# كلية الحاسبات والمعلومات

**المستوي الاول برنامج أمن المعلومات**

**وتكنولوجيا الشبكات والمحمول**

**الفصل الدراسي الاول**

**2020-2021**

**تاريخ الامتحان: 2021/2/27**

**نموذج اجابة ورقة كاملة**

**المادة: تأهيلى الرياضيات**

**أستاذ المادة : د / أحمد مصطفي عبدالباقي مجاهد**

**استاذ مساعد بقسم الرياضيات بكلية العلوم ببنها**

# صورة من الاسئلة

**Benha University**
**1st Term (February 2021) Final Exam**
**Information Security and Digital Forensics Program**
**Level:** 1st level
**Subject:** Qualifying Mathematics

**Faculty of Computers & AI**
**Date:** 27 /2 /2021
**Time:** 3 hrs.
**Total Marks:** 50 Marks
**Examiner(s): Dr. Ahmed Megahed**

## Choose the correct answer [ 25 questions in 3 pages]:

1- The point $A(2,-3,0)$ lies
(a)on the z-axis b) in the y z-plane (c) in the x y- plane (d)on the x-axis

2- The distance between the point (2,-3,5) and the x-z plane equals length unit.
(a) 2 b) -3 (c) 3 (d) 5

3- The perpendicular distance from the point (-5,-3,4) to the x- axis = ... length unit.
(a) 3 b) 5 (c) 4 (d) 10

4- If A(-4,-2,3), B(1,2,k) and the length of $\overline{AB} = \sqrt{77}$ , then k=
(a) -3 or 6 b) ) -3 or 12 (c) ) 9 or 6 (d) 9 or -3

5- The radius length of the sphere $x^2+y^2+z^2+2x-6y+10z-1=0$ equals
(a) 3 b) 4 (c) 5 (d) 6

6- The equation of the sphere whose center is the origin and its radius length=3 is
$(a)\quad x^2+y^2+z^2=3$ $(b) x^2+y^2+z^2=9$
$(c)(x-2)^2+(y-3)^2+(z-2)^2=9$ $(d) x^2+y^2+z^2+9=0$

7- The area of the sphere whose equation $x^2+y^2+z^2-25=0$ equals... area units
(a)$20\,\pi$ b) $40\,\pi$ (c) $25\,\pi$ (d) $100\,\pi$

8- $\begin{vmatrix} \sin x & \cos x \\ \cos x & -\sin x \end{vmatrix} =$
(a) zero b) 1 (c) -1 (d) cos 2x

9- $\begin{vmatrix} 3 & 1 & 2 \\ 4 & 0 & 5 \\ 5 & 3 & 7 \end{vmatrix} = \begin{vmatrix} 1 & 1 & 2 \\ 1 & 0 & 5 \\ 1 & 3 & 7 \end{vmatrix} + \cdots.$

(a) $\begin{vmatrix} 2 & 1 & 2 \\ 3 & 0 & 5 \\ 4 & 3 & 7 \end{vmatrix}$ b) $\begin{vmatrix} 3 & 1 & 2 \\ 4 & 0 & 5 \\ 5 & 3 & 7 \end{vmatrix}$ (c) $\begin{vmatrix} 2 & 1 & 2 \\ 4 & 0 & 5 \\ 2 & 3 & 7 \end{vmatrix}$ (d) $\begin{vmatrix} 2 & 1 & 2 \\ 2 & 0 & 5 \\ 3 & 3 & 7 \end{vmatrix}$

10- If $\begin{vmatrix} a & b & c \\ d & e & f \\ x & y & z \end{vmatrix} = 12$ then $\begin{vmatrix} a & d & x \\ b & e & y \\ c & f & z \end{vmatrix} = \cdots$

(a)-12 b) 12 (c) zero (d)24

11- The solution set of equation $\begin{vmatrix} x & 1 & 2 \\ 0 & x & 3 \\ 0 & 0 & x \end{vmatrix} - 8 = 0$ in $\mathbb{R}$ *is*

(a){-2} b){2} (c){2,-2} (d){8}

12- The singular matrix from the following matrices is …

(a) $\begin{pmatrix} 3 & 4 \\ 5 & 6 \end{pmatrix}$ b) $\begin{pmatrix} 3 & -2 \\ 6 & -4 \end{pmatrix}$ (c) $\begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$ (d) $\begin{pmatrix} 2 & 4 \\ -3 & 6 \end{pmatrix}$

13- If $= \begin{pmatrix} 1 & 2 \\ 3 & -5 \end{pmatrix}$ , then adj (A)=…

(a) $\begin{pmatrix} -5 & -2 \\ -3 & 1 \end{pmatrix}$ b) $\begin{pmatrix} 3 & -5 \\ 1 & 2 \end{pmatrix}$ (c) $\begin{pmatrix} 2 & 1 \\ -5 & 3 \end{pmatrix}$ d) $\begin{pmatrix} -5 & 3 \\ 2 & 1 \end{pmatrix}$

14- If A and B are two non singular matrices, then $(AB)^{-1}$ equals…

(a) $AB$ b) $A^{-1}B^{-1}$ (c) $B^{-1}A^{-1}$ (d)$(BA)^{-1}$

15- If A, B, C are three matrices of order n x n and $ABC = I$, then $B^{-1} = \cdots$

(a) $A^{-1}C^{-1}$ b) $(AC)^{-1}$ (c) $C^{-1} + A^{-1}$ (d) $CA$

16- If A,B are two matrices of order 3 x 3 and A=2B, det(B)=5, then det(A)=

(a) 8 b) 16 (c) 32 (d) 40

17- For any square matrix A if $A^2 - A + I = 0$ then $A^{-1} =$

(a)$A^{-2}$ b) $A + I$ (c) $I - A$ (d) $A - I$

18- Value of which makes the matrix $\begin{pmatrix} x & 2 \\ -3 & 3 \end{pmatrix}$ is singular is …

(a) 2 b) -2 (c) 0.5 (d) -3

19- If A is a matrix of order 2 x 2 and det ( A)=5, then det (3A)=…

(a) 5 b) 15 (c) 45 (d) 10

20- The solution set of the equation $z^2 + 9 = 0$ *in* $\mathbb{C}$ is

(a) {3,-3} b) {i,-i} (c) {3i,-3i} (d) {-9}

21- If $z = a + bi, z + \bar{z} = 6, then\ a =$

(a) 3 b) -3 (c) 6 (d) -6

22- The number z=3-4i is represented on Agrand's diagram by the point A where A=

(a) (3,4) b) (3,-4) (c) (-3,4) (d) (-3,-4)

23- The complex number z=-2i in trigonometric form equals

$(a)\ 2(\cos 90^\circ + \mathrm{i}\sin 90^\circ)$ $(b) 2(\cos -90^\circ + \mathrm{i}\ \sin -90^\circ)$

$(c) 2(\cos 0^\circ + i\sin 0^\circ)$ $(d) 2(\cos 180^\circ + \mathrm{i}\ \sin 180^\circ)$

24- If $|z| = 6\ then\ \ |-\bar{z}| = \cdots$

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

25- =...$[5(\cos 10^\circ + \mathrm{i}\ \sin 10^\circ)]^2$

$(a)\ 25(\cos 100^\circ + \mathrm{i}\ \sin 100^\circ)$ $(b) 10(\cos 100^\circ + \mathrm{i}\ \sin 100^\circ)$

$(c) 25(\cos\ 20^\circ + i\sin 20^\circ)$ $(d) 10(\cos 20^\circ + \mathrm{i}\ \sin 20^\circ)$

**GOOD LUCK,**

*Dr. Ahmed Megahed*

# Model Answer

| No. of Question | Answer |
|---|---|
| 1 | c |
| 2 | c |
| 3 | b |
| 4 | d |
| 5 | d |
| 6 | b |
| 7 | d |
| 8 | c |
| 9 | a |
| 10 | b |
| 11 | b |
| 12 | b |
| 13 | a |
| 14 | c |
| 15 | d |
| 16 | d |
| 17 | c |
| 18 | b |
| 19 | c |
| 20 | c |
| 21 | a |
| 22 | b |
| 23 | b |
| 24 | a |
| 25 | c |

Dr. Ahmed Mostafa Megahed