

FINAL EXAM Fall 2014
BUSINESS PROGRAMMING (COBOL) CST8283

NAME _____ (print clearly)

INSTRUCTIONS

All Parts of this exam (A, B, and C) are to be answered using the mark sense answer sheets provided.

Point values are given for each part.

PART A

True / False, Multiple Choice (numbers 1 -54) 1 point each (54 points)

PART B

Code Validation (numbers 55 - 64) 1 point each (10 points)

PART C

Move / Editing (numbers 65 - 74) 1 point each (10 points)

TOTAL 74 points

Exam Time 2 hours (120 minutes)

No one is allowed to leave in the first 20 minutes.

When you are finished the exam:

- hand in this exam paper and the mark sense sheet;
- make sure that your name is clearly printed on this exam paper;
- make sure your name is clearly coded on the mark sense sheet and the exam paper;
- make sure your name has been checked off on the attendance sheet.

Please use an HB pencil or pencil lead on the mark sense sheet provided.

No electronic devices of any kind are allowed – this includes cell phones, music devices, electronic dictionaries, pagers, calculators etc.

This is a closed book test – no notes or reference material of any kind are allowed.

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PART A True / False Multiple Choice

(40 points)

Answer the following True False questions on the mark sense answer sheet. Select whether the statements are (A) true or (B) false. (one point each)

- (1) The name of a procedure or routine should begin in margin B (column 12).
(a) True
(b) **False**
- (2) A field can be subtracted from several fields in one operation or instruction.
(a) **True**
(b) False
- (3) A scope terminator is mandatory (required) for all reserved words or operation codes in COBOL.
(a) True
(b) **False**
- (4) The GIVING clause is required in all COMPUTE statements.
(a) True
(b) **False**
- (5) An Indexed Sequential file can only be established with an ACCESS MODE RANDOM statement in the SELECT -- ASSIGN sentence.
(a) True
(b) **False**
- (6) The ACCEPT DATE statement will return the name of the day from the system time clock (e.g. TUESDAY).
(a) True
(b) **False**
- (7) The following picture structure will require 8 bytes of memory -- S9(4)V99.
(a) True
(b) **False**
- (8) A PIC A(4) field can be moved to a PICTURE X(3) field.
(a) **True**
(b) False

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PART A True / False Multiple Choice (continued)

- (9) The LINKAGE SECTION must be included in all COBOL programs that are executed with a CALL command.
(a) True
(b) False
- (10) The OCCURS clause is used to establish the number of fields in a file.
(a) True
(b) False
- (11) When using the COPY statement, the referenced code will be executed only when the program is run or executed.
(a) True
(b) False
- (12) A level 88 field is used to establish subordinate fields that can be used in arithmetic instructions such as ADD , DIVIDE, COMPUTE etc.
(a) True
(b) False
- (13) The order of execution for the operators in a COMPUTE statement always handle multiplication before division, regardless of where they appear in the arithmetic expression.
(a) True
(b) False
- (14) When moving data from a PIC X field to another PIC X field, the receiving field will pad (fill) right most (low order) positions with zeros if the receiving field is larger.
(a) True
(b) False
- (15) The EVALUATE statement requires the END-EVALUATE scope terminator.
(a) True
(b) False
- (16) The EVALUATE statement can be used with a Condition Name if the statement uses a field name with the EVALUATE op-code.
(e.g. EVALUATE AVERAGE).
(a) True
(c) False

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PART A True / False Multiple Choice (continued)

- (17) The READ statement can be used to access records from an Indexed Sequential file in a sequential manner (i.e. one record after the other until the end of the file).
- (a) True
 - (b) False
- (18) The PERFORM VARYING structure cannot be used to vary the value of a subscript used to access a table.
- (a) True
 - (b) False
- (19) A Positional Lookup for a value in a table requires looking at (examining) each occurrence in the table until the required value is found.
- (a) True
 - (b) False
- (20) An Alternate Key field in an Indexed Sequential file must be unique if a search for a record based on the alternate key is to work properly.
- (a) True
 - (b) False

For the following Multiple Choice, select the most correct answer. Note your answer on the mark sense answer sheet.

- (21) The value for a subscript will range from
- (a) 0 (zero) to 1 (one) more than the number of table elements
 - (b) 1 (one) to 1 (one) more than the number of table elements
 - (c) 0 (zero) to 1 (one) less than the number of table elements
 - (d) 1 (one) to the number of table elements (occurrences)
 - (e) none of the above
- (22) During the execution of a PERFORM ... VARYING statement, the test of the control variable is done
- (a) before the procedure is executed
 - (b) while the procedure is executed
 - (c) at the end of and within the executed procedure
 - (d) before the control variable is set or incremented
 - (e) at the end of the executed procedure

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PART A True / False Multiple Choice (continued)

- (23) If the command REWRITE SOME-NAME is executed, SOME-NAME is
- (a) a file name that does not require a key value
 - (b) a record reference that does not require a key field value
 - (c) a file reference that requires a key field value
 - (d) a record reference that requires a key field value**
 - (e) the reference to the index file associated with the data file.
- (24) Given the code below, which statement is true?
- ```
05 VEHICLE-TYPE PIC X(1).
 88 SEDAN VALUE "S".
 88 CONVERTIBLE VALUE "C".
 88 VAN VALUE "V".
```
- (a) VEHICLE-TYPE is an elementary item**
  - (b) SEDAN has a size of one byte and can be moved to TYPE
  - (c) the value S is placed into the field TYPE
  - (d) VAN is an elementary item
  - (e) the field VAN can be displayed on the monitor.
- (25) Given the code in (24) above, if the instruction DISPLAY VEHICLE-TYPE were executed, the following would be displayed on the monitor.
- a) the value in SEDAN
  - b) the value in CONVERTIBLE
  - c) the value in VAN
  - d) the value V
  - e) none of the above.**
- (26) When processing an indexed sequential file, the records can be accessed randomly for both READ and REWRITE if
- (a) the ACCESS MODE is SEQUENTIAL and the OPEN I-O is used
  - (b) the ACCESS MODE is RANDOM and the OPEN INPUT is used
  - (c) the ACCESS MODE is RANDOM and the OPEN OUTPUT is used
  - (d) the ACCESS MODE is RANDOM and the OPEN I-O is used**
  - (e) the ACCESS MODE is I-O and the OPEN DYNAMIC is used
- (27) When an EVALUATE statement executes, if more than one WHEN clause is true, which statement(s) will be executed?
- (a) all of the statements where the WHEN clause is true.
  - (b) the last statement where the WHEN clause is true.
  - (c) the first statement where the WHEN clause is true.**
  - (d) none of them will be executed since the program would not be able to determine which one to execute.

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- (e) the statement associated with the WHEN OTHER clause.

**PART A True / False Multiple Choice (continued)**

- (28) When searching a table (comparing a search argument against a table argument), the subscript value
- (a) could be set to a starting value of 1.
  - (b) could be set to any valid value where the search is to begin.
  - (c) could be set to the maximum subscript value and work backwards.
  - (d) could be varied using a PERFORM ... VARYING statement.
  - (e) **all of the above could be true.**
- (29) If the START command, with no conditional expression, is executed against an indexed sequential file, the program will
- (a) read the record which contains the same value as the key field.
  - (b) read the record which contains a higher value than the key field.
  - (c) read the record which contains a lower value than the key field.
  - (d) read the record where the key field value is equal to the key value provided.
  - (e) **none of the above**
- (30) Which of the following statements is false?
- (a) a condition name can be used in place of a relational condition
  - (b) **a condition name can be used in a display statement**
  - (c) a condition name can be defined in the FILE SECTION
  - (d) a condition name can be defined in WORKING-STORAGE SECTION
  - (e) a condition name must have values defined for it.
- (31) An indexed sequential file has been defined with ACCESS mode SEQUENTIAL. The file has been opened as INPUT. The key field is RECORD-KEY. What record will be read if the following code is executed for the first time?

```
MOVE 12345 TO RECORD-KEY
READ IND-FILE.
```

- (a) the record with a key field (record-key) of 12345
- (b) the record with a key field (record-key) of 12345 if it exists; otherwise nothing will happen
- (c) **the first record on the file**
- (d) the record with the key field (record-key) of 12345; otherwise, the next record in the file
- (e) none of the above

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**PART A True / False Multiple Choice (continued)**

(32) Given the code below, when will the procedure EXEMPTION-RTN be executed?

```
IF GRADE = "A" AND PROJECTS = "B"
 AND ST-COMMENT = "EX"
 PERFORM EXEMPTION-RTN
END-IF.
```

- (a) whenever GRADE is "A" no matter what value is in ST-COMMENT
- (b) whenever ST-COMMENT is "EX" no matter what value is in GRADE
- (c) only when all three conditions are true**
- (d) whenever any one of the conditions are true
- (e) none of the above

*For each of the questions 33 to 37 inclusive, use the fields and values as described below in RECORD-WS. For each of the questions 32 to 36 inclusive, select the result of the arithmetic operation.*

```
01 RECORD-WS.
 05 FLD-1 PIC 9(2)V99 VALUE 1070.
 05 FLD-2 PIC 9(2). VALUE 10.
 05 FLD-3 PIC 9(2) VALUE 5.
 05 FLD-4 PIC 9(2) VALUE 2.
 05 FLD-5 PIC 9(3)V9 VALUE ZERO.
```

(33) COMPUTE FLD-5 = (FLD-1 + FLD-2) / FLD-4 + FLD-3

- (a) 153000
- (b) 53100
- (c) 0153**
- (d) 01530
- (e) 15300

(34) SUBTRACT FLD-3 FROM FLD-1 GIVING FLD-5 ROUNDED.

- (a) 0006
- (b) 0067
- (c) 0057**
- (d) 0060
- (e) 0066

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**PART A True / False Multiple Choice (continued)**

- (35) MULTIPLY FLD-1 BY FLD-4 GIVING FLD-5 ROUNDED
- (a) 0215
  - (b) 02140
  - (c) 0214
  - (d) 02150
  - (e) 02240
- (36) DIVIDE FLD-2 BY FLD-5 GIVING FLD-1
- (a) 0001
  - (b) 0100
  - (c) will fail -abend
  - (d) 01
  - (e) 0010
- (37) COMPUTE FLD-1 = (FLD-2 + FLD-3 / 5) + FLD-3 \*\* FLD-4
- (a) 360
  - (b) 36
  - (c) 3600
  - (d) 0036
  - (e) 0360
- (38) A table (OCCURS clause) has been defined at the elementary level for three elementary items within a group level, A subscript is required
- (a) at the group level.
  - (b) only for the first of the three elementary items.
  - (c) for each of the three elementary items.
  - (d) for the second elementary items.
  - (e) none of the above.
- (39) A class test can examine whether the contents of a field is
- (a) positive or negative
  - (b) alphanumeric upper case
  - (c) alphabetic lower case
  - (d) positive zero
  - (e) none of the above

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**PART A True / False Multiple Choice (continued)**

(40) Given the COBOL structure below, which of the following statement(s) is true?

05 FLD-1.

15 FLD-2 PIC 9(3)V99 VALUE 12345.

15 FLD-3 REDEFINES FLD-2 PIC X(5).

15 FLD-4 REDEFINES FLD-2 PIC 9(5).

15 FLD-5 PIC X(15).

- (a) FLD-1 is a group item
  - (b) FLD-2 has two assumed decimal positions
  - (c) FLD-3 contains an alphanumeric number of 12345
  - (d) FLD-4 contains the value 12345 with no assumed decimal
  - (e) all of the above**
- (41) When creating an indexed sequential file, the input records
- (a) must be in sequential order by key field
  - (b) could be in ascending order of key field
  - (c) could be in descending order by key field
  - (d) all the above are true**
  - (e) none of the above are true

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**PART A True / False Multiple Choice (continued)**

Given the code below, answer questions 42, 43 and 44.

WORKING-STORAGE SECTION.

```
01 PAY-TABLE.
 05 PAY-VALUES OCCURS 25 TIMES PIC 9(3)V99.
01 WORKING-VALUES.
 05 SUB PIC 9(2) VALUE ZERO.
```

PROCEDURE DIVISION.

INITIALIZE -ROUTINE.

```
INITIALIZE PAY-TABLE
```

MAINLINE-ROUTINE.

```
PERFORM LOAD-TABLE
 VARYING SUB FROM 1
 BY 1
 UNTIL SUB > 10.
```

DISPLAY-ROUTINE.

```
DISPLAY PAY-VALUE (SUB)
```

LOAD-TABLE.

```
MOVE SUB TO PAY-VALUE (SUB).
```

(42) The DISPLAY statement will display the value \_\_\_\_ on the monitor.

- a) 5
- b) 0
- c) 10
- d) 4
- e) none of the above

(43) When the value of SUB in the PERFORM statement is equal to 9, the value in PAY-VALUE (SUB) will be equal to

- a) 12
- b) 10
- c) 0
- d) 9
- e) none of the above

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**PART A True / False Multiple Choice (continued)**

- (44) When the LOAD-TABLE routine has executed for the last time, the value in PAY-VALUE (25) will be
- a) 25
  - b) 0
  - c) 10
  - d) 26
  - e) none of the above

Given the code below, answer questions 45, 46, and 47.

```
FD PAY-FILE-IN.
01 PAY-RECORD-IN.
 05 SALARY PIC 9(2)V99.
 88 VALID-SALARY VALUE 4.50 THROUGH 50.00.
 05 HOURS PIC 9(2).
 88 REG-HOURS VALUE 0 THROUGH 40.
 88 OT-HOURS VALUE 41 THROUGH 80.
```

- (45) If the statement DISPLAY VALID-SALARY is executed, the value \_\_\_\_\_ will be shown on the monitor screen.
- a) 4.5
  - b) 50.00
  - c) 50
  - d) 4
  - e) none of the above.
- (46) If the value zero is in the field SALARY,
- ~~a) the field VALID-SALARY will also be zero~~
  - ~~b) the condition name VALID-SALARY will be true~~
  - c) the condition name VALID-SALARY will be false
  - ~~d) the statement IF VALID-SALARY = 0 DISPLAY "TRUE" would compile~~
  - ~~e) the condition name SALARY would be false.~~
- (47) If the value in HOURS were 81,
- a) both REG-HOURS and OT-HOURS would be true
  - b) both REG-HOURS and OT-HOURS would be false
  - c) REG-HOURS would be true
  - d) OT-HOURS would be true
  - e) none of the above

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**PART A True / False Multiple Choice (continued)**

- (48) With \_\_\_\_\_ testing, the code in the program is not known and might typically be done by the user of the program.
- (a) unit
  - (b) integration
  - (c) black box
  - (d) stress
  - (e) none of the above
- (49) Which of the following criteria will improve the maintainability of a program?
- (a) understandability
  - (b) testability
  - (c) portability
  - (d) modifiability
  - (e) all of the above
- (50) Maintenance of programs and systems includes
- (a) fixing abends or program failures
  - (b) modifying programs
  - (c) perfective work (improving efficiency)
  - (d) adding new functions
  - (e) all of the above
- (51) The DISP= command in JCL would indicate the
- (a) disposition of the data set (file) at the beginning of a job step
  - (b) disposition of the data set (file) if the step executes successfully
  - (c) disposition of the data set (file) if the job step fails.
  - (d) all of the above
  - (e) none of the above
- (52) In JCL, the disposition of a file, once a step is successful, includes whether the file should be set as
- (a) KEEP,
  - (b) DELETE,
  - (c) PASS,
  - (d) NEW
  - (d) only (a), (b) and (c) above

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**PART A True / False Multiple Choice (continued)**

- (53) To ensure the modifiability of an application, which of the following should be considered?
- (a) Are variables used rather than literals
  - (b) Is redundant code minimized (eliminated)
  - (c) Is there tight cohesion and loose coupling
  - (d) Does the documentation clearly describe modularity and structure
  - (e) All of the above
- (54) The field PASSWORD has been declared as PIC X(7). However, the first three characters must be alphabetic upper case and the last 4 characters must be numeric. Which of the following would be more appropriate?
- (a) Move the field PASSWORD to a numeric field and test for numeric characters.
  - (b) Redefine PASSWORD so that it is a PIC 9 field.
  - (c) Redefine PASSWORD so that the first three bytes are PIC A(3) and the last 4 bytes are PIC 9(4) and then use a Class test.
  - (d) Move PASSWORD to a PIC X field and test for alphameric characters.
  - (e) Move PASSWORD to a PIC 9 field and test for non-numeric characters.

**PART B CODE VALIDATION**

*For each of the following lines of code, determine whether the syntax (code structure) is valid or invalid. Note your answer on the mark sense answer sheet. Do not correct the code, simply not if the syntax is valid or invalid.*

- (55) COMPUTE SQUARE = ROOT \*\* 2 GIVING SQUARE ROUNDED.
- (a) valid
  - (b) invalid
- (56) EVALUATE TRUE RATING  
    WHEN < 5 DISPLAY "Excellent"  
    WHEN < 7 DISPLAY "Good"  
    WHEN OTHER DISPLAY "Poor"  
END-IF.
- (a) valid
  - (b) invalid
- (57) ADD A, B, C, GIVING ROUNDED D.
- (a) valid
  - (b) invalid

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**PART B CODE VALIDATION (continued)**

(58) MOVE A, B, C, TO D

(a) valid

(b) invalid

(59) 05 VALUES-IN

88 TOP-VALUE PIC 9(2) VALUE 5 THROUGH 10.

88 LOW-VALUE PIC 9(2) VALUE 1 THROUGH 4.

(a) valid

(b) invalid

(60) 01 COURSE-NAMES OCCURS 100 TIMES

05 COURSE-ID PIC X(7).

05 COURSE-SESSION PIC 9(3).

(a) valid

(b) invalid

(61) PERFORM 10 TIMES

DISPLAY "ENTER A NUMBER"

ADD N-1 TO TOTAL

(a) valid

(b) invalid

(62) IF A > B AND A = C OR A < C

PERFORM WHAT-HAPPENED-HERE-RTN.

(a) valid

(b) invalid

(63) PERFORM TABLE-SEARCH

VARYING SUB FROM 10 BY 2 UNTIL SUB > 100.

(a) valid

(b) invalid

(64) EVALUATE TRUE

IF EQUAL TO 5 PERFORM RTN-1

IF OTHER PERFORM RTN-2.

(a) valid

(b) invalid

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**PART C MOVE and Editing**

*For each of the rows in this table, identify whether the receiving field value is correct or incorrect. Note your response on the Mark Sense sheet as "a" for correct or "b" for incorrect. (note → the lower case b in the value field represents a blank or space character)*

| Number | SENDING FIELD   | VALUE                 | RECEIVING FIELD       | VALUE                    |
|--------|-----------------|-----------------------|-----------------------|--------------------------|
| (65)   | PIC 9(6)        | 001234                | PIC \$,,\$\$,,\$\$.99 | <del>\$\$\$\$1,234</del> |
| (66)   | PIC 9(6)V99     | 001234                | PIC ***,**9.99        | bbbb12.34                |
| (67)   | PIC X(6)        | 1234bb                | PIC X(3)              | 123                      |
| (68)   | PIC S9(5)       | 01234<br>(positive)   | PIC ****,**9.99+      | *1,234                   |
| (69)   | PIC 9(3)V99     | 12345                 | PIC 9(3)V999          | 123.450                  |
| (70)   | PIC 9(3)V99     | 12345                 | PIC 9(5).99+          | 123.45+                  |
| (71)   | PIC X(5)        | 12345                 | PIC X(7)              | 12345bb                  |
| (72)   | PIC X(4)        | JOHN                  | PIC X(2)              | JOHN                     |
| (73)   | PIC<br>S9(5)V99 | 1234567<br>(positive) | PIC \$\$\$,\$\$.99CR  | \$12,345.67CR            |
| (74)   | PIC X(7)        | bbbJOHN               | PIC X(4)              | JOHN                     |

-- ERRATA --

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Please note the correction for two questions in the subject exam.

Page 10 -- a correction in the code provided should read as follows

LOAD-TABLE.

MOVE SUB TO PAY-VALUES (SUB).

DISPLAY-ROUTINE.

DISPLAY PAY-VALUES (SUB).

Assume a STOP RUN after the DISPLAY-ROUTINE procedure.

Question 52.

The answers should read as follows

- (a) KEEP
- (b) DELETE
- (c) PASS
- (d) NEW
- (e) only (a), (b), and (c)