

## Practice Final Exam Semester 1

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

A company installs 5000 light bulbs, each with an average life of 500 hours, standard deviation of 100 hours, and distribution approximated by a normal curve. Find the percentage of bulbs that can be expected to last the period of time.

1) Less than 690 hours

A) 47.14%

B) 97.2%

C) 97.06%

D) 97.1%

**Add in the indicated base.**

2)

221<sub>4</sub>

131<sub>4</sub>

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A) 352<sub>four</sub>

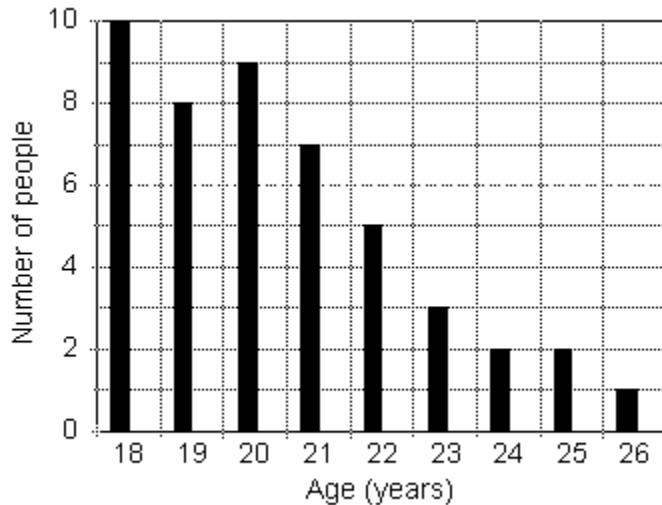
B) 412<sub>four</sub>

C) 1012<sub>four</sub>

D) 1112<sub>four</sub>

**Answer the question appropriately.**

3)



How many people were 23 years old or older?

A) 12 people

B) 8 people

C) 3 people

D) 10 people

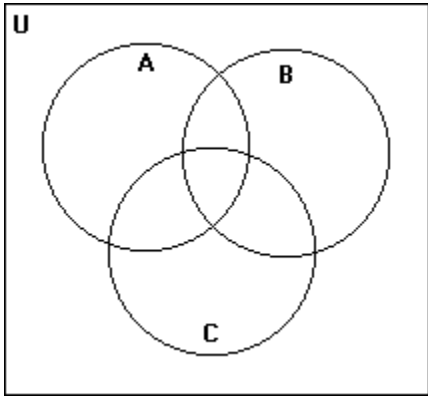
**Construct a Venn diagram illustrating the following sets.**

4)  $U = \{a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p\}$

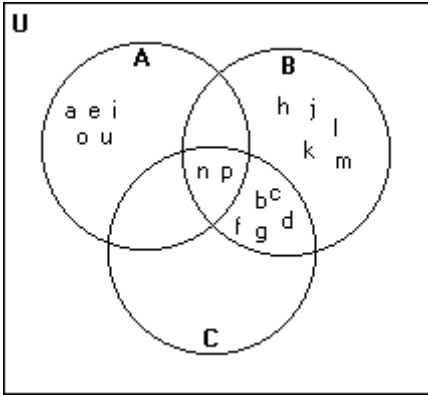
$A = \{a, e, i, o\}$

$B = \{b, c, d, f, g, h, j, k, l, m\}$

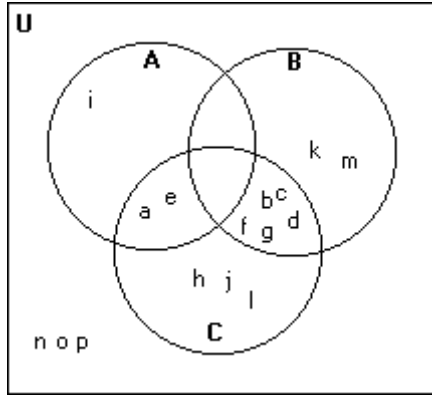
$C = \{a, b, c, d, e, f, g\}$



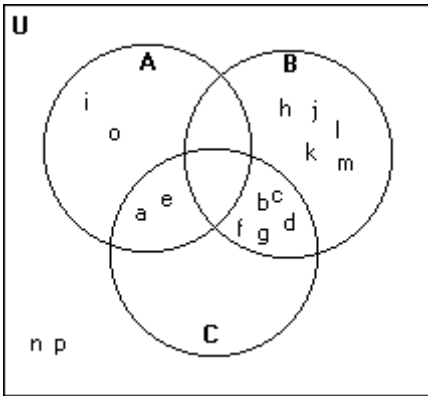
A)



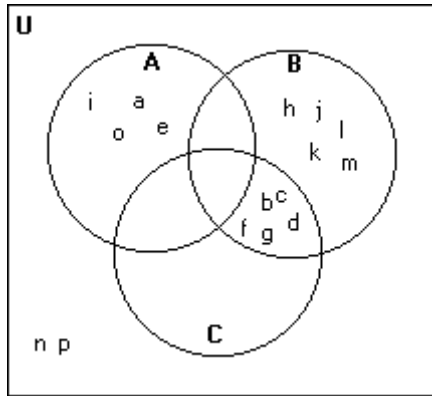
B)



C)



D)



**Construct a truth table for the statement.**

5)  $\sim(s \vee t) \wedge \sim(t \wedge s)$

A) s	t	$\sim(s \vee t) \wedge \sim(t \wedge s)$
T	T	F
T	F	T
F	T	T
F	F	F

B) s	t	$\sim(s \vee t) \wedge \sim(t \wedge s)$
T	T	F
T	F	F
F	T	T
F	F	F

C) s	t	$\sim(s \vee t) \wedge \sim(t \wedge s)$
T	T	F
T	F	F
F	T	F
F	F	F

D) s	t	$\sim(s \vee t) \wedge \sim(t \wedge s)$
T	T	F
T	F	F
F	T	F
F	F	T

**Convert the base 10 numeral to a numeral in the base indicated.**

6) 68 to base 8

A)  $104_8$

B)  $102_8$

C)  $120_8$

D)  $140_8$

**Convert the numeral to a numeral in base 10.**

7)  $33_5$

A) 165

B) 90

C) 30

D) 18

8)  $402_8$

A) 10

B) 48

C) 258

D) 2064

**Determine whether the sets are equal, equivalent, both, or neither.**

9)  $\{5, 14\}$  and  $\{51, 4\}$

A) Neither

B) Equal

C) Both

D) Equivalent

10)  $\{35, 17, 50\}$  and  $\{17, 50, 35\}$

A) Equal

B) Neither

C) Equivalent

D) Both

**Evaluate the expression.**

11)  $2^{-2}$

A) -4

B)  $\frac{1}{4}$

C) 4

D)  $-\frac{1}{4}$

12)  $(-90) \div 5$

A) -18

B) 18

C) -28

D)  $-\frac{1}{18}$

13)  $[(-3)(-2)] \cdot [9(-8)]$

A) 48

B) -48

C) 432

D) -432

14)  $-10 + 26$

A) 16

B) -36

C) -16

D) 36

15)  $-12 - (-7)$

A) -19

B) 19

C) -5

D) 5

**Express the number in scientific notation.**

16) 1,900,000

A)  $1.9 \times 10^6$

B)  $1.9 \times 10^{-7}$

C)  $1.9 \times 10^{-6}$

D)  $1.9 \times 10^7$

**Express the set in roster form.**

17)  $\{x \mid x \text{ is an integer greater than } -3\}$

A)  $\{-4, -5, -6, \dots\}$

B)  $\{-2, -1, 0, 1\}$

C)  $\{-4, -5, -6\}$

D)  $\{-2, -1, 0, \dots\}$

18) The set of integers greater than -5 and less than -1

A)  $\{-5, -4, -3, -2\}$

B)  $\{-4, -3, -2\}$

C)  $\{-4, -3, -2, -1\}$

D)  $\{-5, -4, -3, -2, -1\}$

Find  $n(A)$  for the set.

19)  $A = \{4, 6, 8, 10, 12\}$

A)  $n(A) = 4$

B)  $n(A) = 12$

C)  $n(A) = 5$

D)  $n(A) = 2$

20)  $A = \{x \mid x \text{ is a second in a minute}\}$

A)  $n(A) = \text{Infinite}$

B)  $n(A) = 60$

C)  $n(A) = 120$

D)  $n(A) = 12$

Find the mean of the set of data.

21) 87, 41, 5, 46, 85, 43, 59, 104, 14

A) 53.8

B) 52.2

C) 44.3

D) 60.5

Find the midrange of the set of data.

22) 12, 19, 2, 15, 13, 12, 25, 9, 10

A) 8.9

B) 12.5

C) 16.0

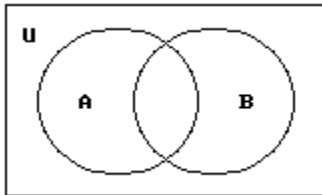
D) 13.5

For the given sets, construct a Venn diagram and place the elements in the proper region.

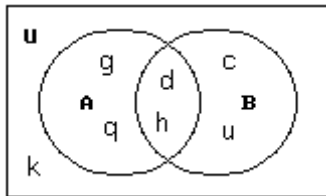
23) Let  $U = \{c, d, g, h, k, u, q\}$

$A = \{d, h, g, q\}$

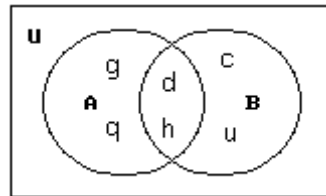
$B = \{c, d, h, u\}$



A)



B)



Given  $p$  is true,  $q$  is true, and  $r$  is false, find the truth value of the statement.

24)  $\sim q \rightarrow (p \vee r)$

A) False

B) True

Let  $U = \{q, r, s, t, u, v, w, x, y, z\}$

$A = \{q, s, u, w, y\}$

$B = \{q, s, y, z\}$

$C = \{v, w, x, y, z\}$ . List the elements in the set.

25)  $A \cap B'$

A)  $\{q, s, t, u, v, w, x, y\}$

B)  $\{u, w\}$

C)  $\{r, s, t, u, v, w, x, z\}$

D)  $\{t, v, x\}$

26)  $A \cup (B \cap C)$

A)  $\{q, r, w, y, z\}$

B)  $\{q, s, u, w, y, z\}$

C)  $\{q, y, z\}$

D)  $\{q, w, y\}$

Let  $p$  represent the statement, "Jim plays football", and let  $q$  represent "Michael plays basketball". Convert the compound statements into symbols.

27) Jim does not play football and Michael does not play basketball.

A)  $p \vee q$

B)  $p \wedge q$

C)  $\sim p \wedge \sim q$

D)  $\sim p \vee \sim q$

List all subsets or determine the number of subsets as requested.

28) Determine the number of subsets of {mom, dad, son, daughter}

A) 14

B) 12

C) 16

D) 8

29) List all the subsets of {bear, hen, cow}.

A) {bear, hen, cow}, {bear, hen}, {bear, cow}, {hen, cow}, {bear}, {hen}, {cow}

B) {bear, hen, cow}, {bear, hen}, {bear, cow}, {hen, cow}, {bear}, {hen}, {cow}, { }

C) {bear, hen}, {bear, cow}, {hen, cow}, {bear}, {hen}, {cow}, { }

D) {bear, hen}, {bear, cow}, {hen, cow}, {bear}, {hen}, {cow}

Perform the indicated operation and reduce your answer to lowest terms.

30)  $\frac{9}{11} + \frac{2}{3}$

A)  $\frac{1}{3}$

B)  $\frac{11}{14}$

C)  $1\frac{16}{33}$

D)  $3\frac{1}{2}$

31)  $\frac{7}{9} - \frac{3}{8}$

A)  $\frac{1}{18}$

B)  $\frac{29}{72}$

C)  $\frac{29}{9}$

D)  $\frac{72}{29}$

Perform the indicated operations.

32)  $-4\sqrt{7} + 7\sqrt{7}$

A)  $3\sqrt{7}$

B)  $-11\sqrt{7}$

C)  $-28\sqrt{14}$

D)  $3\sqrt{14}$

Perform the operation and give the answer as a fraction in lowest terms.

33)  $\frac{2}{9} \div \left(-\frac{1}{9} \div \frac{7}{4}\right)$

A)  $\frac{7}{36}$

B)  $\frac{7}{162}$

C)  $-\frac{7}{2}$

D)  $-\frac{4}{63}$

34)  $\left(-\frac{1}{4}\right)\left(\frac{2}{3}\right)$

A)  $-\frac{1}{12}$

B)  $-\frac{5}{9}$

C)  $-\frac{8}{3}$

D)  $-\frac{1}{6}$

Rationalize the denominator.

35)  $\frac{9}{\sqrt{2}}$

A) 13

B)  $9\sqrt{2}$

C)  $\frac{9\sqrt{2}}{2}$

D)  $\frac{81\sqrt{2}}{2}$

**Simplify.**

36)  $\sqrt{250}$

A)  $10\sqrt{5}$

B)  $5\sqrt{10}$

C) 15

D) 50

**Solve the problem.**

37) Results of a survey of fifty students indicate that 30 like red jelly beans, 29 like green jelly beans, and 17 like both red and green jelly beans. How many of the students surveyed like neither red nor green jelly beans?

A) 8

B) 13

C) 17

D) 12

**Subtract in the indicated base.**

38)

$$\begin{array}{r} 32_4 \\ 23_4 \\ \hline \end{array}$$

A)  $9_4$

B)  $10_4$

C)  $3_4$

D)  $2_4$

39)

$$\begin{array}{r} 301_4 \\ 102_4 \\ \hline \end{array}$$

A)  $232_4$

B)  $199_4$

C)  $143_4$

D)  $133_4$

**Use DeMorgan's laws or a truth table to determine whether the two statements are equivalent.**

40)  $\sim(p \wedge q), \sim p \wedge \sim q$

A) Not equivalent

B) Equivalent

**Use  $\subset$ ,  $\supset$ ,  $\subseteq$ , or both  $\subset$  and  $\subseteq$  to make a true statement.**

41)  $\{8, 9, 10\}$  \_\_\_\_\_  $\{7, 8, 9, 10\}$

A)  $\not\subseteq$

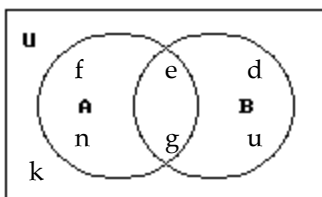
B)  $\subset$

C)  $\subset$  and  $\subseteq$

D)  $\subseteq$

**Use the Venn diagram to find the requested set.**

42) Find  $A \cap B$ .



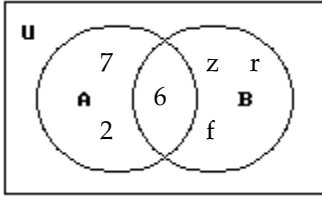
A)  $\{e, g\}$

B)  $\{k\}$

C)  $\{d, e, g, f, k, n, u\}$

D)  $\{d, e, g, f, n, u\}$

43) Find  $(A \cup B)$ .



A)  $\{7, 2, 6\}$

B)  $\{7, 2, 6, z, r, f\}$

C)  $\emptyset$

D)  $\{7\}$

Use the distributive property to multiply. Then, if possible, simplify the resulting expression.

44)  $a(b + c)$

A)  $ab + bc$

B)  $abc$

C)  $ab + c$

D)  $ab + ac$

Write the compound statement in symbols.

Let  $r$  = "The food is good,"  $p$  = "I eat too much,"

$q$  = "I'll exercise."

45) If I exercise, then the food won't be good and I won't eat too much.

A)  $\sim(r \wedge p) \rightarrow q$

B)  $q \rightarrow \sim(r \wedge p)$

C)  $(q \wedge \sim r) \rightarrow \sim p$

D)  $q \rightarrow (\sim r \wedge \sim p)$

## Answer Key

Testname: FINAL PRACTICE SEM 1 (2011-2012).TST

- 1) Answer: D
- 2) Answer: C
- 3) Answer: B
- 4) Answer: C
- 5) Answer: D
- 6) Answer: A
- 7) Answer: D
- 8) Answer: C
- 9) Answer: D
- 10) Answer: D
- 11) Answer: B
- 12) Answer: A
- 13) Answer: D
- 14) Answer: A
- 15) Answer: C
- 16) Answer: A
- 17) Answer: D
- 18) Answer: B
- 19) Answer: C
- 20) Answer: B
- 21) Answer: A
- 22) Answer: D
- 23) Answer: A
- 24) Answer: B
- 25) Answer: B
- 26) Answer: B
- 27) Answer: C
- 28) Answer: C
- 29) Answer: B
- 30) Answer: C
- 31) Answer: B
- 32) Answer: A
- 33) Answer: C
- 34) Answer: D
- 35) Answer: C
- 36) Answer: B
- 37) Answer: A
- 38) Answer: C
- 39) Answer: D
- 40) Answer: A
- 41) Answer: C



## Answer Key

Testname: FINAL PRACTICE SEM 1 (2011-2012).TST

42) Answer: A

43) Answer: C

44) Answer: D

45) Answer: D