**COMSATS University Islamabad, Attock Campus**

**Department of Computer Science**

**Program: CS VII**

**Spring 2024: Final Examination**

**Course: - Compiler Construction**

**Time Allowed: - 180 Minutes Marks: 50**

**Name:- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Regn. No:-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Note:- Don’t write anything on Question Paper except your Name & Regn. No.**

**Q1. Attempt any two of the following [CLO 1, SO1] (10)**

*i. Discuss various strategies for recovering from lexical errors and syntax errors (5)*

*ii. Differentiate between Recursive descent, LL(1),LR(0), SLR(1) and LR(1) parsers (5)*

*iii. Discuss the two type of attribute grammars in context to syntax directed translation (5)*

**Q2. Attempt any two of the following [CLO 2, SO1 SO2] (10)**

*i. Compare Reaching definitions, available expressions and liveness algorithms (5)*

*ii. Discuss any four register allocation strategies (5)*

*iii. Discuss type systems (5)*

**Q3. For the given code [CLO 3, SO2] (30)**

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| **int wxyz (int y, int z)**  {  int w=32;  int x = y \* 2; x = y \* 16;  z= z\*32 x = y \* w + z / w; y=32+x;  return x;  t=x;  }  **int abcd - (int c, int d)**  {  int a=2-(c/d \*16);  int b=((c/d\*8)\*2)+2;  c=(a/b) / (d/c);  d=c/2;  int e= (a/b)/ (b/c)/(c/d);  int t= a+b –c-d;  return t;**}** | **void main {** int nuke;  int result=0,Donald=1,Duck=2, Russel=3,UP=4;  cout<< “press 1 for NK press 2 for USA”<<endl;  cin>>nuke;  switch(nuke){  case 1:  cout<<”please enter 1st value”<<endl;  cin>> Donald;  cout<<”please enter 2nd value”<<endl;  cin>> Donald;  result=wxyz(Donald,Duck); result=wxyz(Duck, Donald);  break;  case 2:  cout<<”please enter 1st value”<<endl;  cin>> Russel;  cout<<”please enter 2nd value”<<endl;  cin>> UP;  result=abcd (Russel,UP);  break;  result=abcd (UP,Russel);  default:break;  cout<<result;  } } |

1. *Create Symbol table of entire code (10)*
2. *Convert code of wxyz and abcd function into 3 address code. (10)*
3. *Perform 10 optimization for the3 address code in (ii) above. (10)*