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**Guru Nanak Dev University, Amritsar-143005**  
**Quiz Test in MATLAB Programming and Simulation**

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Code#MTL902

Max. Marks 10  
Time Allowed: 20 Minutes

*Note:* Please tick ✓ only one of the four options (a), (b), (c), and (d) for each question below.

- The output of the MATLAB program `>> x=1:4'` is equivalent to  
 (a) `[1 2 3 4]` (b) `[1,2,3,4]'` (c) `[1 2 3 4]'` (d) none of these
- The output window of MATLAB is called  
 (a) Editor Window (b) Workspace Window (c) Command Window (d) History Window
- Which one of the following words can not be a name of a MATLAB script file ?  
 (a) 2r (b) ansdfhcvgbhu\_123 (c) math (d) hhhh
- Let `x=[1 2 3; 4 5 6; 7 8 9]`; Then output of the MATLAB program `>> x(2,3)` will be  
 (a) 6 (b) `[2 3; 5 6; 8 9]` (c) `[4 5 6; 7 8 9]` (d) none of these
- Let `x=[1 2 3; 4 5 6; 7 8 9]`; Then output of the MATLAB program `>> x.^ 2-x^2` is  

(a) 0 0 0	(b) 29 32 33	(c) -29 -50 -56	(d) -29 -32 -33
0 0 0	50 56 60	-32 -56 -62	-50 -56 -60
0 0 0	53 62 69	-33 -60 -69	-53 -62 -69
- The output of the MATLAB program `>> a = 4 < 5 ≤ 5` will be  
 (a) 0 (b) 1 (c) a (d) none of these
- The output of the MATLAB program `>> b = ceil(-1.3)+floor(2.4)+round(5.6)` will be  
 (a) 5 (b) 6 (c) 7 (d) none of these

```
>> for i=1:5
      if(rem(i,2)==0)
          disp(i)
      else
          disp(i^2)
      end
end
```

8. The output of the following MATLAB program:

will be

- |                |       |                |       |
|----------------|-------|----------------|-------|
| (a) 1 2 9 4 25 | (b) 1 | (c) 1 2 4 9 25 | (d) 1 |
|                | 2     |                | 2     |
|                | 9     |                | 4     |
|                | 4     |                | 9     |
|                | 25    |                | 25    |

- What will be the output of the following MATLAB program `>> i=1, 3^2*5/6^2+5<6+(i==1)`  
 (a) 1 (b) 0 (c) -1 (d) none of these
- A vertical board is ruled with horizontal parallel lines at constant distance 'a' apart. A needle of length  $b (< a)$  is thrown at random on the table. The probability that it will not intersect

one of the lines is given by

- (a)  $\frac{2b}{a\pi}$  (b)  $1 - \frac{2b}{a\pi}$  (c)  $\frac{2a}{b\pi}$  (d)  $1 - \frac{2a}{b\pi}$

11. Let  $X \sim U(0, 2)$  and  $Y \sim U(0, 2)$  be two independent random variables. Then  $P[X^2 + Y^2 < 0]$  is equal to one of the following:

- (a)  $\frac{\pi}{4}$  (b)  $\frac{4}{\pi}$  (c)  $\frac{\pi}{8}$  (d)  $\frac{8}{\pi}$

12. If  $X \sim U(0, 2)$  then  $P\left[\frac{1}{3} \leq X \leq \frac{1}{2}\right]$  is equal to

- (a)  $\frac{1}{6}$  (b)  $\frac{1}{3}$  (c)  $\frac{1}{12}$  (d)  $\frac{1}{8}$

13. Let  $Y$  be an unbiased estimator of  $\mu$  and  $C$  be a control variate such that  $E(C) = \mu_c$  (known). Write down another unbiased estimator of  $\mu$  using control variate

- (a)  $Y + 2(\mu - \mu_c)$  (b)  $Y + 2(\mu + \mu_c)$  (c)  $Y + 2(\mu\mu_c)$  (d) none of these

14. Q. 2. In simulation process, if  $I = \int_0^1 x dx$  be estimated by  $\theta = (U_1 + U_2)/2$ , where  $U_1$  and  $U_2$  be  $U(0, 1)$  random variable. Then  $\text{var}(\theta)$  is

- (a)  $1/4$  (b)  $1/12$  (c)  $1/24$  (d) None of these

15. Let  $\theta$  be a sample mean Monte Carlo estimator of integral  $I = \int_0^1 x dx$  using sampling distribution  $f_x(x) = 2x$ ,  $0 < x < 1$  and 0 otherwise. Then  $\text{var}(\theta)$  is

- (a) 0 (b) greater than 0 (c)  $1/2$  (d) none of these

16. Among MATLAB function file and script file the former is identified from

- (a) the file extension name (b) the file name (c) the first line in the file (d) none of these

17. If  $x = \begin{pmatrix} -2 & 3.12 & 5 \\ -5 & -3 & -1 \end{pmatrix}$  then output of the MATLAB command `>> x>3|x==-3|x<=-5` will be

- (a)  $\begin{pmatrix} 0 & 1 & 0 \\ 1 & 0 & 1 \end{pmatrix}$  (b)  $\begin{pmatrix} 0 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix}$  (c)  $\begin{pmatrix} 0 & 1 & 1 \\ 1 & 1 & 0 \end{pmatrix}$  (d)  $\begin{pmatrix} 0 & 0 & 0 \\ -5 & -3 & -1 \end{pmatrix}$

18. The output of the sequence of MATLAB commands: `>> S=1;n=1; while S+(n+1)^2<100 n=n+1; S=S+n^2; end >> [n, S]` will be

- (a) 6 91 (b) 12 91 (c) 91 12 (d) 91 6

19. If  $A = \begin{pmatrix} -2 & 3 & 4 & 4 \\ 0 & 5 & -1 & 6 \\ 6 & 8 & 0 & 1 \end{pmatrix}$  Then output of the sequence of MATLAB commands:

`>> n=find(A<=0); n'`

will be

- (a) 1 2 8 9 (b) 1 9 8 2 (c) 1 7 8 3 (d) 1 2 8 6

20. In two dimensional plots in MATLAB the vectors  $x$  and  $y$  can be plotted if

- (a)  $x$  and  $y$  are of same size (b)  $x$  and  $y$  are column vectors (c)  $x$  and  $y$  are column vectors of same length

1.a ??c ??a  
2.c ??b 10.b  
3.a ??d 11.c  
4.a ??c 12.c  
5.d ??b 13.a  
??c 6.b 14.b  
??c 7.c 15.a  
??b 8.b 16.d  
??a 9.a 17.d  
??c ??d 19.a