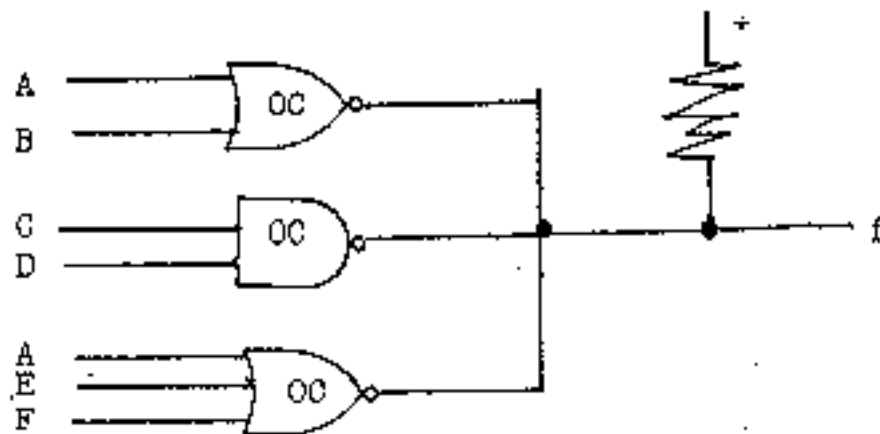
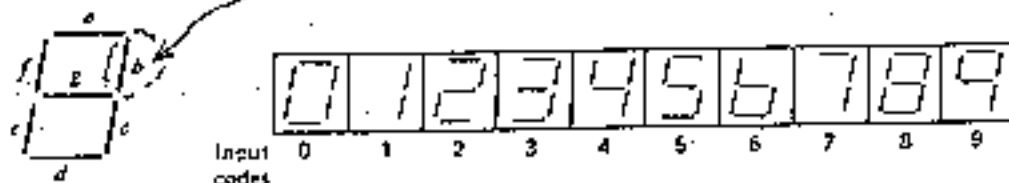


1. Briefly explain what are TCP/IP, Internet, WWW, Browser, HTTP, HTML, CGI, and URL. (16%)
2. Explain why a Java applet can be compiled and put in a WWW server, then it can be downloaded into a browser and run on any computer over the Internet. (5%)
3. Give a logic function  $f$  obtained by the wired AND in the following diagram. An "OC" stands for an open-collector gate. (5%)



4. Shown below is the seven-segment display. You are requested to use an 8:1 multiplexor to design a circuit which drives the  $\bar{b}$  of this seven-segment display (given a BCD digit to display). (14%)



(背面仍有題目,請繼續作答)

5. Code the following string in ASCII using even parity by adding a parity bit at the low order end of each character code:

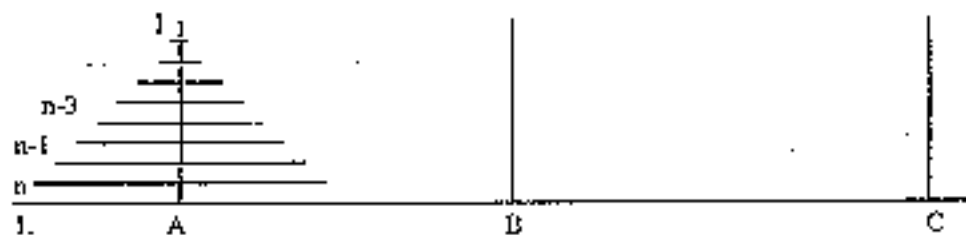
IME.NCKU

Your answer shall be in binary format. The ASCII codes in decimal and hexadecimal are shown in Table 1. (10%)

TABLE 1: ASCII Codes

碼 號		螢幕	表示方式	碼 號		螢幕	表示方式
十	十六	顯示	鍵 盤	十	十六	顯示	鍵 盤
32	20	SPACE	space bar	73	49	I	I ,A-73
33	21	!	! ,A-33	74	4A	J	J ,A-74
34	22	"	" ,A-34	75	4B	K	K ,A-75
35	23	#	# ,A-35	76	4C	L	L ,A-76
36	24	\$	\$ ,A-36	77	4D	M	M ,A-77
37	25	%	% ,A-37	78	4E	N	N ,A-78
38	26	&	& ,A-38	79	4F	O	O ,A-79
39	27	'	' ,A-39	80	50	P	P ,A-80
40	28	(	( ,A-40	81	51	Q	Q ,A-81
41	29	)	) ,A-41	82	52	R	R ,A-82
42	2A	*	* ,A-42	83	53	S	S ,A-83
43	2B	+	+ ,A-43	84	54	T	T ,A-84
44	2C	,	, ,A-44	85	55	U	U ,A-85
45	2D	-	- ,A-45	86	56	V	V ,A-86
46	2E	.	. ,A-46	87	57	W	W ,A-87
47	2F	/	/ ,A-47	88	58	X	X ,A-88
48	30	0	0 ,A-48	89	59	Y	Y ,A-89
49	31	1	1 ,A-49	90	5A	Z	Z ,A-90
50	32	2	2 ,A-50	91	5B	[	[ ,A-91
51	33	3	3 ,A-51	92	5C	\	\ ,A-92
52	34	4	4 ,A-52	93	5D	]	] ,A-93
53	35	5	5 ,A-53	94	5E	^	^ ,A-94
54	36	6	6 ,A-54	95	5F	_	_ ,A-95
55	37	7	7 ,A-55	96	60	`	` ,A-96
56	38	8	8 ,A-56	97	61	a	a ,A-97
57	39	9	9 ,A-57	98	62	b	b ,A-98
58	3A	:	: ,A-58	99	63	c	c ,A-99
59	3B	;	; ,A-59	100	64	d	d ,A-100
60	3C	<	< ,A-60	101	65	e	e ,A-101
61	3D	=	= ,A-61	102	66	f	f ,A-102
62	3E	>	> ,A-62	103	67	g	g ,A-103
63	3F	?	? ,A-63	104	68	h	h ,A-104
64	40	@	@ ,A-64	105	69	i	i ,A-105
65	41	A	A ,A-65	106	6A	j	j ,A-106
66	42	B	B ,A-66	107	6B	k	k ,A-107
67	43	C	C ,A-67	108	6C	l	l ,A-108
68	44	D	D ,A-68	109	6D	m	m ,A-109
69	45	E	E ,A-69	110	6E	n	n ,A-110
70	46	F	F ,A-70	111	6F	o	o ,A-111
71	47	G	G ,A-71	112	70	p	p ,A-112
72	48	H	H ,A-72	113	71	q	q ,A-113

6. Explain the following terms: (18%)  
 (1) SQL (2) Client-Server Computing (3) Virtual Memory  
 (4) DBMS (5) CIM (6) Linked List
7. The Tower of Hanoi game is to place  $n$  circular rings of varying size 1 to  $n$  on three pegs A, B, and C. Every step you are allowed to move one ring from one peg to the other; and, at any time, any ring of size  $i$  must not be placed on top of the other ring of size  $j$  if  $i > j$ . Initially all rings are placed in peg A. Write a recursive program (in any programming language or pseudo code you prefer) to move all rings from peg A to peg C. (10%)



8. The three properties of objects (also denoted the three pillars of object-oriented programming) are: Encapsulation, Inheritance and Polymorphism. Please describe them. (9%)
9. The following program is written in Pascal, what are the outputs of the program for parameters-passing mechanism as (1) call by value (2) call by reference. (6%)

Program ParaPass (input, output)

```

var x, y: integer;
procedure p (a, b: integer);
begin  a:=a*2; x:=a+b;  b:=b+x;  a:=a+1
end;
begin
    x:=2;  y:=3;
    p (x, y);
    writeln (x, y);
end.
  
```

10. Given PREORDER and INORDER for a binary tree,  
 PREORDER CADEMBFGI  
 INORDER DAHEBCFIG  
 (1) Construct the binary tree, (4%)  
 (2) Print the result of postorder traversal. (5%)