GATE

Computer Science & Information Technology

C - Programming

Array & Pointer

DPP: 3

Q1
```
#include<stdio.h>
int main(){
    int a[] = {10,234,74,95,25,66 };
    int *b= a+6;
    printf("%d", b[-5]);
    return 0;
}
```
The output of the program is_____

Q2 Consider the following program
```
#include<stdio.h>
int main(){
int i, j , b[] = {2, 3, 4, 5, 6}, *p ;
    p = b ;
*p++;
    i= (*p)+=10;
    j = *p+=10;
printf ("%d\t" ,i+j) ;
}
```
The output of the program is _____

Q3
```
#include<stdio.h>
int main(){
int i , b [] = {21, 13, 43, 25, 60}, *p ;
p = b ;
*++p ;
printf ("%d\t" ,*p) ;
p += 2 ;
    printf ("%d" , *p);
}
```
(A) 13, 25   (B) 21 25
(C) 43 60   (D) 21 43

Q4
```
#include <stdio.h>
int main(){
    int arr[]={1,2,3,4,5,6,7,8,9,0,1,2,5}, *ptr;
    int x = 12%13-(1<<3);
    ptr = arr + x;
```

```
    printf("%d \n", ptr[1]);
    return 0;
}
```
The output of the program is _____

Q5
```
#include <stdio.h>
int main(){
    int arr[]={1,2,3,4,5,6,7,8,9,0,1,2,5}, *ptr;
    int x = 2%13-(1>>1);
    ptr = arr+x;
    ptr +=3;
    printf("%d \n", ptr[1]);
    return 0;
}
```
The output of the program is _____

Q6
```
#include<stdio.h>
int main(){
    int arr[]={1,2,3,4,5,6,7,8,9,0,1,2,5}, *ptr1, **ptr2;
    ptr1 = arr;
    ptr2 = &ptr1;
    ++*ptr2;
    printf("%d \n", ptr1[1]);
    return 0;
}
```
Output of the program is_____

Q7 Consider the following program
```
#include<stdio.h>
int main(){
int i , b [] = {2, 1, 4, 5, 0}, *p ;
int **q;
q = &p;
p = b ;
++*q ;
printf ("%d\t" ,*p) ;
++**q ;
printf ("%d" , *p);
```

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}

output of the given program is _____

(A) 2 2   (B) 1 2

(C) 11   (D) 2 2

Q8 Consider the following program

```c
#include<stdio.h>
int main() {
        int i, j , b[] = {2, 3, 4, 5, 6}, *p, **p1 ;
        p = b+2;
        p1 = &p;
        p[2] = 22;
        p1[0][2]=p1[0][2]+22;
        *p++;
        i= (*p)++;
        j = **p1++;
```

printf ("%d\t" ,i+j+b[4]) ;

}

The output of the program is _____

Q9
```c
#include<stdio.h>
int main()
{
int a[] = {10,234,74,95,25,66 };
int x = 2*6/7<<2;
int *b= a+6;
printf("%d", b[-x]);
}
```

The output of the program is_____

(A) 234   (B) 74

(C) 95   (D) 25

Answer Key

Q1	234		**Q6**	3
Q2	36		**Q7**	(B)
Q3	(A)		**Q8**	55
Q4	6		**Q9**	(B)
Q5	7			

Hints & Solutions

Q1 Text Solution:

10	234	74	95	25	66
100	104	108	112	116	120

$b = 100 + 6 \Rightarrow 100 + 6 \times 4$

$\Rightarrow 124$

$b[-5] = *(6-5)$

$\Rightarrow *(124 - 5)$

$\Rightarrow *(124 - 5*4)$

$\Rightarrow *(120) = 234$

234 is the answer.

Q2 Text Solution:

b

2	$\cancel{3}$ 13	4	5	6
100	104	108	112	116

P | $\cancel{100}$ |

4

*P++; ← post increment

$i = (*P) + 10$

$i = 3 + 10 = 13$

$j = *P + 1 = 10$

$j = 13 + 10 = 23$

13 + 23 = 36 is the correct answer

Q3 Text Solution:

b

21	13	43	25	60
100	104	108	112	116

P | $\cancel{100}$ | 104

*++P; prefix operator

printf → 13

P = 104 + 2 = 104 + 2*4 = 112

printf → 25

∴ 13, 25, which is option 'a'

Q4 Text Solution:

1	2	3	4	5	6	7	8	9	0	1	2	5
0	4	8	12	16	20	24	28	32	36	40	44	48

$x = 12 \% 13 - (1 << 3)$

$= 12 - 8 \Rightarrow 4$

ptr = arr + 4

$= 0 + 4 = 16$

$ptr = [1] = *(ptr + 1)$

$= *(20)$

$= 6$

Q5 Text Solution:

1	2	3	4	5	6	7	8	9	0	1	2	5
0	4	8	12	16	20	24	28	32	36	40	44	48

$X = 2 \% 13 - 0 \Rightarrow 2 - 0$

$ptr = arr + x = 0 + 2 = 8$

$ptr += 3 = 8 + 3 \Rightarrow 8 + 3 * 4 = 20$

$printf(20[1]) = *(20 + 1)$

$= *[24]$

$= 7$

Q6 Text Solution:

1	2	3	4	5	6	7	8	9	0	1	2	5
0	4	8	12	16	20	24	28	32	36	40	44	48

ptr1 = 0

ptr 1 | $\cancel{0}$ 4 | 100

ptr 2 | 100 |

* prt = 0

++ *ptr = 4

$ptr 1[1] = *(ptr 1 + 1)$

$= (4 \times 1) \Rightarrow *8$

$= 3$

Q7 Text Solution:

2	1	4	5	0
100	104	108	112	116

p | $\cancel{100}$ | 100   q | 200 |

200   300

$++*q = 100 \to 104$

printf → 1

$++**q \to 2$

printf 2

∴ option 'b' is correct.

Q8 Text Solution:

b	2	2	3	5	~~6~~
	100	104	108	112	116 ~~22~~

44

$$p = 100 + 2 = \boxed{~~108~~}\ 112$$

200

$$p1\ \boxed{~~200~~}\ 204$$

P2 = * (108 + 2) = *(116)
P1 [0] [2] = * (* (p + 0) +2)

$\qquad$ = * (* (200) +2)

$\qquad$ = *(108) + 2)

$\qquad$ = * 116

$\quad$ *p++ = 112

$\quad$ i= (*p) ++ = 5

$\quad$ printf(i+j+b[5])//pseudocode

$\qquad$ = 6 + 5 + 44 $\Rightarrow$ 55

Q9 Text Solution:

10	234	74	95	25	66
100	104	108	112	116	120

x = 2* 6 / 7 << 2

$\quad$ = 12/7 << 2

$\quad$ = 1 << 2 = 4

b = 100 + 6 = 100 + 6 * 4 = 124

b [–4]

$\quad$ * (b –4) = * (124 – 4)

$\qquad$ = * (124 – 16)

$\qquad$ = *(108) = 74

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