

COLLEGE OF ENGINEERING, PUNE

(An Autonomous Institute of Government of Maharashtra)

Subject :- (CT 208) Principles of Programming Languages

Max. Time :- 3 Hrs

Date :- 12/05/2012

End Semester Examination

Max. Marks :- 100

S.Y. B .Tech (Computer Engineering & Information Technology)

Instructions :

1. Attempt all questions
2. Draw suitable diagrams wherever necessary
3. Assume suitable data, if necessary
4. Figures to the right indicate maximum marks

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- Q 1**
- a** Explain the following attributes of a good programming language : **6**
Orthogonality , Portability and Cost of use.
- b** Is goto a good programming language construct? How does it affect **6**
readability?
- c** In C programming language, what will be the L-value of A[5] if A is **2**
array of 10 integers and is stored from memory location 8000 ?
- Q 2**
- a** What is subroutine calling sequence ? What does it do ? What is **6**
meant by subroutine prologue and epilogue?
- b** What is short circuit boolean evaluation ? Why it is useful ? How it is **6**
implemented ?
- Q 3**
- a** Comment on : "C is more of an environment than a simple language" **6**
- b** Draw flow diagram for the following code fragments :
- i.** switch (ch) **4**
- {

```

case 1,3 :
    c++;
    break;
case 2,4 :
    c += 10;
    break;
default :
    c = 0;
}

```

ii. while (a != b)

```

{
    if (a < 100 && b < 200)
    {
        c = 10;
        a +=1;
    }
    else break;
}

```

4

- Q4 a How new threads are created in concurrent programming? 6
- b With suitable examples, explain the role of various pre-defined exception classes in Python. 8
- Q5 a What are various problems related to heap storage? 8

b Write short note on any two of the following:

8

i. Dope vector

ii. Coersion

iii. Proper program

Q 6 Explain with a suitable example, mark-sweep algorithm for garbage collection. 10

OR

Explain list comprehension and generator expression in python. Also demonstarte how they are used in writing functional programs ?

Q 7 The following table gives the name of student and the courses which he has registered. One student can register either PPL or MPT or both the courses. (For example : ashish has taken PPL and MPT course, sachin is registered to MPT course)

Name	Registered for courses
ashish	PPL , MPT
sachin	MPT
pratik	PPL
shubhada	MPT
priyanka	MPT
deepen	PPL, MPT
pankaj	PPL
yash	PPL, MPT

a Write down a database of facts in prolog for the given data. Define relation `is_registered` which will give name of student who has registered for a course. 6

b Also define relation `has_taken`, which will give name of student who has taken two courses. 4

Q 8 a State output of following statements in LISP :

4

i. (+ 1 2 3 (* 2 5))

ii. (car (cdr (cdr '(12 (* 3 4) (+ 1 3) (/ 4 2) 23))))

b Trace the execution of following statement written in LISP :

6

(some '(a) '(b c) '(d e))

Given that :

(defun some(x y z) (cons x (other y z)))

(defun other(v w) (cons v w))