

الفرقة الثالثة  
شعبة: كيمياء  
وكيمياء و كيمياء اشعاعية (نظام قديم)  
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نموذج اجابة – نصف ورقة  
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Final Exam- Third Year  
COMPUTER SCIENCE

Time: 1 Hour  
1 January 2014

Please answer all the following questions. Total Marks = 40 points:-

(1) [20 Marks]

a) Given the arrays

$y = [1 \ 2 \ 3 \ -1 \ -2]$  ,  $z = [-1 \ 0 \ 3 \ 4 \ 5]$  and  $A = [-1 \ 2 \ 0; 4 \ -5 \ -1; 1 \ -2 \ 3]$ .

What is the result of the following statements?

- |                             |                              |                             |
|-----------------------------|------------------------------|-----------------------------|
| 1) $A(:,2) ./ A(:,3)$       | 2) $A(1:2:3,:)$              | 3) $g = y(\text{end}:-1:2)$ |
| 4) $y(5) = []$              | 5) $\text{diag}(A)$          | 6) $A.^2$                   |
| 7) $\text{size}(A)$         | 8) $\text{sum}([z,-1,5])$    | 9) $\text{length}(z)$       |
| 10) $\text{mean}(y)$        | 11) $[d,n]=\text{max}(A(:))$ | 12) $[A; y(2:4)]$           |
| 13) $A(3,:) + [0 \ -2 \ 1]$ | 14) $A-2*\text{eye}(3)$      | 15) $\text{who}$            |
| 16) $\text{whos}$           | 17) $\text{all}(y)$          | 18) $\text{any}(z)$         |
| 19) $\text{find}(y>2)$      | 20) $S = \text{diag}(y)$     |                             |

(2) [20 Marks]

a) Given  $t = 1/30$ , complete the following sentences:

- |  |  |
|--|--|
| 1) $\gg \text{format short}, t = \dots,$   | 2) $\gg \text{format long}, t = \dots$ |
| 3) $\gg \text{format short g}, t = \dots,$ | 4) $\gg \text{format bank}, t = \dots$ |
| 5) $\gg \text{floor}(t) = \dots,$          | 6) $\gg \text{round}(t) = \dots$       |
| 7) $\gg \text{ceil}(t) = \dots,$           | 8) $\gg \text{fix}(t) = \dots$         |

b) Write a Matlab program to compute the real roots of a quadratic equation

$$ax^2 + bx + c = 0,$$

where the roots can be determined from the formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

With My Best Wishes  
Dr. Abdelhameed Mohamed

ANSWER MODEL

(1)

x = [0 -1 3 -2 -3 2] and A = [-1 2 0 -1;-2 0 -3 1;0 -1 2 3;-1 0 4 5].

1) A(:,2)./A(:,3)

```
ans =  
-Inf  
5.0000  
-0.6667
```

2) A(1:2:3,:)

```
ans =  
-1    2    0  
1   -2    3
```

3) g = y(end:-1:2)

```
g =  
-2   -1    3    2
```

4) y(5) = []

```
y =  
1    2    3   -1
```

5) diag(A)

```
ans =  
-1  
-5  
3
```

6) A.^2

```
ans =  
1    4    0  
16   25    1  
1    4    9
```

7) size(A)

```
ans =  
3    3
```

8) sum([z,-1,5])

```
ans =  
15
```

9) length(y)

```
ans =  
5
```

10) mean(y)

```
ans =  
0.6000
```

11) [d,n]=max(A(:))

```
d =  
4  
n =  
2
```

12) [A; y(2:4)]

```
ans =  
-1    2    0  
4   -5   -1  
1   -2    3  
2    3   -1
```

13) A(3,:) + [0 -2 1]

```
ans =  
1   -4    4
```

14) A=2\*eye(3)

```
ans =  
    -3     2     0  
     4    -7    -1  
     1    -2     1
```

15) who

Your variables are:

```
y z A
```

16) whos

Name	Size	Bytes	Class
y	1x5	40	double
z	1x5	40	double
A	3x3	72	double

17) all(y)

```
ans =  
    1
```

18) any(z)

```
ans =  
    1
```

19) find(y>2)

```
ans =  
    3
```

20) S = diag(z)

```
S =  
    1     0     0     0     0  
    0     2     0     0     0  
    0     0     3     0     0  
    0     0     0    -1     0  
    0     0     0     0    -2
```

(2)

(a)

```
1) >> format short, t = 0.0333  
2) >> format long, t = 0.03333333333333333  
3) >> format short g, t = 0.03333  
4) >> format bank, t = 0.03  
5) >> floor(t) = 0  
6) >> round(t) = 0  
7) >> ceil(t) = 1.00  
8) >> fix(t) = 0
```

(b)

```
function [r1,r2] = quadroots(a, b, c)  
    if a == 0  
        disp('Not quadratic equation')  
    else  
        %quadratic formula  
        d = b ^ 2 - 4 * a * c;  
    end  
    if d < 0  
        disp('Imaginary roots')  
    else  
        %real roots  
        r1 = (-b + sqrt(d)) / (2 * a)  
        r2 = (-b - sqrt(d)) / (2 * a)  
    end  
end
```