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**B. E. (Third Semester) Examination,
Nov.-Dec. 2019**

(New Scheme)

(CSE Engg.)

COMPUTATIONAL SCIENCE

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : All questions are compulsory. Part (a) of each question is compulsory carries 2 marks. Solve any two parts from remaining (b), (c) and (d) of each question carrying 7 marks each.

Unit-I

1. (a) Define the role of decision tables as software design notation.
- (b) Explain different forms of cohesion and coupling to exhibit structured design of a software product.
- (c) Design a DFD illustrating daily issue/return/management activities in an institution's library.

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Suitable data, entities and processes may be defined before using them as DFD components.

- (d) Enumerate the attributes of a good programming language.

Unit-II

2. (a) Differentiate between linker and loader.
- (b) Explain the functionality of software simulator for implementing a HLL program with a suitable block diagram.
- (c) Discuss the role of various memory components in machine architecture for execution of HLL program.
- (d) Describe the different classes of binding times for the execution of a HLL source code.

Unit-III

3. (a) Explain the term 'side-effects' of a programming language.
- (b) Discuss the differences and commonalities among the three popular programming paradigms.
- (c) How are list functions expressed in SML? Explain with suitable examples.

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- (d) Describe the components of symbolic expressions (s-expressions) written in LISP.

Unit-IV

- 3. Highlight the correspondence between a biological neuron and artificial neuron.
- 4. Explain the concept of layers in neural networks. Name the different components for the following layer of neurons shown in figure.1

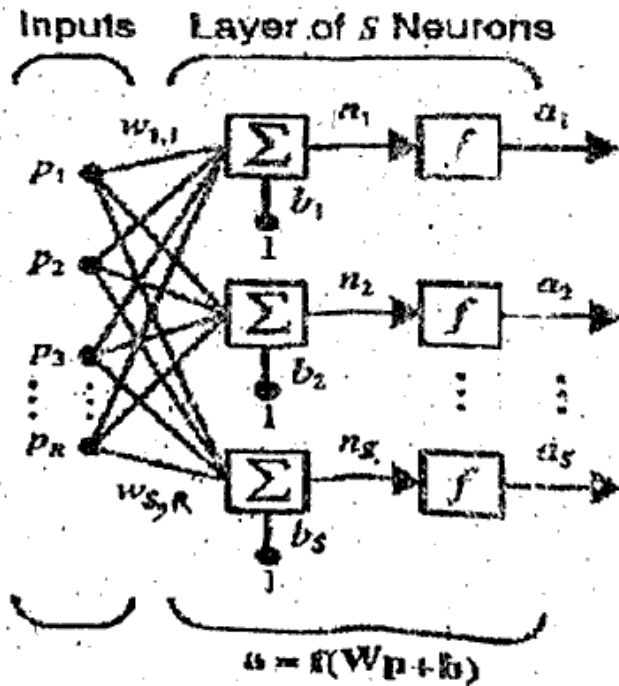


Figure 1

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- 7. Differentiate between supervised and unsupervised learning in neural nets.
- 8. Explain auto-associative neural network model with a suitable diagram.

Unit-V

- 5. Enumerate the real-time applications of fuzzy systems.
- 7. Discuss the properties of fuzzy set and crisp set with suitable examples.
- 8. Explain the working principle of genetic algorithms.
- (d) How fuzzy membership functions are used to represent fuzzy relation matrices? Explain with a suitable example.