Total No. of Questions : 5]

SEAT No. :

PA-1036

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T.Y. B.Sc. (Semester - VI)

COMPUTER SCIENCE

CS-366 : Compiler Construction

(2019 Pattern) (CBCS)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt any eight of the following (out of Ten) : **[8 × 1 = 8]**

a) YACC is a compiler or Parser. Write Correct Statement.

b) Write a regular expression in lex for hex decimal number in C language.

c) Define cross Compiler.

d) List any two transformations performed on basic block.

e) What is sentinels?

f) Define Annotated Parse Tree.

g) Name the types of LR parser.

h) What is basic block?

i) State the use of function retract ( ).

j) Construct LR(1) items for the following production.

$S \rightarrow \in$

Q2) Attempt any four of the following : **[4 × 2 = 8]**

a) List out all phases of compiler in sequence.

b) Define synthesized attribute and Inherited attribute.

P.T.O.

c) Construct a DAG for block :

b = a[i]

a[j] = d

e = a[i]

d) Differentiate between top-down parsing and bottom-up parsing.

e) Define left recursion. How it can be eliminated?

Q3) Attempt any two of the following (out of three) : **[2 × 4 = 8]**

a) Check whether the given grammar is SLR (1) or not.

$S \rightarrow L = R \mid R$

$L \rightarrow * R \mid id$

$R \rightarrow L$

b) Write lex program specification. Explain the Lex library functions associated with lex in brief.

c) Compute First & Follow for the following.

$S \rightarrow BD \mid AB$

$A \rightarrow aAa|b$

$B \rightarrow bAa \mid \in$

$D \rightarrow \in$

Q4) Attempt any two of the following : **[2 × 4 = 8]**

a) Check whether the give grammar is LALR (1) or not.

$S \rightarrow aAd \mid bBd \mid aBe \mid bAe$

$A \rightarrow c$

$B \rightarrow c$

b) What is multi-pass compiler? Explain diagrammatically with its advantages and disadvantages.

c) Consider the following syntax-directed definition and Draw the Annotated parse tree for the input string 5+3*4.

Production	Semantic Rule
L → En	Print E.val
E → E1+T	E.val=El.val+T.val
E → T	E.val=T.val
T → Tl * F	T.val=TI.val* F.val
T → F	T.val=F.val
F → (E)	F.val=E.val
F → digit	F.val=digit.lexval

Q5) Attempt any one of the following : **[1 × 3 = 3]**

a) List the code optimization techniques. Explain anyone technique with an example.

b) Draw the operator precedence table for the following grammar :

E → E + E |E*E |E-E |id

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