

-----STATION 1-----

1. Which of the following statements displays all user-defined macro variables in the SAS log?

- a) %put user=;
- b) %put user;
- c) %put _user_;
- d) options mprint

Answer: c

To display all user-defined macro variables and their values in the SAS log, you use the %PUT statement with the _USER_ argument. The MPRINT option specifies that text that is sent to the compiler as a result of macro execution is printed in the SAS log.

2. The data set Company.Employee has 100 observations and contains the variables Name, Salary and Birthdate. The following SAS program is submitted:

```
proc sql;  
  <insert SQL procedure statement here>  
  select name, salary, birthdate  
  from work.employees;  
quit;
```

Which of the following statements successfully completes the program to append the data in Work.Newemployees to Company.Employee?

- a) alter company.employee (name, salary, birthdate)
- b) update company.employee (name, salsry, birthdate)
- c) modify company.employee (name, salary, birthdate)
- d) insert into company.employee (name, salary, birthdate)



Answer: d

The INSERT INTO statement appends data to the Company.Employee table. The ALTER TABLE statement (rather than the ALTER statement) enables you to add, drop, and modify columns, but you cannot use it to append data sets. The UPDATE statement enables you to modify values in existing rows, but you cannot use it to append data sets. The MODIFY clause works with the ALTER statement to enable you to change column attributes, but you cannot use it to append data sets.

3. The following SAS program is submitted:

```
data two;  
  y= '2';  
run;  
  
%let x= 10;  
%let var= y;  
  
data one;  
  set two (keep= &var);  
  z= &var*&x;  
run;
```

Which of the following answers is the value of the variable z when the program finishes executing?

- a) _ERROR_
- b) 20
- c) y*20
- d) . (missing value)

Answer: b

The macro variable reference &var resolves to Y in the SET statement. Then, the macro variable reference &var resolves to Y in the assignment statement, and Y is a character variable with the value of 2. The macro variable reference &x resolves to a numeric value of 10. SAS performs automatic character-to-numeric conversion on the value of the variable Y. Therefore, the value of the variable Z is 20.

4. After submitting a SAS program, the following is written to the SAS log:

```
11 %let date= 0;
12 proc print data= sashelp.class;
ERROR: The PUT function referenced in the %SYSFUNC
      or %QSYSFUNC macro function is not found.
13     title "SAS Base date is
          %sysfunc(put(&date, date9.))";
14 run;
```

What is the cause of this error message?

- a) the PUT function does not exist
- b) the macro variable reference `&date` needs to have double quotation marks around it
- c) the PUT function cannot be used in %SYSFUNC**
- d) the %PUT function is missing a percent sign in front of the word `put`.

Answer: c

To use the %SYSFUNC function to apply a numeric format (such as DATE9.) to a numeric macro expression (such as 0), you must specify the PUTN function. The PUT function, although available in other contexts, is not supported by %SYSFUNC.

-----STATION 2-----

1. At the beginning of a new SAS session, the following program is submitted:

```
%macro one;
  %let proc= means;
  proc &proc data= sashelp.class;
  run;
%mend;
%one
```

Where is the macro variable **proc** stored?

- a) in the local symbol table
- b) in the global symbol table
- c) in the SAS data set **Work.Sasmacr**
- d) the program fails to execute because PROC is a reserved word

Answer: a

New macro variables that are created during macro execution are created in the macro's local symbol table. Macro variables that are created with a %LET statement in open code are stored in the global symbol table. PROC is not a reserved word in the SAS macro facility.

2. The table **One** has five million observations. Table **Two** has one thousand observations. These tables have identical column attributes. Concatenating tables **One** and **Two** should result in 5,001,000 observations.

Which of the following SAS techniques uses the least CPU time and fewest I/O operations to process?

- a) the APPEND procedure
- b) the SET statement in the DATA step
- c) the INSERT INTO statement in an SQL procedure
- d) the OUTER UNION CORR operator in an SQL procedure



Answer: a

Both the SET statement in the DATA step and the OUTER UNION CORR operator in the SQL procedure read all observations from all input data sets, while the APPEND procedure reads only the observations in the appended data set. Thus, both I/O and CPU usage are greater with either the SET statement or the OUTER UNION CORR statement than with the APPEND procedure. While the INSERT statement reads only the observations in the inserted data set, just as the APPEND procedure does, the SQL procedure in general requires more procedure code and therefore more I/O and CPU usage than the APPEND procedure.

3. Which of the following statements cannot be used in a DATA step that reads a raw data file as input?

- a) KEEP statement
- b) IF statement
- c) FORMAT statement
- d) **WHERE statement**

Answer: d

You cannot use the WHERE statement to subset observations that are read from a raw data file.

4. Which statement about this program is true?

```
proc print data= orion.sales;
  var employee_id salary;
  where country= 'AU';
  by gender;
  label salary= 'Annual Salary';
run;
```

- a) the program will run correctly only if **Orion.Sales** is sorted in ascending order by Country
- b) **the PROC PRINT report displays only the observations in which the value of Country is AU**

- c) the label and format specified in the program are stored in **Orion.Sales**
- d) none of the above

Answer: b

The WHERE statement subsets the data so that the report displays only the observations in which the value of Country is *AU*. The input data set must be sorted by Gender, the variable specified in the BY statement. The label *Annual Salary* will not be displayed because the LABEL option is not included in the PROC PRINT statement.

-----STATION 3-----

1. Which statement about this PROC SORT step is true?

```
proc sort data= orion.staff;
    out= work.staff;
    by descending salary;
    manager_ID;
run;
```

- a) the sorted data set overwrites the input data set
- b) the observations are sorted by Salary in descending order, and then by Manager_ID in descending order
- c) a semicolon should not appear after the input data set name**
- d) the sorted data set contains only the variables specified in the BY statement

Answer: c

This PROC SORT step has a syntax error: a semicolon in the middle of the PROC SORT statement. If you correct this syntax error, this step sorts orion.staff by Salary in descending order and by Manager_ID in ascending order. The step then creates the temporary data set staff that contains the sorted observations and all variables.

2. Which of the following is *not true* of SAS date values?

- a) they are numeric
- b) they can be positive or negative values
- c) they represent the number of days between the day being stored and a base date
- d) the base date is January 1, 1900**



Answer: d

The base date is January 1, 1960.

3. The following SAS program is submitted at the start of a new SAS session:

```
data sashelp.test;
    set sashelp.class;
    if _N_ > 5;
run;

proc print data= test noobs;
run;
```

Sashelp.Class contains 5 variables and 19 observations. Which one of the following answers explains what happens when this code is submitted?

- a) the SAS data set Test does not exist and no report is generated**
- b) the SAS data set **Test** has no observations
- c) the PRINT procedure statement syntax is incorrect and no report is generated
- d) the PRINT procedure statement syntax is correct and a report is generated

Answer: a

The code that is submitted creates the data set Sashelp.Test. The PRINT procedure is attempting to use Work.Test. Because we are in a new session where this is the only code submitted, Work.Test does not exist.

4. The data portion of the Work.Salaries data set is shown below. Note that Salary is an 8-byte character variable.

name	status	salary
Liz	S	15,600
Herman	S	26,700
Marty	S	35,000

The following SAS program is submitted:

```
proc print data= work.salaries;  
  where salary GT 20000;  
run;
```

No observations are output. Why?

- a) **WHERE statement will not do any automatic data conversion – the step fails**
- b) GT is not a valid operator. The symbol > must be used
- c) GT is a valid operator, but it does not work with character data
- d) the WHERE statement must use the value 20,000

Answer: a

Using the character variable Salary as a numeric variable in the WHERE statement results in a syntax error that will stop the processing of the step. Unlike many other situations in SAS, in WHERE conditions there is no automatic character to numeric or numeric to character conversion.

-----STATION 4-----

1. The following SAS program is submitted:

```
libname sasdata 'SAS-data-library';
data work.boston
    work.dallas (drop= city equipment);
set sasdata.cities (keep= orig price city dest equipment);
if dest= 'BOS' then output work.boston;
else if dest= 'DFW' then output work.dallas;
drop dest;
run;
```

Which variables are output to both data sets?

- a) City **and** Equipment
- b) Price **and** Orig
- c) Price, Orig, **and** Dest
- d) City, Price, Orig, **and** Equipment

Answer: b

The variables Orig, Price, City, Dest, and Equipment are read in. The variable Dest is dropped from both of the new data sets being created and the variables City and Equipment are dropped from Work.Dallas. So, the data set Work.Boston contains Orig, Price, City, and Equipment and the data set Work.Dallas contains Orig and Price. The only 2 variables that end up in both data sets are Price and Orig.

2. The variable **Name** in the data set **Employee** has a \$CHAR10. format. The variable **Name** in the data set **Sales** has a \$CHAR15. format. The following SAS program is submitted:

```
data both;
length name $ 20;
merge sales employee;
by id;
run;
```

What is the format of the variable **Name** in the data set **Both**?

- a) \$20
- b) \$CHAR10.
- c) **\$CHAR15.**
- d) \$CHAR20.

Answer: c

The first attribute seen for a variable is the one used in the current DATA step. Given that the Work.Sales data set is positioned first on the MERGE statement, the variable Name would have a format of \$CHAR15. in the new data set Work.Both. The LENGTH statement only gives the variable Name a predetermined maximum length.

3. The following SAS program is submitted:

```
data work.words;
word1= 'Is';
word2= 'It';
word3= 'Blue';
all= catx(word1, word2, word3);
run;
```

The variable **All** is created with which value? Note that the quotes are shown for readability and are not part of the value.

- a) "It Is Blue"
- b) **"ItIsBlue"**
- c) "It Is Blue"
- d) "IsItBlue"

Answer: b

In the CATX function, the first argument is the delimiter that is used when the other arguments are put together. So, we are putting It together with Blue and have Is as the delimiter between them.

4. Assume that Sasuser.One does not exist and that the following SAS program is submitted at the beginning of a new SAS session:

```
data sasuser.one;  
  x= 1;  
  y= 27;  
  output one;  
run;
```

What is the result?

- a) the data set **Sasuser.One** is created with 2 variables and 3 observations
- b) the data set **Sasuser.One** is created with 2 variables and 0 observations
- c) the DATA step does not execute
- d) the data set **Sasuser.One** is created with 2 variables and 1 observations

Answer: b

The OUTPUT statement is told to use Work.One, but it is not a data set that is specified on the DATA statement. This generates a syntax error and stops the execution of the DATA step. At compile time, a data set Sasuser.One with 2 variables and 0 observations would be created, but only if it did not already exist. A pre-existing Sasuser.One would not be affected by this DATA step.

-----STATION 5 - Just for Fun-----

1. If a doctor gives you 3 pills and tells you to take one pill every half hour, how long would it be before all the pills had been taken?

- a) 3 hrs
- b) 1.5 hrs
- c) **1 hr**
- d) none of the above

Answer: c

If you take a pill at 1 o'clock, then another at 1:30 and the last at 2 o'clock, they will be taken in 1 hour.

2. Divide 30 by one half and add ten. What do you get?

- a) 20
- b) 25
- c) 60
- d) **70**

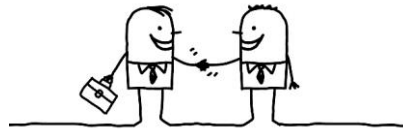
Answer: d

Dividing by half is the same as multiplying by 2. Therefore $(30/0.5)+10=70$.

3. At a conference, 12 members shook hands with each other before and after the meeting. How many total number of occurred?

- a) 100
- b) **132**
- c) 145
- d) 144

each other before handshakes

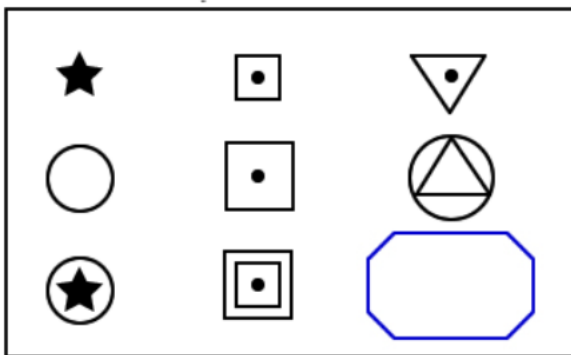


Answer: b

The first person shook hands with 11 remaining people, the second person also shook hands with 11 people, but we count 10, as the hand shake with the first person has already been counted. Then add 9 for the third person, 8 for the fourth one & proceeding in this fashion we get: $11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 66$.

Hence 66 hand shakes took place before & 66 after the meeting, for a total of 132.

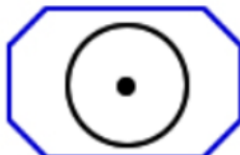
4. Select the item below which would complete the pattern:



a.



b.



c.



d.



Answer: d

-----**STATION 6- What do you know about SAS?**-----

1. How many tons of M&M's was it estimated that SAS consumed (as at December 7, 2011)?
- a. 1
 - b. 8
 - c. 11
 - d. 22**
 - e. 53

Answer d – 22 tons

2. Match the date=0 value to the correct software

- | | |
|---------------|--------------|
| a. Jan 1 1753 | 2. SQL |
| b. Jan 0 1900 | 1. Excel |
| c. Jan 1 1960 | 4. SAS |
| d. Jan 1 1970 | 3. Javacript |
| e. Jan 1 2000 | 5. Netezza |

3. Which of the following are true or false

- | | |
|--|------|
| a. SAS stands for: South African Ship - the South African Navy Ship Prefix | True |
| b. SAS stands for: Scandinavian Airlines | True |
| c. SAS stands for: Surfers Against Sewage | True |
| d. SAS is a village in Iran | True |
| e. SAS stands for: Space Activity Suit | True |
| f. SAS stands for: San Antonio Spurs | True |

4. Timeline - match the SAS Canada Events to the dates

- | | |
|---|---------|
| a. SAS Canada expands to the Quebec market | 6. 1991 |
| b. SAS Canada expands into Western | 3. 1995 |
| c. SAS Canada opens its Ottawa office. | 1. 1993 |
| d. SAS Canada celebrates hiring 150th employee | 7. 2000 |
| e. SAS Canada opens the SAS Institute in Toronto, with 2 employees. | 2. 1988 |
| f. SAS celebrates 25 years of business in Canada | 4. 2013 |
| g. SAS Canada, King Street East is recognized Canada's first LEED® | 5. 2008 |
| h. SAS Canada's corporate headquarters opens at 280 King Street East. | 8. 2005 |

ANSWERS SHEET

Station 1			Station 2			Station 3			Station 4		
Question	Answer		Question	Answer		Question	Answer		Question	Answer	
1	a	<input type="checkbox"/>	1	a	<input checked="" type="checkbox"/>	1	a	<input type="checkbox"/>	1	a	<input type="checkbox"/>
	b	<input type="checkbox"/>		b	<input type="checkbox"/>		b	<input type="checkbox"/>		b	<input checked="" type="checkbox"/>
	c	<input checked="" type="checkbox"/>		c	<input type="checkbox"/>		c	<input checked="" type="checkbox"/>		c	<input type="checkbox"/>
	d	<input type="checkbox"/>		d	<input type="checkbox"/>		d	<input type="checkbox"/>		d	<input type="checkbox"/>
2	a	<input type="checkbox"/>	2	a	<input checked="" type="checkbox"/>	2	a	<input type="checkbox"/>	2	a	<input type="checkbox"/>
	b	<input type="checkbox"/>		b	<input type="checkbox"/>		b	<input type="checkbox"/>		b	<input checked="" type="checkbox"/>
	c	<input type="checkbox"/>		c	<input type="checkbox"/>		c	<input type="checkbox"/>		c	<input type="checkbox"/>
	d	<input checked="" type="checkbox"/>		d	<input type="checkbox"/>		d	<input checked="" type="checkbox"/>		d	<input type="checkbox"/>
3	a	<input type="checkbox"/>	3	a	<input type="checkbox"/>	3	a	<input checked="" type="checkbox"/>	3	a	<input type="checkbox"/>
	b	<input checked="" type="checkbox"/>		b	<input type="checkbox"/>		b	<input type="checkbox"/>		b	<input checked="" type="checkbox"/>
	c	<input type="checkbox"/>		c	<input type="checkbox"/>		c	<input type="checkbox"/>		c	<input type="checkbox"/>
	d	<input type="checkbox"/>		d	<input checked="" type="checkbox"/>		d	<input type="checkbox"/>		d	<input type="checkbox"/>
4	a	<input type="checkbox"/>	4	a	<input type="checkbox"/>	4	a	<input checked="" type="checkbox"/>	4	a	<input type="checkbox"/>
	b	<input type="checkbox"/>		b	<input checked="" type="checkbox"/>		b	<input type="checkbox"/>		b	<input checked="" type="checkbox"/>
	c	<input checked="" type="checkbox"/>		c	<input type="checkbox"/>		c	<input type="checkbox"/>		c	<input type="checkbox"/>
	d	<input type="checkbox"/>		d	<input type="checkbox"/>		d	<input type="checkbox"/>		d	<input type="checkbox"/>

Station 5			Station 6		
Question	Answer		Question	Answer	
1	a	<input type="checkbox"/>	1	a	<input type="checkbox"/>
	b	<input type="checkbox"/>		b	<input type="checkbox"/>
	c	<input checked="" type="checkbox"/>		c	<input type="checkbox"/>
	d	<input type="checkbox"/>		d	<input checked="" type="checkbox"/>
2	a	<input type="checkbox"/>		e	<input type="checkbox"/>
	b	<input type="checkbox"/>	2	a	<input type="checkbox"/> 2
	c	<input type="checkbox"/>		b	<input type="checkbox"/> 1
	d	<input checked="" type="checkbox"/>		c	<input type="checkbox"/> 4
3	a	<input type="checkbox"/>		d	<input type="checkbox"/> 3
	b	<input checked="" type="checkbox"/>		e	<input type="checkbox"/> 5
	c	<input type="checkbox"/>		True False	
	d	<input type="checkbox"/>	3	a	<input checked="" type="checkbox"/> <input type="checkbox"/>
4	a	<input type="checkbox"/>		b	<input checked="" type="checkbox"/> <input type="checkbox"/>
	b	<input type="checkbox"/>		c	<input checked="" type="checkbox"/> <input type="checkbox"/>
	c	<input type="checkbox"/>		d	<input checked="" type="checkbox"/> <input type="checkbox"/>
	d	<input checked="" type="checkbox"/>		e	<input checked="" type="checkbox"/> <input type="checkbox"/>
				f	<input checked="" type="checkbox"/> <input type="checkbox"/>
			4	a	<input type="checkbox"/> 6
				b	<input type="checkbox"/> 3
				c	<input type="checkbox"/> 1
				d	<input type="checkbox"/> 7
				e	<input type="checkbox"/> 2
				f	<input type="checkbox"/> 4
				g	<input type="checkbox"/> 5
				h	<input type="checkbox"/> 8

Name: _____