## HAL/S PROGRAMMING FUNDAMENTALS QUIZ 3

1. Which of the following is correct:

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- a) REPLACE INCR\_CTR BY 'ICTR = ICTR + 1';

	b) REPLACE INCR_CTR BY "ICTR = ICTR + 1";	Ans.	
2.	Concerning the previous question, can you explain why the forced to use one delimiter rather than the other?	HAL/S Ans.	S compiler would be
3.	What is the value of K in the following situation? DECLARE INTEGER, I, J, K; I = 20; J = 7;		
	$\mathbf{K}=\mathbf{I}/\mathbf{J};$	Ans.	
4.	True or False. HAL/S does not allow the T (Transpose) op vectors (e.g., VECT**T).	erator t Ans.	o be applied to
5.	True or False. A blank is needed in the following case to in $B = 3$ (I + J)	ndicate Ans.	the multiplication:
6.	True or False. The following three expressions are complet generate the same object code): a) B**.5 b) B**(1/2) c) SQRT(B)	ely equ Ans.	uvalent (will
7.	True or False. An integer raised to a positive integer power integer. All other cases of a number raised to a power will	' will b yield a Ans.	e evaluated as an scalar result.
8.	<ul> <li>In the case of a matrix raised to a power (MATRIX**I), wh statements are false?:</li> <li>9. MATRIX must be a square matrix (equal numbers of 10. The value of I must be known at compile time 11. I cannot have the value 0.</li> <li>12. If I is -1 the expression is equivalent to finding the in</li> </ul>	ich of rows a	the following and columns). of MATRIX.

Ans. \_\_\_\_\_

9. True or False. The following code will produce the inverse DECLARE MATRIX, MM1 INITIAL(3#(1,2,3)), MM DECLARE T INTEGER INITIAL(-1):	of the matrix MM1: 2 INITIAL(0);		
MM2 = MM1**T;	Ans		
10, True or False. Matrix transpose operations are performed subroutines and should thus be avoided when possible. Vector however, very quick.	by rather slow library transpose operations are, Ans		
11. True or False. The sole CHARACTER string operator is co	oncatenation (  ). Ans.		
12. True or False. Integers and Scalars are automatically converse character strings whenever they are concatenated with a character string or substring.	erted to appropriate tracter string or assigned to Ans		
<ul><li>13. True or False. The BIT string operators are a) AND (&amp;), b and d) concatenation (  ).</li></ul>	) OR ( ), c) NOT (¬), Ans		
14. True or False. The negation operator (-) has a higher prece (**).	edence than exponentiation Ans		
15. True or False. Sequences of operators of the same precedent to right – except in the case of exponentiation (**) and divise evaluated from right to left.	nce are evaluated from left sion (/) which are Ans		
16. What is the value of 2**3**2 ?	Ans		
17. True or False. The Boolean operator AND (&) is of higher	r precedence than OR ( ). Ans		
<ul><li>18. Which of the following will give a different value from the a) A/B/C b) (A/B)/C c) A/(B/C)</li></ul>	other two expressions? Ans		
19. True or False. The following vector conversion function w formation of a single precision 3-vector: VECTOR(1)	vill result in the run-time Ans		
20. What keyword is used in the subscript of a vector or matrix force a double precision result?	conversion function to Ans.		

21. True or False.	In the MATRIX	conversion fun	nction the	matrix is	initialized	column
by column.				Ans.		

22. True or False. The repetition operator (#) can be used in VECTOR and MATRIX conversion functions just as it can in INITIAL or CONSTANT clauses.

Ans. \_\_\_\_\_

23. True or False. The expression MAT = 1; will result in a 3 by 3 single precision matrix with all 9 values set to 1. DECLARE MAT MATRIX; MAT = 1; Ans.

24. True or False. In the assignment of vectors the lengths must match but precisions can be different. In the assignment of matrices, both left- and right-hand side matrices must have identical row and column sizes – precisions, however, need not match.

Ans. \_\_\_\_\_

- 25. True or False. In HAL/S, Scalars are converted to Integers by truncation. Ans. \_\_\_\_\_
- 26. True or False. In a multiple assignment statement (L1, L2, L3 = R;) the individual assignments are performed in a left-to-right order. Ans. \_\_\_\_\_
- 27. True or False. In an IF statement (IF exp THEN ...) the "exp" may be either a BOOLEAN expression or a RELATIONAL expression. In either case the "exp" will only evaluate to the TRUE or FALSE state.
- 28. True or False. An IF ... THEN statement actually consists of two separate HAL/S statements even though only one semicolon is present. Ans. \_\_\_\_\_

29. True or False. The following statement (with 3 statement labels) will compile. KEY\_IF: IF A < (I + J) THEN ZERO\_Q: Q = 0; ELSE ZERO\_R: R = 0; Ans. \_\_\_\_\_

30. True or False. The ELSE clause of an IF statement can be another IF statement. Ans. \_\_\_\_\_

31. True or False. The following code sequence will not comp DECLARE BOOLEAN, B1 INITIAL(TRUE); DECLARE SCALAR INITIAL(2), S1, S2; IF B1   S1 < S2 THEN	ile:
S1 = S2;	Ans
32. Examples of ARITHMETIC operators are: **, /, *, +, Examples of COMPARATIVE operators are: <, >, =, ¬ Examples of LOGICAL/BIT operators are: &,  , ¬	=,
True or False. In a relational expression ARITHMETIC precedence than COMPARATIVE operators, and the latter in t precedence than LOGICAL operators.	operators have higher urn have higher Ans
33. True or False. There must be one and only one label on PF PROCEDURE, and FUNCTION header statements.	ROGRAM, COMPOOL, Ans
34. True or False. Simple DO END groups are frequently n THEN and ELSE parts of an IF statement. The DO and EN considered executable statements, but usually very little cod (perhaps a branch/jump statement).	eeded in demarcate the ID statements are le is generated for them Ans
35. Which is the BOOLEAN expression: a) IVAL <= I + J b) MAT1 ¬= MAT2	c) B1 & (B2   ¬B3) Ans
36. True or False. The DO WHILE (condition) END loo once. Then, if the (condition) is false the loop will be terr	p will execute at least ninated. Ans
37. True or False. As a rule RELATIONAL expressions produced than BOOLEAN expressions.	ice faster, more efficient Ans
38. True or False. The following code will compile successful BIG_LOOP: DO FOR I = 1 TO 5; (omitted code)	ly:
BIG_LOOP: END;	Ans
39 True or False. The only time the '*' symbol is used to me	n any form of

39. True or False. The only time the '\*' symbol is used to mean any form of multiplication is in the vector cross-product: V = W \* Z; Ans. \_\_\_\_\_