCI. **[4]**

P.T.O.

Q7) a) What is RTOS. List the real Time applications. **[4]**

b) What is precedence graph and task graph? Give details. **[4]**

OR

Q8) a) what are the three important categories of parameters which characterize the tasks. **[4]**

b) Explain Fixed and Dynamic priority algorithms. **[4]**

Q9) Explain various ways of Inter-process communication-semaphores, message queues, mailboxes and pipes. **[9]**

OR

Q10) Explain priority inversion with an example. **[9]**

Q11) Write short notes on any two. **[8]**

a) Windows CE

b) RTLinux

c) Embedded software development tools.

OR

Q12) With neat diagram Explain software development process for embedded system. **[8]**