

Answer ALL questions

Question One: [10 marks]

a. Correct the errors in the following MATLAB codes [4 marks]

Questions	Your Answers	Marks
A=[1 3; 2 5] b=[1,8] c=[a,b]		
x=1; a=2; b=3 if x<20 r=a*.b; a=a+.1; end		
function F=fact[s] F=1; for i=2:s F=F*i; end		
x=rand(3,4) x=reshape(6,3)		

b. Convert the following if/else statement to a switch statement. [3 marks]

a=input('enter the value of a:'); if a == 1 disp('a is 1'); elseif a == 2 disp('a is 2'); else disp('a is not 1 or 2') end		
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c. Write a MATLAB code to solve the following set of equations

$$\begin{aligned} 2x_1 + 2x_2 + x_3 &= 2 \\ x_2 + 2x_3 &= 1 \\ x_1 + x_2 + 3x_3 &= 3 \end{aligned}$$

you can use any method to solve it.

[3 marks]

الطالب: رقم القيد: المجموعة:

Question Two: [10 marks]

For each of the following MATLAB codes, write the value of the output.

<pre>x=[5.2,0.2,3.8; 2.3,0.5,-5]; floor(x)</pre>		
<pre>x=[5,0.2,3; 2,2,-5]; length(min(sum(x)))</pre>		
<pre>a=2:3:8; b=[a' a' a']; d=a+b; c=size(d)</pre>	c= _____	
<pre>A=2+rem(2,9)+3*2/2-3</pre>		
<pre>y = 1.20; x = 12.5879; fprintf('variable x is %06.3f\n',x);</pre>		
<pre>T=0; if T < 30 h = 2*T + 1 elseif T < 10 h = T - 2 else h = 0 end</pre>	h= _____	
<pre>%Main file clear a = 2; b = myfun(a); disp(a) disp(b) %Function file function a = myfun(b) % Algebraic function evaluation b = b^2 + 5; a = (3*b + 9)/6; end</pre>		
<pre>J=0; for i=1:2:3 J=J+i; end disp(J)</pre>		
<pre>A=[3 5 -4; -8 -1 0]; C=(A>=0); A(C) = A(C)+1; disp(A)</pre>		



Question Three: [8 marks]

d. Consider the following arrays defined in MATLAB's workspace:

$$w = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 2 & 3 & 0 & 0 \\ 4 & 5 & 6 & 0 \\ 7 & 8 & 9 & 1 \end{bmatrix}$$

In a single line of MATLAB code create from w the following sub-arrays:

[4 marks]

[4 5 6 0]		
[0 0 0 0 0 0]		
2 0 7 9		
7 0 4 3 2 5 1 8		

e. The program below is written to compute the average and maximum mark of a class and is saved as mark.m. Complete the missing statements on line 6, 8 and 11.

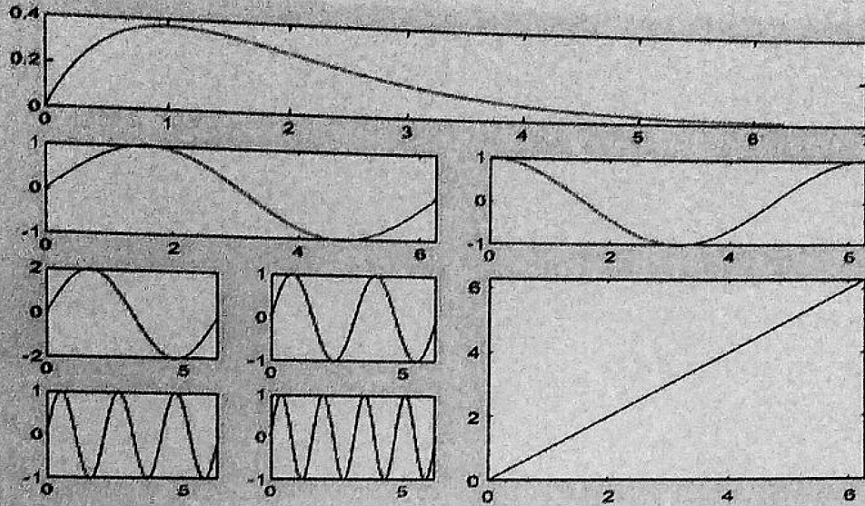
[4 marks]

```
%Prog to calculate average and max mark of a class
1- n=input('Please enter the number of students:');
2- csum = 0;
3- max = 0;
4- for i=1:n
5- mark = input('input mark [1-100]: ');
6- .....% compute cumulative mark
7- if mark > max
8- .....%compute maximum mark
9- end
10-end
11-..... %compute average mark
12-fprintf('The average mark is %.2f\n', avg)
13-fprintf('Maximum mark is %.2f\n',max)
```



المجموعة:
 الطالب: رقم القيد:
Question Four: [12 marks]

- a. Correct the following code to produce the corresponding figure. **Circuit the error and write the correction.** [6 marks]



```
x=0:2*pi:0.01;
subplot(4,4,[1 5 9 13])
plot(x,x*exp(-x))
subplot(4,4,[5 6])
plot(x, sin(x))
subplot(4,4,[7 8])
plot(x, cos(x))
subplot(4,4,9)
plot(x, 2sin(x))
subplot(4,4,10)
plot(x, sin(2*x))
subplot(4,4,13)
plot(x, sin(3*x))
subplot(4,4,14)
plot(x, sin(4*x))
subplot(4,4,[1 2 3 4])
plot(x,x)
```

- b. Write a MATLAB script to prompt the user for x and n values and calculate the value of S. [6 marks]

$$S=1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \dots + \frac{x^n}{n!}$$