

Student: _____

It is okay to **write on test** (use it for scratch paper) but answers must be recorded on the bubble sheet for credit. **Closed book. No notes.** Work strictly from memory. **Time limit:** no limit in testing center, three-hour limit in class. **Scratch paper okay.** This test is worth 20% of your final grade. Some answers require more than one line. On these, code the first letter or digit of your answer into the first line of the answer sheet; second digit, second line, etc.

printf: Which escape sequence has what meaning? (text p.9) (If no match mark J.)

(A) \`"` (B) \`?` (C) \`b` (D) \`f` (E) \`n` (F) \`ooo` (G) \`r` (H) \`v` (I) \`xhh`

1/5p. carriage return

2/5p. backspace

3/5p. horizontal tab

4/5p. formfeed

5/5p. octal number

6/5p. newline

7/5p. hexadecimal number

printf/scanf: Which conversion character means what? (text p.536) (If no match mark J.)

(A) %`%` (B) %`c` (C) %`d` (D) %`f` (E) %`f1` (F) %`o` (G) %`p` (H) %`s` (I) %`u`

8/5p. integer

9/5p. double

10/5p. percent

11/5p. unsigned integer

True/False: Which are valid names for variables in C? (text p.11)

12/3p. CB

13/3p. 4

14/3p. C@

15/3p. b_#

16/3p. 5_5

17/3p. A2C

18/3p. bB

19/3p. ac2

20/3p. b:

21/3p. b

22/3p. Aa4

23/3p. 3:

24/3p. C

25/3p. 4#1

26/3p. b3C

Precedence: What is the value of each expression? Mark (I) for error, (J) for none of the above.

27/12p.	$2*5-8$	(A) -16	(B) -6	(C) -1	(D) 2	(E) 5	(F) 19	(G) 50	(H) 52
28/12p.	$9/1*3$	(A) -53	(B) -51	(C) -50	(D) -48	(E) 3	(F) 6	(G) 7	(H) 27
29/12p.	$0-7/4/2$	(A) -52	(B) -43	(C) -4	(D) -3	(E) 0	(F) 27	(G) 59	(H) 68
30/12p.	$4/9/5$	(A) -94	(B) -14	(C) 0	(D) 4	(E) 9	(F) 53	(G) 63	(H) 78
31/12p.	$1-9/7/2$	(A) -50	(B) -3	(C) -2	(D) -1	(E) 0	(F) 1	(G) 43	(H) 65
32/12p.	$4*5/3$	(A) -60	(B) 2	(C) 4	(D) 8	(E) 11	(F) 58	(G) 71	(H) 72
33/12p.	$8/5-8$	(A) -52	(B) -39	(C) -36	(D) -29	(E) -5	(F) -3	(G) -1	(H) 84
34/12p.	$6*10-2/4$	(A) -97	(B) 0	(C) 2	(D) 21	(E) 48	(F) 58	(G) 59	(H) 71
35/12p.	$3*4/7$	(A) -59	(B) -10	(C) 5	(D) 26	(E) 29	(F) 32	(G) 45	(H) 96
36/12p.	$6/1+10/8$	(A) -51	(B) 0	(C) 1	(D) 7	(E) 52	(F) 55	(G) 59	(H) 71
37/12p.	$5+10*3/5$	(A) -34	(B) 0	(C) 5	(D) 7	(E) 9	(F) 39	(G) 59	(H) 80
38/12p.	$4/2-1+3$	(A) -69	(B) -67	(C) -19	(D) -8	(E) -4	(F) 2	(G) 3	(H) 28
39/12p.	$4+5-9*5$	(A) -37	(B) -36	(C) -20	(D) -16	(E) 44	(F) 58	(G) 85	(H) 86
40/12p.	$2*9-8/2$	(A) -87	(B) 0	(C) 18	(D) 78	(E) 80	(F) 92	(G) 94	(H) 97
41/12p.	$7-0/8+2$	(A) -93	(B) -10	(C) 7	(D) 10	(E) 68	(F) 83	(G) 97	(H) 98
42/12p.	$2-9/3*4$	(A) -74	(B) -59	(C) -7	(D) 2	(E) 5	(F) 8	(G) 17	(H) 77
43/12p.	$6*7-7/4$	(A) -60	(B) 0	(C) 8	(D) 19	(E) 35	(F) 36	(G) 41	(H) 84
44/12p.	$5*3-4/8$	(A) -76	(B) -5	(C) -1	(D) 0	(E) 15	(F) 55	(G) 59	(H) 82
45/12p.	$5/4-7*4$	(A) -77	(B) -69	(C) -49	(D) -24	(E) -19	(F) -7	(G) -4	(H) 90
46/12p.	$1-2/8/3$	(A) -90	(B) -77	(C) -54	(D) -43	(E) -1	(F) 0	(G) 2	(H) 53
47/12p.	$6-0*4+3$	(A) -38	(B) 3	(C) 6	(D) 9	(E) 27	(F) 36	(G) 37	(H) 42
48/12p.	$4/8*3-5$	(A) -78	(B) -67	(C) -12	(D) -9	(E) -1	(F) 4	(G) 7	(H) 45
49/12p.	$5/7-4-5$	(A) -75	(B) -40	(C) -9	(D) -3	(E) 0	(F) 1	(G) 45	(H) 74
50/12p.	$9*9/2-8$	(A) -63	(B) -7	(C) -3	(D) -2	(E) -1	(F) 1	(G) 50	(H) 79
51/12p.	$6-10/5-2$	(A) -99	(B) -85	(C) -3	(D) 2	(E) 3	(F) 6	(G) 35	(H) 37

How many times does the body of the loop execute? (Mark 9 if 9 or more.)

52/15p.	<code>int e=10; do body; while(e-- > 6);</code>
53/15p.	<code>int j=7; while(j++ < 11) body;</code>
54/15p.	<code>int q; for(q=-9; q>=-10; q--) body;</code>
55/15p.	<code>int x=-9; do body; while(++x != -16);</code>
56/15p.	<code>int b=6; do body; while(b-- != 6);</code>
57/15p.	<code>int m=-6; do body; while(++m <= -2);</code>
58/15p.	<code>int f=7; while(--f != 4) body;</code>
59/15p.	<code>int g; for(g=-5; g!=-9; g++) body;</code>
60/15p.	<code>int i; for(i=10; i<=15; i++) body;</code>
61/15p.	<code>int u; for(u=6; u!=6; u++) body;</code>
62/15p.	<code>int j=7; do body; while(++j != 8);</code>
63/15p.	<code>int m=5; do body; while(--m != 1);</code>
64/15p.	<code>int d=-6; do body; while(--d >= -6);</code>
65/15p.	<code>int x=9; while(++x != 17) body;</code>
66/15p.	<code>int t=6; while(++t < 15) body;</code>
67/15p.	<code>int y=-6; while(y++ != 1) body;</code>
68/15p.	<code>int z; for(z=7; z!=3; ++z) body;</code>
69/15p.	<code>int d=3; do body; while(d-- != 1);</code>
70/15p.	<code>int r; for(r=-2; r<=-1; r++) body;</code>
71/15p.	<code>int z=-6; while(++z < -5) body;</code>

On the following printf questions you are given a list of inputs. For each problem line determine which printf statement created the accompanying outputs. (␣ means space.)

Which of these printf statements created the outputs shown for each problem below? (x is int x;)

- (A) `printf("␣␣%2d",x);` (D) `printf("␣%3d",x);` (G) `printf("%0␣4d",x);`
 (B) `printf("␣%␣3d",x);` (E) `printf("%+04d",x);` (H) `printf("%04d",x);`
 (C) `printf("␣%+3d",x);` (F) `printf("%-␣4d",x);` (I) `printf("%4d",x);`

inputs:	<u>2</u>	<u>55</u>	<u>-55</u>	<u>629</u>	<u>6666</u>	<u>-5389</u>	<u>-14310</u>
72/20p.	␣002	␣055	-055	␣629	␣6666	-5389	-14310
73/20p.	0002	0055	-055	0629	6666	-5389	-14310
74/20p.	␣␣2	␣␣55	␣-55	␣629	␣6666	␣-5389	␣-14310
75/20p.	␣␣2	␣␣55	␣-55	␣␣629	␣␣6666	␣-5389	␣-14310
76/20p.	␣+2␣	␣+55	␣-55	␣+629	␣+6666	␣-5389	␣-14310

Which of these printf statements created the outputs shown for each problem below? (x is char * x;)

- (A) `printf("␣␣␣␣%s",x);` (D) `printf("␣␣␣%2s",x);` (G) `printf("␣%4s",x);`
 (B) `printf("␣␣␣␣%1s",x);` (E) `printf("␣␣%-3s",x);` (H) `printf("%-5s",x);`
 (C) `printf("␣␣␣%-2s",x);` (F) `printf("␣%-4s",x);` (I) `printf("%5s",x);`

inputs:	<u>"</u>	<u>"b"</u>	<u>"lc"</u>	<u>"kccg"</u>	<u>"kkphgy"</u>	<u>"xkqgzxw"</u>
77/20p.	␣␣␣␣	␣␣␣␣b	␣␣␣lc	␣kccg	kkphgy	xkqgzxw
78/20p.	␣␣␣␣	␣␣␣␣b	␣␣␣␣lc	␣␣␣␣kccg	␣␣␣␣kkphgy	␣␣␣␣xkqgzxw
79/20p.	␣␣␣␣	␣␣b␣␣	␣␣lc␣	␣␣kccg	␣␣kkphgy	␣␣xkqgzxw
80/20p.	␣␣␣␣	␣␣␣b␣	␣␣␣lc	␣␣␣kccg	␣␣␣kkphgy	␣␣␣xkqgzxw
81/20p.	␣␣␣␣	b␣␣␣␣	lc␣␣␣	kccg␣	kkphgy	xkqgzxw

Which of these printf statements created the outputs shown for each problem below? (x is double x;)

- (A) `printf("␣␣␣%+7.0f",x);` (D) `printf("%+010.2f",x);` (G) `printf("%010.0f",x);`
 (B) `printf("␣␣␣%07.0f",x);` (E) `printf("%+010f",x);` (H) `printf("%010f",x);`
 (C) `printf("␣␣␣%7.2f",x);` (F) `printf("%+10.2f",x);` (I) `printf("%10.2f",x);`

inputs:	<u>8</u>	<u>3.50</u>	<u>1.2786</u>	<u>23234.506381</u>
82/20p.	+000008.00	+000003.50	+000001.28	+023234.51
83/20p.	␣␣␣0000008	␣␣␣0000004	␣␣␣0000001	␣␣␣0023235
84/20p.	␣␣␣␣␣␣8.00	␣␣␣␣␣␣3.50	␣␣␣␣␣␣1.28	␣␣23234.51
85/20p.	+08.000000	+03.500000	+01.278600	+23234.506381
86/20p.	␣␣␣␣␣␣␣␣+8	␣␣␣␣␣␣␣␣+4	␣␣␣␣␣␣␣␣+1	␣␣␣␣+23235

Convert from decimal (base 10) into binary (base 2). Report the last 5 digits (add leading zeros as needed).

example... 52 = 10100
 87-91/25p. 57 =
 92-96/25p. 38 =
 97-101/25p. 71 =
 102-106/25p. 68 =

Convert from binary into decimal. Report the last 2 digits (add leading zeros as needed).

example... 1011010 = 90
 107-108/20p. 101001 =
 109-110/20p. 11101 =
 111-112/20p. 111100 =
 113-114/20p. 110110 =
 115-116/20p. 100010 =

Convert from binary into octal (base 8). Report the last 4 digits (add leading zeros as needed).

example... 101000100001000 = 0410
 117-120/36p. 1010101011111 =
 121-124/36p. 11010100101 =
 125-128/36p. 101000111000110 =

Convert from binary into hex (base 16). Report the last 4 digits (add leading zeros as needed).

example... 10010100111111 = 253F
 129-132/40p. 111001011100011 =
 133-136/40p. 101100001011100 =
 137-140/40p. 110111011011101 =

Logical-and in octal. Report the last 4 digits.

example... 4570 and 6271 = 4070
 141-144/36p. 1035 and 0744 =

Logical-or in octal. Report the last 4 digits.

example... 7635 or 6064 = 7675
 145-148/36p. 0242 or 4026 =

Logical-xor in octal. Report the last 4 digits.

example... 5631 xor 1240 = 4471
 149-152/36p. 0640 xor 6313 =

Add in octal. Report the last 4 digits.

example... 2176 + 0372 = 2570
 153-156/36p. 3324 + 6630 =
 157-160/36p. 6172 + 7563 =

Total points 1608.

Answer Key (points per line)

1 (5).	G	37 (12).	J	73 (20).	H
2 (5).	C	38 (12).	F	74 (20).	D
3 (5).	J	39 (12).	B	75 (20).	B
4 (5).	D	40 (12).	C	76 (20).	C
5 (5).	F	41 (12).	J	77 (20).	I
6 (5).	E	42 (12).	D	78 (20).	B
7 (5).	I	43 (12).	G	79 (20).	E
8 (5).	C	44 (12).	E	80 (20).	C
9 (5).	J	45 (12).	J	81 (20).	H
10 (5).	A	46 (12).	J	82 (20).	D
11 (5).	I	47 (12).	D	83 (20).	B
12 (3).	t	48 (12).	G	84 (20).	I
13 (3).	f	49 (12).	C	85 (20).	E
14 (3).	f	50 (12).	B	86 (20).	A
15 (3).	f	51 (12).	D	87-91 (5).	11001
16 (3).	f	52 (15).	5	92-96 (5).	00110
17 (3).	t	53 (15).	4	97-101 (5).	00111
18 (3).	t	54 (15).	2	102-106 (5).	00100
19 (3).	t	55 (15).	9	107-108 (10).	41
20 (3).	f	56 (15).	1	109-110 (10).	29
21 (3).	t	57 (15).	5	111-112 (10).	60
22 (3).	t	58 (15).	2	113-114 (10).	54
23 (3).	f	59 (15).	9	115-116 (10).	34
24 (3).	t	60 (15).	6	117-120 (9).	2537
25 (3).	f	61 (15).	0	121-124 (9).	3245
26 (3).	t	62 (15).	1	125-128 (9).	0706
27 (12).	D	63 (15).	4	129-132 (10).	72E3
28 (12).	H	64 (15).	1	133-136 (10).	585C
29 (12).	E	65 (15).	7	137-140 (10).	6EDD
30 (12).	C	66 (15).	8	141-144 (9).	0004
31 (12).	F	67 (15).	7	145-148 (9).	4266
32 (12).	B	68 (15).	9	149-152 (9).	6553
33 (12).	E	69 (15).	3	153-156 (9).	2154
34 (12).	F	70 (15).	2	157-160 (9).	5755
35 (12).	C	71 (15).	0		
36 (12).	C	72 (20).	G		

Total points 1608.

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Final Exam

v925935203

Bro Colton

