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M S Ramaiah Institute of Technology

Department of Information Science and Engineering

Term:	22/01/2018 to 12/05/2018	**Course Code:**	IS631
Course:	System Software	**Semester:**	6
CIE:	Test II	**Max Marks:**	30
Date:	**05/04/2018**	**Time:**	**9 :30 –10:30 AM**

Portions for Test: Lecture Nos. from 18 to 33 as per lesson plan

Instructions to Candidates: Answer any **Two** out of Three questions.

Sl No	Questions	Marks	BL	CO
1a.	Given the following SIC program, write the object code as produced by one pass load and go assembler. Also given are the opcodes as follows: STL-14,JSUB-48, LDA-00, COMP 28, JEQ-30, J-30, STA-0C, LDL-08, RSUB-4C. RDREC is at location 203D and WRREC is at location 2062. Show the changes made in the symbol table. COPY START 0000 EOF BYTE C'ABC' THREE WORD 3 ZERO WORD 0 RETADR RESW 2 LENGTH RESW 6 BUFFER RESB 4096 FIRST STL RETADR CLOOP JSUB RDREC LDA LENGTH COMP ZERO JEQ ENDFIL JSUB WRREC J CLOOP ENDFIL LDA EOF STA BUFFER LDA THREE STA LENGTH JSUB WRREC LDL RETADR RSUB	**6**	**Ap**	**2**
1b.	Provide the output of the relocation loaders given that the starting address given by the operating system is 5000. **Input File:** H^PROG^000000^001077 T^000045^12^AC0^141033^481039^901776^921765^345610^571765	**5**	**Ap**	**3**

	T^001111^0F^F00^232838^432979^892060^662849^340000 E^000000			
1c.	Discuss the data structures used in a one-pass macro processors.	**4**	**U**	**4**
2a.	Briefly discuss how two pass assemblers handle i. Program Blocks ii. Expressions	**4**	**U**	**2**
2b.	For the below given object program indicate the data loaded into the main memory by the linking loaders. Also given below is the external symbol table. H^pa ^000000^000053 T^000020^0A^03201D^77100004^050014 T^000044^0F^000014^FFFFF6^00003F^000014^FFFFC0 M^000024^05^+lb M^000044^06^+lc M^000047^06^+ec M^000047^06^-lc M^00004A^06^+ec M^00004A^06^-lc M^00004A^06^+pa M^00004D^06^-eb M^00004D^06^+lb M^000050^06^+lb M^000050^06^-pa E^000020 Control Section / Symbol Name / Address / Length pa / 4000 / 0053 la / 4030 ea / 4044 pb / 4053 / 007F lb / 40B3 eb / 40C3 pc / 40D2 / 0051 lc / 4102 ec / 4114 Elaborate on the process of generation of data to be loaded into the main memory for execution by the linking loaders.	**7**	**Ap**	**3**
2c.	Discuss the EXPAND procedure of the one pass macro processors.	**4**	**U**	**4**
3a.	Explain the working of multi-pass assemblers for the given input. HSZ EQU M/2 M EQU A PVT EQU B-3 B RESB 4096 A EQU * Given that the location counters value of B is 4052.	**4**	**Ap**	**2**
3b.	What is dynamic linking? Describe the process of loading and calling of a subroutine using dynamic linking.	**6**	**U**	**3**
3c.	Indicate how the following is handled i. macro definition in SIC/XE ii. macro expansion in SIC/XE	**5**	**U**	**4**