Assiut University
Faculty of Science
Geology Department

Date: June 2022
Time allowed :2 hours
Total Marks: 50 Marks

Special Course 305G (Ophiolite)

Answer only FOUR questions from the followings starting with the first one. (Use drawings when possible)

1- **Write briefly on the lithologies of the ideal sequence of ophiolites.** (14 marks)

2- **Summarize briefly the main tectonic structures associated with the region of subduction zone.**(12 marks)

3- **Compare between the oceanic crust and the continental crust.**(12 marks)

4- **Discuss the main mechanisms by which rifts develop.** (12 marks)

5- **Define the term marginal sea and display the different models explaining its formation.**(12 marks)

Good luck

Prof. Dr. Ali A. Khudeir

جامعة أسيوط

امتحان الفصل الدراسي الثاني للعام ٢٠٢١/٢٠٢٢ مقرر ٣١٨ر

كلية العلوم لطلاب كلية العلوم –المستوي الثالث الزمن/ ثلاث ساعات

قسم الرياضيات المادة/معادلات تفاضلية جزئية ودوال خاصة الدرجة الكلية/ ٥٠ درجة

اجب عن خمسة فقط من الاسئلة الاتية :- **(عشر درجات لكل سؤال)**

١- (i) اوجد المعادلة التي تنتج عن حذف الدالة الاختيارية f من العلاقة الاتية:

$$z = x + yf(x^2 + y^2)$$

(ii) اوجد الحل العام والحل الكامل للمعادلة :

$$x(y^2 + z)p - y(x^2 + z)q = (x^2 - y^2)z$$

ثم اوجد الحل الخاص الذي يمر خلال المنحني $z = 1\,,\quad x + y = 0$

٢- اوجد الحل العام لكل من المعادلات الاتية :

(i) $(D_1^2 - 3D_1D_2 - 4D_2^2)z = e^{x-y}$

(ii) $[D_1^2 + (a+b)D_1D_2 + abD_2^2]z = 24xy$, a, b ثوابت مطلقة

٣- اوجد الحل العام لكل من المعادلات الاتية :

(i) $(D_1^2 + 3D_1D_2 + 2D_2^2)z = \tan(x - y)$

(ii) $(D_1^2 - D_2)z = \cos(2x - y)$

٤-(i) اثبت ان : $B(n,m)\,\Gamma(n+m) = \Gamma(n)\,\Gamma(m)$

(ii) احسب قيمة التكاملات الاتية :

$\int_0^\infty \frac{x}{1+x^6}dx$, $\int_{-\infty}^{\infty} x^n e^{\frac{-x^2}{2}}dx$, حيث n عدد صحيح

٥- لدالة بسل $J_n(x)$ اثبت صحة العلاقات الاتية :

(i) $J_{-n}(x) = (-1)J_n(x)$ $n \in N$

(ii) $\sin(x) = \sqrt{\frac{2}{\pi x}}\sin x$

(iii) $\frac{d}{dx}[x^{-n}J_n(x)] = -x^nJ_{n+1}(x)$

٦- *لكثيرات حدود لجندر* $P_n(x)$ *اذكر وبرهن كل من:-*

(i) خاصية التعامد *(ii)* صيغة رودريج

انتهت الاسئلة مع اطيب الامنيات بالتوفيق د/مجدي كامل الجندي

Assiut University

Mathematics Department
Faculty of Science
Assiut University
2nd Semester - 2021/2022
3rd & 4th Years
Final-term Exam

Computer Science Program
Course Code: ٣٢٥هـ
Microprocessors
(معالجات دقيقة)
Date: June 6th, 2022
Time: 9:00 am - 12:00 pm **(3 hours)**

Faculty of Science

Important Notes: Marks: 50, Number of Pages: 2, Number of Questions: 4

Answer All the Following Questions:

Question 1 *10 Marks*

Choose the correct answer to each of the following statements: *(1 Mark for Each Point)*
(Note: multiple choices are not allowed)

1. The main processing unit in Intel 8086 which contains the IP register is .....
   A BIU B ALU C EU D non of the previous
2. The maximum size of any memory segment in the real mode is .....
   A 1 MB B 64 KB C 4 MB D 256 KB
3. The computing machine which can be considered the first general-purpose computer is .....
   A Colossus B Z3 C ENIAC D Abacus
4. The ..... bus selects the memory or I/O device and causes them to perform a read or write operation
   A data B control C address D non of the previous
5. ..... can be considered a suitable combination of segment:offset registers
   A CS:IP B DS:SP C SS:SI D ES:BP
6. IF SP = 37CD H, the offset address of the first location in the stack to pop data from is .....
   A 37CC H B 37CD H C 37CE H D 37CB H
7. The first microprocessor in Intel which has 32-bit address bus and 64-bit data bus is .....
   A Intel 80386 B Intel 80486 C Intel Pentium D Intel Pentium Pro
8. Consider DS = 3000 H, the ending address of the data segment in DS:2000 H is .....
   A 2FFFF H B 32FFF H C 3FFFF H D 32000 H
9. Consider CF = 1 and AL = 10100011 B. After the execution of `RCL AL,2` .....
   A CF = 1 and AL = 01000111 B B CF = 0 and AL = 10001111 B
   C CF = 0 and AL = 10001110 B D CF = 1 and AL = 11101000 B
10. The data addressing mode in `MOV AX,[SI+8]` is .....
    A register indirect B base plus index
    C register relative D base relative plus index

Question 2 *16 Marks*

i) Suppose that AL = 00001100 B, write the assembly lines to preform the following operations without using the command MUL, and then show the contents of AL: *(6 Marks)*

a) Multiply AL by 4
b) Multiply AL by 10
c) Multiply AL by 21

ii) Show the contents of BX and the flag bits (CF, ZF, SF, OF, PF and AF) after the execution of the following assembly lines: *(6 Marks)*

```
MOV BH,23H
ADD BH,89H
CMC
MOV BL,0C8H
SBB BL,43H
```

iii) Assume that AX = 2500 H and BX = 1200 H.

a) Explain the main function of the following assembly lines and show the contents of AX and BX after the execution of them *(3 Marks)*

```
MOV CX,AX
MOV AX,BX
MOV BX,CX
```

b) Write just a one assembly line that can replace the three lines given in (a). *(1 Mark)*

Question 3 *10 Marks*

i) Check if the jump will occur or not in the following cases: *(6 Marks)*
(Note: answer with occur or not occur, and also write the reason)

a)
```
MOV AX,32B7H
CMP AX,6A2DH
JA NEXT
```

b)
```
MOV AL,0F5H
ADD AL,41H
JC NEXT
```

c)
```
MOV AL,9AH
CMP AL,76H
JL NEXT
```

d)
```
MOV CX,5
DEC CX
JCXZ NEXT
```

ii) Write the assembly lines that perform the following operations: *(4 Marks)*

a) Set the bits No. 0, 3 and 5 in AL
b) Clear the bits No. 1, 2, 4 and 6 in BL
c) Toggle the bits No. 2, 3 and 7 in CL
d) Clear the contents of DX without using the command MOV

Question 4 *14 Marks*

Write the assembly code that: *(12 Marks)*

- adds and counts the even and odd numbers in a series of byte size data (37, 62, 28, 51, 46, 84 and 0)
- stores the sum and count of the even numbers in CL and CH, respectively
- stores the sum and count of the odd numbers in DL and DH, respectively
- stops when the number 0 is read

then show the contents of CX and DX after the execution of the assembly code. *(2 Marks)*

Best Wishes *Dr. Abdelrahman Morsi*

	Assiut University Faculty of Science Mathematics Dept.	Final Exam 2021/2022 Image Processing Code: MC366	16/6/2022 Level: 3rd Time: 2 hours	

Answer the following questions: **(50 Marks)**

Q1: Shade T or F in the bubble sheet **(25 Marks)**

1. In a well contrasted image, the grey levels would be well spread out over much of the range.
2. Image encryption is a procedure which converts the cipher image to the plain image by employing a secret key.
3. Considering diffusion, pixel position changes in a plain image without changing the values of the pixel.
4. The plain image converted into a nonreadable form after encryption is called a cipher image.
5. It is well known that high correlations exist in adjacent pixels of a plain image.
6. Image acquisition is the second fundamental step in image processing.
7. An image encryption algorithm should have the ability to reduce the correlations between adjacent pixels.
8. Zernike moments can represent images with the minimum amount of information redundancy.
9. A watermark is said to be public if only authorized users can detect it.
10. Spatial domain watermarking techniques are usually less robust to attacks such as compression and added noise.
11. Information entropy, imperceptibility, and robustness are among the many aspects of image encryption.
12. Normally, the correlation between adjacent pixels of plain image is very small which is close to 0.
13. The randomness of the image is measured by information entropy.
14. In diffusion, the values of image pixels changed using mathematical operations.
15. The ideal entropy value is 8 bits for an image with 512 Gray-levels.
16. The histograms of plain image obtained is almost uniform.
17. A good encryption algorithm should produce an encrypted image with entropy close to 8.
18. The histogram of the decrypted image should be flat to prevent attackers from decrypting the image by statistical analysis.
19. Moments and moment invariants have the ability to represent global features for image processing.
20. Non-orthogonal moments can be divided into those defined in either Cartesian or polar coordinates.
21. Image reconstruction from the orthogonal moments is quite difficult due to the lack of orthogonality.
22. Smallest value of gamma will produce brighter image.
23. Orthogonal moments defined in polar coordinates are also called radial orthogonal moments.
24. Imperceptibility denotes the ability to resist various types of attacks.
25. Traditional watermarking can completely preserve excellent visual quality of the original image.

Q2: Shade the correct answer; a, b, c or d in the bubble sheet **(25 Marks)**

26. Range $[0, L-1]$, where L is the.....

a. no of levels	b. length	c. no of intensity levels	d. low quality

27. Histogram equalization refers to image....

a. normalization	b. quantization	c. framing	d. sampling

28. Inserting data on to the images is called image.....

a. equalization	b. watermarking	c. compression	d. enhancement

29. a 1024-level image is called a .....image.

a. 8-bit	b. gray	c. 9-bit	d. 10-bit

30. .....is the general form of the power-law transformation.

a. $s = cr^{\gamma}$	b. $c = sr^{\gamma}$	c. $s = rc^{\gamma}$	d. None of these

31. ..... order bits usually contain most of the significant visual information.

a. Lower	b. composed	c. Least	d. Higher

32. Highlighting a specific range of intensities in an image often is desired.

a. Power-law Transf.	b. Intensity slicing	c. Contrast stretching	d. Intensity changing

33. Image.....converts the actual information into a meaningless structure.

a. watermarking	b. steganography	c. encryption	d. decryption

34. Histogram.....generate a processed image that has a specified histogram.

a. matching	b. equalization	c. analysis	d. normalization

35. In the....domain, we can embed the watermark into the coefficients of a transformed image.

a. hybrid	b. continuous	c. spatial	d. frequency

36. The .....function is the trivial case in which the input and output intensities are identical.

a. power	b. log	c. identity	d. frequency

37. Reducing a grayscale image to black and white is usually referred to as .....

a. blurring	b. quantization	c. binarization	d. sampling

38. Non-orthogonal moments such as.....moments.

a. rotational	b. complex	c. Zernike	d. Both a and b

39. Radial orthogonal moments such as.....moments.

a. Jacobi–Fourier	b. complex	c. Legendre	d. geometric

40. Log transformation can be formulized as,....., where c is constant and $\boldsymbol{r \geq 0}$.

a. $s = clog(r)$	b. $s = clog(r-1)$	c. $s = clog(1-r)$	d. $s = clog(1+r)$

41. Digital image with intensity levels in the range $[0, L-1]$ is called.....

a. k-map	b. histogram	c. truth table	d. graph

42. Pixels are digital numbers that are composed of.....

a. color	b. intensity levels	c. bits	d. dots

43. ..... watermarks are designed to survive intentional and unintentional modifications of the image.

a. Semi-fragile	b. Fragile	c. Robust	d. Zero

44. A watermarking technique is said to be....of the original data are needed for the extraction process.

a. blind	b. nonblind	c. Private	d. Public

45. A watermark is said to be ..... if only authorized users can detect it.

a. Public	b. Private	c. blind	d. nonblind

46. The .....is used to evaluate the watermark invisibility.

a. BER	b. NCC	c. BCR	d. PSNR

47. Negative of an image for the gray-level in the range $[0, L-1]$ is expressed by

a. $s = L-1-r$	b. $s = L+1-r$	c. $s = L-1+r$	d. $s = L+1+r$

48. The image .....shows the distribution of image pixel values.

a. histogram	b. entropy	c. correlation	d. None of these

49. .....Level: Segmentation (partitioning an image into regions or objects)

a. First	b. High	c. Mid	d. Low

50. For a 5-bit image, negative transformation of an image is expressed by

a. $s = 33-r$	b. $s = 31-r$	c. $s = r-33$	d. $s = r-31$

Best Wishes

Dr. Mohamed M. Darwish

Assiut University
Faculty of Science
Computer Science Department

Artificial Intelligence (ر ك 352)
End of Term Exam (Closed Book)
Time Allowed: 2 hours
Date: 7 June 2022, (2021/2022)

Part1: Choose the correct answer (one point for each)

1. Which of the following classifications of the environment are valid?
   a. Deterministic and non- Deterministic b. Observable and partially-observable
   c. Static and dynamic d. All of the above
2. Artificial Intelligence has its expansion in the following application.
   a) Planning and Scheduling b) Game Playing
   c) Diagnosis d) All of the mentioned
3. Agents behavior can be best described by _____
   a) Perception sequence b) Agent function
   c) Sensors and Actuators d) Environment in which agent is performing
4. What is rational at any given time depends on?
   a) The performance measure that defines the criterion of success
   b) The agent's prior knowledge of the environment
   c) The actions that the agent can perform
   d) All of the mentioned
5. The Task Environment of an agent consists of _____
   a) Sensors b) Actuators c) Performance Measures d) All of the mentioned
6. Categorize Crossword puzzle in Fully Observable / Partially Observable.
   a) Fully Observable b) partially Observable
   c) All of the mentioned d) None of the mentioned
7. An agent is composed of _____
   a) Architecture b) Agent Function
   c) Perception Sequence d) Architecture and Program
8. Which of the following mentioned searches are heuristic searches?
   a. Random Search c. Breadth First Search
   b. Depth First Search d. None of the above
9. The set of actions for a problem in a state space is formulated by a _____.
   a. Intermediate states b. Initial state
   c. Successor function, which takes current action and returns next immediate state
   d. None of the mentioned
10. Which search strategy is also called as blind search?
    a. Uninformed search c. Simple reflex search
    b. Informed search d. All of the mentioned
11. Which search is implemented with an empty first-in-first-out queue?
    a. Depth-first search c. Bidirectional search
    b. Depth-limited search d. None of the mentioned
12. When is breadth-first search is optimal?
    a. When there is less number of nodes b. When all step costs are equal
    c. When all step costs are unequal d. Both a & c
13. Which search algorithm imposes a fixed depth limit on nodes?
    a. Depth-limited search c. Iterative deepening search
    b. Depth-first search d. Bidirectional search
14. Which search uses the problem specific knowledge beyond the definition of the problem?

a. Informed search
b. Depth-first search
c. Breadth-first search
d. Uninformed search

15. Which search method takes less memory?
a) Depth-First Search
b) Breadth-First search
c) Linear Search
d) Optimal search

16. Which data structure conveniently used to implement BFS?
a. Stacks
b. Queues
c. Priority Queues
d. All of the mentioned

17. uniform-cost search expands the node n with the _____
a) Heuristic cost
b) Highest path cost
c) Average path cost
d) none of the above

18. What is the heuristic function of greedy search?
a) f(n) != h(n)
b) f(n) < h(n)
c) f(n) = h(n)
d) f(n) > h(n)

19. Which search is complete and optimal when h(n) is consistent?
a) Best-first search
b) Depth-first search
c) Both Best-first & Depth-first search
d) A* search

20. Which is used to improve the performance of heuristic search?
a) Quality of nodes
b) Quality of heuristic function
c) Simple form of nodes
d) None of the mentioned

21. Which search method will expand the node that is closest to the goal?
a) Best-first search
b) Greedy search
c) A* search
d) None of the mentioned

22. What is the evaluation function in greedy approach?
a) Heuristic function
b) Path cost from start node to current node
c) Path cost from start node to current node + Heuristic cost
d) Average of Path cost from start node to current node and Heuristic cost

23. What is the evaluation function in A* approach?
a) Heuristic function
b) Path cost from start node to current node
c) Path cost from start node to current node plus Heuristic cost
d) Average of Path cost from start node to current node and Heuristic cost

24. Which rule is applied for the Simple reflex agent?
a) Simple-action rule
b) Simple &Condition-action rule
c) Condition-action rule
d) None of the above

25. The exploration problem is where_____.
a) Agent contains the knowledge of State and actions.
b) Agent does not contain the knowledge of State and actions.
c) Only actions are known to the agent.
d) None of the above

26. In state-space, the set of actions for a given problem is expressed by the_____.
a) Intermediate States
b) Successor function that takes current action and returns next state
c) Initial States
d) None of the above

27. The main function of problem-solving agent is to_____.
    a) Solve the given problem and reach the goal
    b) Find out which sequence of action will get it to the goal state.
    c) Both a & b d) None of the above
28. Genetic algorithms involve which of the following phenomena?
    a. Mutation c. Selection
    b. Cross over d. All of the above
29. What is the term used for describing the judgmental or commonsense part of problem solving?
    a. Heuristic b.Critical c. Value based d. Analytical
30. What is the function of an Artificial Intelligence "Agent"?
    a) Mapping of goal sequence to an action
    b) Work without the direct interference of the people
    c) Mapping of precept sequence to an action
    d) Mapping of environment sequence to an action
31. Which of the following is not a type of Artificial Intelligence agent?
    a) Learning AI agent b) Goal-based AI agent
    c) Simple reflex AI agent d) Unity-based AI agent
32. Which of the following can improve the performance of an AI agent?
    a) Perceiving b) Learning c) Observing d) All of the mentioned
33. Which of the following is/are the composition for AI agents?
    a) Program only b) Architecture only
    c) Both Program and Architecture d) None of the mentioned

Part2: Write True or False (1/2 point for each)

34. Robot is not an example of artificial intelligent agent/agents?
35. Iterative deepening search uses only linear space and not much more time than other uninformed algorithms
36. A* is optimal if h(n) is not admissible heuristic.
37. A knowledge-based agent can combine general knowledge with current percepts to infer hidden aspects of the current state prior to selecting actions.
38. An AI agent perceives and acts upon the environment using Sensors and Perceiver
39. The main tasks of an AI agent are Moment and Humanly Actions
40. An Algorithm is said as Complete algorithm if It begins with a solution
41. The heuristic function is used to solve mathematical problems.
42. The heuristic function takes parameters of type string and returns an integer value.
43. The heuristic function does not have any return type.
44. The heuristic function calculates the cost of an optimal path between the pair of states.
45. Artificial intelligence means putting your intelligence into Computer
46. A problem in a search space is defined by initial state
47. fitness functions perform similar role to an objective function
48. fitness functions is the maximization of sum of squared residuals is an example of fitness function.
49. fitness functions help in optimization
50. Genetic Algorithms are a class of algorithms that try and build solutions by ntroducing evolution and selection of the best in a population of candidate solutions
51. Genetic Algorithms are Methods, based on the theory of natural selection and evolutionary biology, for solving optimization problems.

52. Greedy BFS is the best first search algorithm was used to predict the closeness of the end of path and its solution.
53. Genetic Algorithms are a heuristic search method used in artificial intelligence and computing.
54. A genetic algorithm (GA) for optimization is most likely to succeed given a small population of fit and similar individuals.
55. A genetic algorithm (GA) for optimization is most likely to succeed given a large population of fit and similar individuals.
56. A genetic algorithm (GA) for optimization is most likely to succeed given a small diverse population of fit individuals.
57. A genetic algorithm (GA) for optimization is most likely to succeed given a large diverse population of fit individuals.
58. Heuristic function h(n) is cheapest path from root to goal node
59. Greedy search strategy chooses the node for expansion in Shallowest
60. "Artificial Intelligence means to mimic a human. Hence, if a robot can move from one place to another like a human, then it comes under Artificial Intelligence."
61. Rational agent is the one who always does the right thing.
62. Expert system is an application of Artificial intelligence
63. Data mining is not an application of Data Mining
64. "In AI search algorithms, we look for a solution which provides us the most optimized way in terms of both time and cost to reach from the current state to the Goal State."
65. Priority Queues cannot be used to implement BFS?
66. Breadth-first search is not optimal when all step costs are equal, because it always expands the shallowest unexpanded node.
67. DFS is time efficient and BFS is space efficient.

Prof. Marghny H. Mohamed

Date: 14\6\2022
Time: 2 hours
50 Marks

2nd Term
Introduction to scientific computations
(356MC)

Answer the following questions

Question 1Choose the correct answer and put your answer in the table (20 marks)

1. **Which command is used to clear a command window?**

   (a) Clear (b) close all (c) clc (d) clear all

2. **Executing in the command window the following code returns.**

   ```
   a = [1:3]' ; size(a)
   ```

   (a) error (b) 1 3 (c) 3 1 (d) 3 3

3. **What would be the output of the following code (in editor window)?**

   ```
   a = [1 0 2]  ;  b = [3 0 7]  ;  c=a*b;
   ```

   (a) [2 0 21] (a) [3 0 14] (c) [14 0 3] (d)error

4. **What would be the output of the following code (in editor window)?**

   ```
   a=1:5  ;  c=a.^2
   ```

   (a) [1 2 5] (b) [1 2 3 4 5] (c) [25 16 9 4 1] (d) [1 4 9 16 25]

5. **What is the output of the following code?**

   ```
   for i=1:4
      for j=1:4
        a=5;a=a+5;
       end
   end
    disp(a)
   ```

   (a) No output will be shown (b) a = 10 (c) a= 8 (d) error

6. **What operator helps in the transpose of matrix A?**

   (a) *A* ' (b) *A*; (c) *A*\ (d) %*A*

7. **What is the value of p for the below Matlab code?**

   ```
   A = [1 -3 2 ];B = [-4 9 6 ]; p = diff(A)
   ```

   (a) [-4 5] (b) 5 (c)[1,1] (d) [2,2,2]

8. **What is the output of the following code?**

   ```
   Mean(1:10)
   ```

   (a) error (b) 5.5 (c)4.5 (d) Syntactical Error

9. **The output for diff(p^2,q) is**

   (a) 0 (a) 2*p (c)2 dp\dq (d) error

10. Which symbol is used to initialize a variable?

(a) = (b) -> (c)== (d) init

11. What is the value of c=sum(A(:,2)), if $A = \begin{pmatrix} 1 & 3 & 4 \\ 5 & 5 & 7 \\ -1 & 3 & 6 \end{pmatrix}$

a) c = 11 b)c = 8 c)c = 18 (d) 17

12. The number of outputs of this MATLAB function "function [a,b,c] = mad(x,y)"

a)3 b)2 c)1 (d) 0

13. We use command ---------- in repetitive sentences with condition

a) for b) if c)while (d) ifelse

14. To ask the user via if statement that , x not y equal we write

a) x .noteq. y b) x ~= y c) x not= y (d) $x \neq y$

15. Which command is used to calculate the determinant of matrix a?

a) |a| b)int(a) c)det(a) d)determinant(a)

16. In trapezium rule, n (number of point), and h(the height of each trapezium)...

a) positive relation b) inverse relation c) equal d) none of them.

17. By comparing Simpson's method and Trapezium Method for integration, the first one

a) better a) worse c)equal d) none of them.

18. Trapezium rule for integration is

a) $\frac{h}{3}(f_0+f_{n+1}+2(f_1+\cdots+f_n))$ b) $\frac{h}{2}(f_0+f_{n+1}+2(f_1+\cdots+f_n))$ c) $h(f_0+f_{n+1}+2(f_1+\cdots+f_n))$ d) none of them.

19. The form of Newton Raphson method to find roots is :

a) $x_{i+1} = x_i - \frac{f(x_i)}{f'(x_i)}$ b) $f(x_{i+1}) = f(x_i) - \frac{x_i}{x_{i+1}}$ c) $x_{i+1} = x_i - \frac{f(x_{i+1})}{f'(x_{i+1})}$ d)None of them.

20. To find root by Bisection method, a , b must satisfy

a) $a * b > 0$ b) $a * b < 0$ c) $f(a) * f(b) < 0$ d) $f(a) * f(b) > 0$

Question 2:Choose T the correct sentence or F for the wrong one (10 marks)

1. The inverse of matrix A can be calculated by inv(A) in MATAB..
2. Differential equations can be solved by using dsolve command.
3. Function mysum is defined as function s = mysum[inputs].
4. Drawing functions in MATLAB by using draw command.
5. To add comment we must add % before.
6. It is important to define the type of each variable in MATLAB.
7. We can calculate the summation of an array, we can use sum.
8. disp(x) is used to display the value of variable x.
9. The command solve is used to find the solution for the second-degree equation.
10. >>1:2:10 is used to print the even numbers between 1 and 10.

Question 3: (20 Marks: 2 marks for each point)

- **Algorithm for newton forward method**

Step1: Input Y as ..... in D matrix nxn
Step2: For ..... do Step 3 and Step 4.
Step3: For ..... do step 4.
Step 4: .....
Step5: Calculate S=.....
Step6: Put sum = ...and ss= .....
Step7: for ..... do step 8, Step 9
Step 8 : ss= ss*.....
Step9: $sum = sum + \frac{ss}{(i-1)!}$.....
Step 10: f_s = ...

1. First step Y put as .....
a) fist row b) first column c)Matrix d)none of them
2. Second step for will take:
a) i = 2 to n b) i = 1 to n c) i = 2 to n-1 d) i = 1 to n-1
3. Third step for will take:
a) j=2 to n-(i-1) b) j = 1 to n-i c)j = 1 to n-(i-1) d)none of them
4. Fourth step matrix D will be formed from the relation:
a) $D_{j,i} = D_{j+1,i-1} - D_{j,i-1}$ b) $D_{j,i} = D_{j+1,i+1} - D_{j,i}$ c) $D_{j,i} = D_{j+1,i+1} - D_{j-1,i-1}$ d)none of them
5. Fifth step S =
a)$S= (x_n - x_0)/h$ b) $S= (x - x_0)/h$ c) $S= (x_s - x_0)/h$ d)$S= (x_s - x_0)/n$
6. Sixth step sum and ss will be
a) sum = $D_{1,1}$ and ss= 0 b) sum = $D_{1,1}$ and ss= 1 c) sum = 1 and ss= 1 d) sum =0 and ss= 0
7. Seventh step for loop will take
a) i = 2 to n b) i = 1 to n c) i = 2 to n-1 d) i = 1 to n-1
8. Eighth step complete the dots
a) (s-(i-1)) b) (s-(i-2)) c) (s-i) d) (s-(i+2))

9. Ninth step complete the dots

a) $D_{i,i}$ b) $D_{1,i}$ c) $D_{i,1}$ d) $D_{1,1}$

10. Tenth step the f_s at x_s will be

a) $f_s = sum$ b) $f_s = D_{n,n}$ c) $f_s = ss$ d)none of them

Best Wishes...

Dr. Amira Allam

Faculty of Science
Math. Dept.

Faculty of Science
Subject: Database (MC357)
Time: 2 Hours
15. June - 2022

Assiut University

Answer the following questions

Q1. Select T for the correct sentence and F for wrong sentence (20 Points)

Sentence	T	F
1. It is recommended to use one attribute to store all E-mails for one person.		
2. For mapping Binary 1:1 Relationship between A and B is possible to include the primary key of A as a foreign key in B, or is possible to include the primary key of B as a foreign key in A.		
3. If we map WRONGLY the Binary 1:1 Relationship, we can have a lot of null values in the tables.		
4. *The DBMS has the ability to represent directly the M:N relationship.*		
5. To map a multivalued attribute, we must make a new table to store this multivalued attribute.		
6. The number of entities in ER relation equals to the number of tables in the database.		
7. The schema is a set of entities that share the same structure.		
8. An important constraint on the entities of an entity type is the domain constraint on attributes.		
9. The relational algebra contains only six basic operations.		
10. In relational algebra, the intersection is a basic operation.		
11. In relational algebra, the division is a basic operation.		
12. In relational algebra, the union is a basic operation.		
13. A view in SQL terminology is a single table that is derived from other tables.		
14. A transaction is an executing program that includes some database operations, such as reading from the database, or applying insertions, deletions, or updates to the database.		
15. A large number of commercial applications running against relational databases in online transaction processing (OLTP) systems are executing transactions at rates that reach several MILION per second.		
16. Each table must have a primary key(s).		
17. A superkey SK specifies a uniqueness constraint that no two distinct tuples in any state r of R can have the same value for SK.		
18. The next statement has no problem Create table Student (Age int, BirthDate date, Level int);		
19. The database technology applies to unstructured, structured, and formatted data		
20. It is recommended to use DBMS in embedded systems with limited storage capacity.		

The Exam is in four pages

Faculty of Science
Math. Dept.

Faculty of Science
Subject: Database (MC357)
Time: 2 Hours
15. June - 2022

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Q2. Select the correct answer (15 Points)

1- For relations where the primary key contains multiple attributes, no nonkey attribute should be functionally dependent on a part of the primary key. What is the normalization form that satisfies the statement?
a) 1NF b) 2NF c) 3NF

2- The Relation should not have a non-key attribute functionally determined by another non-key attribute. What is the normalization form that satisfies the statement?

a) 1NF b) 2NF c) 3NF

3- The relation should have no multivalued attributes or nested relations. What is the normalization form that satisfies the statement?

a) 1NF b) 2NF c) 3NF

4- The address is a ..... attribute
a) simple b) composite c) complex d) multivalued

5- The age is a ..... attribute
a) simple b) composite c) complex d) multivalued

6- The car's color is a ..... attribute
a) simple b) composite c) complex d) multivalued

7- The next SQL statement represents the ..... operator.

```
SELECT Bdate, Address
FROM EMPLOYEE
WHERE Fname='Ali' AND Lname='Ahmed';
```

a) Selection b)Projection c) Selection and projection

d) Join e) Cartesian product

8- The next SQL statement represents ..... operator.

```
SELECT Bdate, Address
FROM EMPLOYEE;
```

a) Selection b) Projection c) Selection and projection

d) Join e) Cartesian product

The Exam is in four pages

9- The next SQL statement represents ..... operator.

```
SELECT Dnum, Lname, Address, Bdate
FROM DEPARTMENT, EMPLOYEE
 WHERE Dnum=Dnumber AND Mgr_ssn=Ssn;
```

a) Selection b) Projection c) Selection and projection

d) Join e) Cartesian product

10- The next SQL statement represents ..... operator.

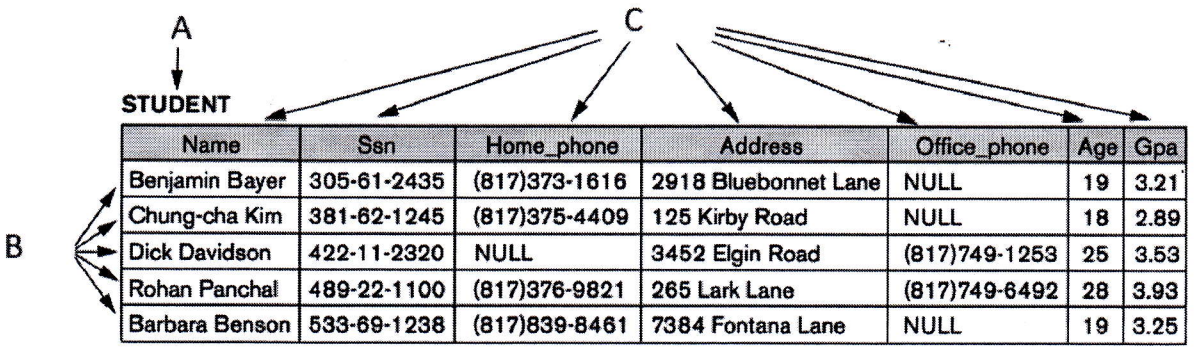
```
SELECT *
FROM EMPLOYEE, DEPARTMENT;
```

a) Selection b) Projection c) Selection and projection

d) Join e) Cartesian product

Q3. Fill by writing the correct answer (5 points)

A- Assume you have the next figure



Name	Ssn	Home_phone	Address	Office_phone	Age	Gpa
Benjamin Bayer	305-61-2435	(817)373-1616	2918 Bluebonnet Lane	NULL	19	3.21
Chung-cha Kim	381-62-1245	(817)375-4409	125 Kirby Road	NULL	18	2.89
Dick Davidson	422-11-2320	NULL	3452 Elgin Road	(817)749-1253	25	3.53
Rohan Panchal	489-22-1100	(817)376-9821	265 Lark Lane	(817)749-6492	28	3.93
Barbara Benson	533-69-1238	(817)839-8461	7384 Fontana Lane	NULL	19	3.25

1) A is .....

2) B is .....

3) C is .....

4) the domain of GPA is .....

5) The NULL value means that .....

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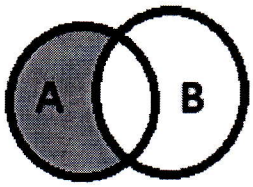
Faculty of Science
Math. Dept.

Faculty of Science
Subject: Database (MC357)
Time: 2 Hours
15. June - 2022

Assiut University

Q4. Select the correct answer (10 Points)

a. Write SQL statements to generate the shadow region in the drawing Venn diagram.



.....
.....
.....
.....

b. In MySQL, Define the field which can store a file that has a size less than 1024KB.

.....
.....
.....
.....

c. Write an SQL statement to make a relation between two tables.

.....
.....
.....
.....

d- Write SQL statements to create this table and insert this data into it.

.....
.....
.....
.....
.....
.....
.....

Customer

customerID	Name
1	Ali
2	Ahmed
3	Mona

e- Write the name of the main constraints in the database?

.....
.....
.....

==========

End of questions, Best Wishes, Dr. Ibrahim Elsemman

The Exam is in four pages

جامعة أسيوط كلية العلوم - قسم الرياضيات امتحان نهائي الفصل الدراسي الثاني للعام الجامعي 2021-2022	المقرر: بحوث عمليات (326ر) الفرقة : المستوي الثالث الدرجة: 50 درجة نظري التاريخ: السبت 4/ 2202/6 الزمن : 3 ساعات	قسم الرياضيات كلية العلوم

Multiple Choice Questions: (one mark for every question)

*** The petrochemicals compsry produces three products are x_1 , x_2 , x_3 There are three stages the production process in three stages as shown in the table. Writ **dual** of liner problem and answer equation (form 1 to 10)

stages	x_1	x_2	x_3	Time of minutes
Stage 1	3	2	4	80
Stage 2	1	5	1	70
Stage 3	5	4	6	90
Z	3	4	2	

1) Minimization objective function of dual is
a) $4\,y_1 + y_2 + 6\,y_3 \geq 2$ b) $W=80\,y_1+70\,y_2+90\,y_3$ c) $w=3\,y_1+4x_2+2\,y_3$

2) The first constraint of dual is
a) $4\,y_1 + y_2 + 6\,y_3 \geq 2$ b) $2\,y_1+5y_2+y_3 \geq 2$ c) $3\,y_1+x_2+5\,y_3 \geq 3$

3) The second constraint of dual is
a) $4\,y_1 + y_2 + 6\,y_3 \geq 2$ b) $2\,y_1+5y_2+y_3 \geq 2$ c) $3\,y_1+x_2+5\,y_3 \geq 3$

4) The third constraint is
a) $4\,y_1 + y_2 + 6\,y_3 \geq 2$ b) $2\,y_1+5y_2+y_3 \geq 2$ c) $3\,y_1+x_2+5\,y_3 \geq 3$

5) Value of y_1 in first constraint of dual is
a) 3/5 b) 3 c) 1

6) Value of y_2 in first constraint of dual is
a) 3/5 b) 3 c) 1

7) Value of y_3 in first constraint of dual is
a) 3/5 b) 3 c) 1

8) Value of y_1 in second constraint of dual is
a) 2 b) 4/5 c) 1

9) Value of y_2 in second constraint of dual is
a) 2 b) 4/5 c) 1

10) Value of y_3 in second constraint of dual is
a) 2 b) 4/5 c) 1

11) Value of y_1 in third constraint of dual is
a) 1/ 3 b) 1/2 c) 2

12) Value of y_2 in third constraint of dual is
a) 1/ 3 b) 1/2 c) 2

13) Value of y_3 in third constraint of dual is
a) 1/ 3 b) 1/2 c) 2

*** To find the optimal solution of Model of linear programming the next by the Graphical Method

Max $Z = 6x_1 + 7x_1$

S.t $2x_1 + 3x_2 \leq 12$, $2x_1 + x_2 \leq 8$, $x_1, x_2 \geq 0$

Form the following data answer equation (form 14 to 22)

14) The intersection point A between the first constraint by x_2 is

a) (6,0) b) (0,4) c) (4,0)

15) The intersection point D between the second constraint by x_1 is

a) (6,0) b) (0,4) c) (4,0)

16) The intersection point F between the second constraint by first constraint

a) (3,2) b) (2,3) c) (4,0)

17) The intersection point B between the first constraint by x_1 is

a) (6,0) b) (0,4) c) (0,8)

18) The intersection C between the second constraint by x_2 is

a) (6,0) b) (0,4) c) (0,8)

19) The intersection O between x_1 and x_2 is

a) (0,1) b) (0,0) c) (1,1)

20) The feasible solu tion Region is

a) O D Fa b) F B D c) A F C

21) The solution at point

a) A b) B c) F

22) Max Z equal

a) 23 b) 32 c) 15

*** Used Algebraic Method to solve this problem

$Min \quad Z = 2x_1 - 3x_2$

s.t $4x_1 + 5x_2 \leq 33$, $x_1 + 4x_2 \geq 11$, $2x_1 - 3x_2 \geq -11$, $x_1, x_2 \geq 0$

For the following data answer equation (form 23 to 27)

23) The point A(33/4, 0) not visible unequal

a) $4x_1 + 5x_2 \leq 33$ b)$x_1 + 4x_2 \geq 11$ c) $2x_1 - 3x_2 \geq -11$

24) The point B(11,0) not visible unequal

a) $4x_1 + 5x_2 \leq 33$ b)$x_1 + 4x_2 \geq 11$ c) $2x_1 - 3x_2 \geq -11$

25)) The point C(− 11/2, 0) not visible unequal

a) $4x_1 + 5x_2 \leq 33$ b) $x_1 + 4x_2 \geq 11$ c) $x_1 \geq 0$

26) The solution at point

a) (7,1) b) (2,5) c) (0 , 11/4)

27) Min Z equal

a) 11 b) -8.25 c)-11

*** If the solution of this model by Simplex method

Max $z = 40x_1 + 50x_2$

S.t $x_1 + 2x_2 \leq 8$, $3x_1 + x_2 \leq 9$, $x_1, x_2 \geq 0$

For the following data answer equation (form 28 to 40)

28) Standard form of objective function is

a)$x_1 + 2x_2 + S_1 + 0S_2 = 8$ b) $3x_1 + x_2 + 0S_1 + S_2 = 9$ c) $Z - 40x_1 - 50x_2 + 0S_1 + 0S_2 = 0$

29) Standard form of first constraint is

a)$x_1 + 2x_2 + S_1 + 0S_2 = 8$ b) $3x_1 + x_2 + 0S_1 + S_2 = 9$ c) $Z - 40x_1 - 50x_2 + 0S_1 + 0S_2 = 0$

30) Standard form of second constraint is

a)$x_1 + 2x_2 + S_1 + 0S_2 = 8$ b) $3x_1 + x_2 + 0S_1 + S_2 = 9$ c) $Z - 40x_1 - 50x_2 + 0S_1 + 0S_2 = 0$

31) pivot equation is

a) (1/2, 1 ,1/2, 0 ,4) b) (5/2, 0 , − 1/2, 1, 5) c)) (-15 ,0, 25, 0 , 200)

32) pivot element is

a) intersection second row and second column b)intersection second row and first column
c) intersection first row and first column

33) The New row Z is

a) (1/2, 1 ,1/2, 0 ,4) b) (5/2, 0 , − 1/2, 1, 5) c) (-15 ,0, 25, 0 , 200)

34) The New row S_2 is

a) (1/2, 1 ,1/2, 0 ,4) b) (5/2, 0 , − 1/2, 1, 5) c)) (-15 ,0, 25, 0 , 200)

35) pivot equation (from table 2) is

a) (1, 0, $-1/5, 2/5$,2) b) (0, 1, $4/10, -1/5$, 3) c)) (0, 0, 22, 2/ 5, 230)

36) pivot element (in table 2) is

a) intersection second row and second column b)intersection second row and first column
c) intersection first row and first column

37) The New row Z (from table 2) is

a) (1, 0, $-1/5, 2/5$,2) b) (0, 1, $3/5, -1/5$, 3) c) (0, 0, 22, 6, 230)

38) The New row X_2 (from table 2) is

a) (1, 0, $-1/5, 2/5$,2) b) (0, 1, $3/5, -1/5$, 3) c) (0, 0, /22, 6 , 230)

39) The solution at point

a) (2, 3) b) (1, 2) c) (5, 4)

40) Max Z equal

a) 230 b) 150 c) 127

*** Writ dual of following liner problem

Min $z = 7x_1 + 3x_2$

S.t $x_1 + x_2 \geq 2$ $3x_1 - x_2 \geq -1$

x_1 unrestricted , $x_2 \geq 0$

For the dual problem answer equation (form 41 to 43)

41) objective faction of dual is

a) Min $w = 2y_1 - y_2$ b) Max $w=7y_1 + 3y_2$ c) Max $w=2y_1 - y_2$

42) The first constraint of dual is

a) $y_1 + 3y_2 = 7$ b) $y_1 - y_2 \leq 3$ c) $-3y_1 + y_2 \leq 1$

43) The second constraint of dual is

a) $y_1 + y_2 \geq 2$ b) $y_1 - y_2 \leq 3$ c) $-3y_1 + y_2 \leq 1$

*** If the solution of this model by Simplex method this problem

Max $z = 5x_1 + 8x_2$

S.t $x_1 + x_2 \le 10$ $3x_1 + 11x_2 \le 25$, $x_1, x_2 \ge 0$

Basic variable	x_1	x_2	S_1	S_2	solation
x_1	1	0	11/8	- 1/8	85/8
x_2	0	1	- 3/8	1/8	- 5/8
z	0	0	31/8	3/8	385/8

Discuss sensitivity Analysis answer equation (form 44 to 50)

44) Unequally for the first variable x_1 is

a) $31/8 + c_1 \times 11/8 \ge 0$, $3/8 + c_1 \times -1/8 \ge 0$ b) $31/8 + c_1 \times -3/8 \ge 0$, $3/8 + c_1 \times 1/8 \ge 0$

c) $31/8 - c_1 \times -\frac{3}{8} \ge 0$, $\frac{3}{8} - c_1 \times 1/8 \ge 0$

45) Unequally for the first variable x_2 is

a) $31/8 + c_2 \times 11/8 \ge 0$, $3/8 + c_2 \times -1/8 \ge 0$ b) $31/8 + c_2 \times -3/8 \ge 0$, $3/8 + c_2 \times 1/8 \ge 0$

c) $31/8 - c_2 \times -\frac{3}{8} \ge 0$, $\frac{3}{8} - c_2 \times -1/8 \ge 0$

46) The value of c_1 is between

a) $-31/11 \le c_1 \le 3$ b) $-3 \le c_1 \le 31/3$ c) $-24/11 \le c_1 \le 8$

47) The value of c_2 is between

a) $-31/11 \le c_2 \le 3$ b) $-3 \le c_2 \le 31/3$ c) $-24/11 \le c_2 \le 8$

48) The value of a_1 is between

a) $-85/11 \le a_1 \le -5/3$ b) $5 \le a_1 \le 85$ c) $5 \le a_1 \le 55/3$

49) The value of a_2 is between

a) $-85/11 \le a_1 \le -5/3$ b) $5 \le a_2 \le 85$ c) $5 \le a_2 \le 55/3$

50)The value of x_1 is between

a) $24/11 \le x_1 \le 8$ b) $5 \le x_1 \le 55/3$ c) $-85/11 \le a_1 \le -5/3$

بالتوفيق والنجاح

د / مصطفى الخطيب

Assiut University Faculty of Science Mathematics Dept.	Final Exam 2021-2022 Course: Optional Course 1 Course code: MC 355	Level: Third Time: 2 Hours	

"اسْتَعِنْ بالله ولا تَعْجَز"

الامتحان سبع (٧) صفحات - الإجابة فى نفس الصفحة

Answer the following questions **(Total Marks: 50)**

Q1. Write in the space the expected output of the following sub code: **(10 Marks)**

(a)

```
package examQ1;
public class ExamQ1
{
    public static void main(String[] arg)
    {
        int x = 55;
        int y = (x%5 != 0)? x+5:x-5;
        int z = (x > y)? 100:-100;
        System.out.println(y);
        System.out.println(z);
    }
}
```

The output here

(b)

```
package exam;
public class Exam {
    public static void main(String[] args) {
      int a = (int)10.5;
      char ch1 = 'e';
      char ch2 = 'a';
      System.out.printf("%d \t %C \t %c \n",a,ch1,ch2);
}
}
```

The output here

(c)

```
package mid2022;
public class Mid2022 {
    public static void main(String[] args) {
        int x = 5;
        boolean y = (x<5)? false : ((x<=5)? false:true );
        System.out.println(y);
    }
```

The output here

Q2. Choose the wright output which appear when executing the following statements:

(10 Marks)

1. ***System.out.println(11/5);***

a) 2 b) 2.2 c) 2.0 d) 0.2

2. ***System.out.println(11/5 + 0.5);***

a) 2.5 b) 0.5 c) 2.8 d) 2

3. ***System.out.println((int)(11/5 + 0.5));***

a) 2 b) 0.5 c) 0 d) 2.5

4. ***System.out.println((double)11/5);***

a) 2.2 b) 0.2 c) 2.0 d) 2

5. ***System.out.println((double)(11/5));***

a) 2.0 b) 0.2 c) 2.5 d) 2

6.

```
double num[] = {2.9, 3.1, 3.0}; double result = 0;
for (int i = 0; i < 3; ++i)
        result = result + num[i];
System.out.println(result/3);
```

a) 3 b) 0.0 c) 0 d) 3.0

7.

```
int a = 3; System.out.println(a++ *10);
```

a) 25 b) 16 c) 9 d) 30

8.

```
double B = 2.5; System.out.println(++B);
```

a) 3 b) 2.5 c) 4 d) 3.5

9.

```
double B = 2.5; System.out.println((int)++B);
```

a) 3.5 b) 2.5 c) 4 d) 3

Q3. Write the class named ***Rectangle*** includes the following:

-two fields named ***length*** and ***width*** with floating-point type

- Constructor with two arguments to initialize the fields

-Non-static function named ***Area*** to compute and return the area of this rectangle

(area = length* width)

In main class, create a single object from class Rectangle with initial values for length and width.

Call the function ***Area*** to compute and print the area of this object.

(5 Marks)

The program here:

Q4. Write a program using a single ***do-while*** statement, and single printing statement to print t following outputs as shown in box below, **don't use any dimension variable**.

1	1	1
2	4	8
3	9	27
4	16	64
5	25	125

The program here: **(5 Marks)**

Q5. Which of the following codes produce the following outputs (10 Marks)

(1)

```
*

***

*****

*******

*********
```

a

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=2*i; j++)
                System.out.print("*");
          System.out.println();}}
```

b

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=2*i+1; j++)
                System.out.print("*");
          System.out.println();}}
```

c

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=2*i-1; j++)
                System.out.print("*");
          System.out.println();}}
```

d

```
Package exam
Public class Exam
Public static void main(String[] args){

        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=i; j++)
                System.out.print("*");
          System.out.println();}}
```

(2)

```
*

**

***

****

*****
```

a

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=2*i-1; j++)
                System.out.print("*");
          System.out.println();}}
```

b

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=2*i+1; j++)
                System.out.print("*");
          System.out.println();}}
```

c

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=2*i; j++)
                System.out.print("*");
          System.out.println();}}
```

d

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=i; j++)
                System.out.print("*");
          System.out.println();}}
```

(3)

```
*****
*****
*****
*****
*****
```

a

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=5; j++)
                System.out.println("*");
          System.out.println();}}
```

b

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=5; j++)
                System.out.print("*");
          System.out.println();}}
```

c

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=5; j++){
                System.out.print("*");
                System.out.println();}}}
```

d

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=i; j++)
                System.out.print("*");
          System.out.println();}}
```

(4)

```
1
12
123
1234
12345
```

a

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=2*i-1; j++)
                System.out.print(i);
          System.out.println();}}
```

b

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=2*i+1; j++)
                System.out.print(j);
          System.out.println();}}
```

c

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=i; j++)
                System.out.print(i);
          System.out.println();}}
```

d

```
Package exam
Public class Exam
Public static void main(String[] args){
        for (int i=1; i<=5; i++)
        {
          for (int j=1; j<=i; j++)
                System.out.print(j);
          System.out.println();}}
```

Q6. Choose the correct answers: **(10 Marks)**

1. if the number of times of execution some statements is predefined, the suitable loop statement is ...

a) while b) do-while c) for d) repeat-until

2. if the number of times of execution some statements is one time at least, the suitable loop statement is...

a) while b) do-while c) for d) repeat-until

3. The modulus operator uses ..... character

a) % b) * c) / d) +

4. Which of the following correctly declares an array?

a) int array[10]; b) int array;

c) array{10}; d) None of the mentioned

5. In switch statement, ... Case is used to perform actions when none of the specified cases matches the switch-expression.

a) switch b) default c) case d) break

6. Which of the following is a floating-point type?

a) short b) double c) long d) int

7. Which of the following escape sequence represents end of line?

a) \r b) \n c) \n\r d) \c

8. Which of the following is a valid statement for any integer variables **a** and **b**??

a) System.out.printf("\t %d \t %d",a,b); b) System.out.print("\t %d \t %d",a,b);

c) System.out.println("\t %d \t %d",a,b); d) System.out.printf("\t %f \t %f",a,b);

9. To receive inputs from keyboard, we use .....

a) import java.util.Arrays; b) import java.util.Objects;

c) import java.util.Random; d) import java.util.Scanner;

End of Exam, with my best wishes:

Dr- Abdel-Rahiem Ahmed Hashem Mohammed

د. عبدالرحيم أحمد هاشم محمد

Department of Mathematics		قسم الرياضيات
Faculty of Science		كلية العلوم
امتحان نهائي الفصل الدراسي الثاني 2022/2021 م		
الفرقة : المستوي الثالث علوم — الزمن: ساعتان — درجة الامتحان : 50 درجة		
مسمى المقرر: حزم البرامج الرياضية و الاحصائية 300 ر ك		التاريخ: 19/ 6 /2022 م

ملاحظة: يتم طمس (تسويد) الإجابة المختارة من قبل الطالب باستخدام القلم الجاف فقط في ورقة البابل شيت

Answer all the following questions:

1-Which of the following is used for creating and defining various characteristics of variables in SPSS?

A) Variable viewer B) Data editor C) Output viewer D) Data view

2-Which menu item contains procedures to compute variables in SPSS?

A) Analyze menu B) Data menu C) Graph menu D) Transform menu

3- In SPSS, the window where the results of your analysis appear?

A) Data view B) Data editor C) Output viewer D) Variable view

4-What are the two main windows in SPSS?

A) Variable view and Output viewer B) Data editor and Output viewer

C) Data view and Variable view D) Data view and Output view

5-Which menu would you select to run descriptive statistical in SPSS?

A) Analyze menu B) Graph menu C) Data menu D) Transform menu

6-In SPSS, rows represent variables and columns represent characteristics of variables in

A) Output Viewer B) Variable view C) Data editor D) Data view

7- IN EXCEL, ... are numbered from 1 to onwards and ..... are numbered from A to onwards.

A) Columns, Rows B) rows , columns C) slides, rows

8- Excel is a program that is used to prepare a.....

A) Slide presentation. B) Spreadsheet C) Text document

9- You can enter which types of data into worksheet cells?

A) Labels, values, and formulas

B) Labels and values but not formulas

C) Values and formulas but not labels

10- Valid Range Arguments for a SUM function

A) Range along a column B) Non-contiguous cells C) Both of them

11- ..... appear at the bottom of the Excel window.

A) Title bar B) Work sheet tabs C) Formula bar

12- Which of the following is not a term of MS-Excel?

A) Cells B) Rows C) Document

13- To change precision of B2 which contain 336.85 to 336.9, we use

A)=SUM(B2:B2) B)=ROUND(B2;1) C) =ROUND(B2;0)

14- A Boolean expression in Excel is refer to a

A) Text expression B) logical operators with number C) number

See behind page,,,,,,,,,,,,,,,,

15- Descriptive and frequencies command used in.

A) Tables B) charts C) SPSS D) windows

16- In SPSS, Data can be entered in the ..... spreadsheet.

A) Variable view B) data view C) Both A & B D) none of these

17- In SPSS, Most output display in tables can be modified by .....clicking on the table.

A) Single B) triple C) double D) none of these

18- Which command provides an advanced facility for table editing.

A) Pivot table editor B) table editor C) A & B D) none of these

19- How many type of spreadsheet in SPSS.

A) Two. B) Three. C) four. D) five.

20- In SPSS, The variables name must begin with a.

A) number B) space C) Ampersands(&) D) letter

21-In excel, which menu would you select to run descriptive statistical

A) View menu B) Page layout menu C) Data menu D) Insert menu

22- The Greater Than sign (>) is an example of .....

A) Arithmetic operator B) Logical operator C) Logical operands

23- What happens when dollar signs ($) are entered in a cell address (B2)

A) An absolute cell address is created B) The sheet tab is changed

C) Cell address will change when it is copied to another cell

24-What does COUNTA( ) function do

A) Counts cells having alphabets B) Counts empty cells

C) Counts non-empty cells

25- To reference a cell absolutely with respect to Column and Relatively with respect to Row use this notation:

A) D$2 B) D2 C) $D2

26- Which of the following formulas will Excel Not be able to calculate?

A) =SUM(A1:A5)*.5 B) =SUM(A1:A5)/(10+10) C) SUM(A1:A5)-10

27- "TRUE" or "FALSE" are

A) Boolean expression B) Boolean Values C) results for IF function

28- Which is Mixed Cell Referencing?

A) $S:2 B) S2 C) S$2

29- An Excel file is generally called a / an :

A) Spreadsheet B) Worksheet C)Workbook

30- What is the intersection of a column and a row on a worksheet called?

A) Column B)Value C) Cell

31-..... use to change fonts, justify text, insert rows, etc.

A) File menu B) quick access toolbar C) home ribbon

32- Which function in Excel tells how many numeric entries are there?

A) NUM B) COUNT C) SUM

33- What will be the result if you type =A1=B1 in cell C1?

A) Yes or No B) True or False C) Value of A1

34-In the Data View in the SPSS, each column represents what?

A) A case. B) A data point. C) A missing value. D) A variable.

35- The "SPSS" is a package of programs for.

A) Analyzing B) manipulation C) presenting data D) all of these

See behind page,,,,,,,,,,,,,,,,

36-Which of the following is true about the names of variables in SPSS?

A) They cannot contain spaces. B) They cannot begin with a numeral.

C) They cannot contain any special characters. D) All of these choices are true.

37- Returns *TRUE* if any of its arguments are *TRUE*

A) AND function. B) OR function. C) NOT function. D) None of them

38- SPSS base provides method for.

A) Data description B) Linear regression C) Simple inference D) all of these

39- SPSS stands for.

A) Statistical package for the social sciences.

B) Standard package for the social sciences

C) A & B

D) none of these

40- In SPSS, Ampersands (&) and spaces .....used as variables name.

A) Can be B) cannot be C) can be, in some cases, D) must be

41- The name box

A) Appears below the status bar

B) Appears to the left of the formula bar

C) Shows the location of the previously active cell

42- When you copy a formula

A) Excel edits cell references in the newly copied formula

B) Excel erases the original copy of the formula

C) Excel adjusts absolute cell references

43- Excel displays #N/A error when

A) A formula refers to a cell that is not valid.

B) Data being referenced is not available.

C) A formula has the wrong type of argument.

44- Combine a ..... construct to determine if none of the values are TRUE.

A) NOT (OR ( )) B) NOT (AND ( )) C) AND (OR ( ))

45- Which formula is true

A) =COUNTIF(C5:C8;D5:D8;">6")

B) =COUNTIF(C5:D8; >6)

C) =COUNTIF(C5:D8;">6")

46- The SUMIF Function is in the form

A) SUMIF(range; criteria; sum-range)

B) SUMIF(sum-range; criteria; range)

C) SUMIF(range; criteria)

47-If we stand in cell B4 and we want to go to D8, then we move

A) Col shift=1; row shift=0 B) Col shift=2; row shift=4 C) Col shift=4; row shift=2

48-AVERAGE function is ..... blank cells

A) Not ignoring and replaced by 1 B) Not ignoring and replaced by 0. C) Ignoring

49-The ROUND function used to

A) Calculate the sum of values B) change the precision of value C) none of them

50-Zero round value to

A) Specified number of decimal places B) tens, hundred, etc C)a whole number

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انتهت الأسئلة بالتوفيق والنجاح للجميع،،،،،، د. شيرين علي محمد السيد

Assiut University	Computer Networks
Third Level (MC354)	Time: 2 hours

Question 1: Answer the following (MCQ) questions: (30 Marks)

1. Which of this is not a network edge device?
a) PC b) Smartphones c) Switch

2. In the layer hierarchy as the data packet moves from the upper to the lower layers, headers are _____
a) Added b) Removed c) Rearranged

3. The structure or format of data is called _____
a) Syntax b) Semantics c) Struct

4. A _____ is the physical path over which a message travels.
a) Path b) Medium c) Protocol

5. A _____ set of rules that governs data communication.
a) Protocols b) Standards c) RFCs

6. Two devices are in network if _____
a) a process in one device is able to exchange information with a process in another device
b) a process is running on both devices
c) PIDs of the processes running of different devices are same

7. In computer network nodes are _____
a) the computer that originates the data b) the computer that routes the data
c) all of the mentioned

8. A _____ is a device that forwards packets between networks by processing the routing information included in the packet.
a) bridge b) firewall c) router

9. A list of protocols used by a system, one protocol per layer, is called _____
a) protocol architecture b) protocol stack c) protocol suite

10.Network congestion occurs _____
a) in case of traffic overloading b) when a system terminates
c) when connection between two nodes terminates

11. the rate at which data is transferred is referred to _____
a) transmission rate b) transfer ratio c) compression rate

12. End systems access the Internet through _____
a) Internet Service Providers (ISPs) b) Customer premises Equipment CBE
c) Digital subscriber line DSL

14-P2P applications face the challenge
a) ISP Friendly b) Security c) all of the mentioned

15-Processes on two different end systems communicate with each other
a) by exchanging messages across the computer network
b) with interprocess communication c) all of the mentioned

16-The only control that the application developer has on the transport-layer side is
a) the choice of transport protocol
b) perhaps the ability to fix a few transport-layer parameters
c) all of the mentioned

17- -------- can make use of as much, or as little, throughput as happens to be available.
a) bandwidth-sensitive applications
b) elastic applications
c) all of the mentioned

18- When this client-server interaction is taking place over TCP, the application developer needs to make an important decision—should each request/response pair be sent over a separate TCP connection, or should all of the requests and their corresponding responses be sent over the same TCP connection? In the former approach, the application is said to use ---
a) non-persistent connections
b) persistent connections
c) none of the above

19- The RTT includes
a) packet-propagation delays b) packet-queuing delays c) all of the mentioned

20. The number of layers in ISO / OSI reference model is _____
a) 10 b) 7 c) 5

21. Which is not a application layer protocol?
a) HTTP b) SMTP c) TCP

22. e -mail uses which protocol?
a) SMTP b) HTTP c) FTP

23. malware can record keystrokes, web sites visited, upload info to collection site.
a) virus b) worm c) spyware

24.Which protocol is a protocol of application layer?
a)HTTP b)TCP c)IP

25.What is client process?
a) Process that initiates communication. b) Process that waits to be contacted.
c) protocol in the application layer.

26.What is the HTTP port number?
a)25 b)110 c)80

27. data over DSL phone line goes to.....
a) internet b) telephone net c) all of the mentioned

28.....move packets from router's input to appropriate router output
a) routing b) forwarding c) switching

29- check bit errors.
A. nodal processing B. queuing delay C. transmission delay

30- determine output link.
A. nodal processing B. queueing delay C. transmission delay

Question 2: Select which of the following statements are false and which are true? (20 Marks)

31-In a client-server architecture, there is an always-on host, called the server
A) True B) False

32-with the client-server architecture, clients directly communicate with each other
A) True B) False

33-in the client-server architecture is that the server has a fixed, well-known address, called an IP address
A) True B) False

34-a client can always contact the server by sending a packet to the server's IP address
A) True B) False

35-a popular social-networking site can quickly become overwhelmed if it has only one server handling all of its requests
A) True B) False

36-A data center can have hundreds of thousands of servers, which must be powered and maintained
A) True B) False

37-the service providers do not pay recurring interconnection and bandwidth costs for sending data from their data centers.
A) True B) False

38-In a P2P architecture, the peers are owned by the service provider.
A) True B) False

39-One of the most compelling features of P2P architectures is their self-scalability.
A) True B) False

40-A process can be thought of as a program that is running within an end system.
A) True B) False

41-a process in a P2P file-sharing system can not both upload and download files.
A) True B) False

42-In the context of a communication session between a pair of processes, the process that initiates the communication is labeled as the server. The process that waits to be contacted to begin the session is the client.
A) True B) False

43-A process sends messages into, and receives messages from, the network through a software interface called a socket.
A) True B) False

44-the interface between the application layer and the transport layer within a host is also referred to as the Application Programming Interface (API) between the application and the network
A) True B) False

45-The application developer has control of everything on the application-layer side of the socket and has control of everything of the transport-layer side of the socket.
A) True B) False

46- Popular applications have not been assigned specific port numbers.
A) True B) False

47- something has to be done to guarantee that the data sent by one end of the application is delivered correctly and completely to the other end of the application. If a protocol provides such a guaranteed data delivery service, it is said to provide reliable data transfer.
A) True B) False

48- When a transport-layer protocol doesn't provide reliable data transfer, this is not acceptable for loss-tolerant applications,
A) True B) False

49- in UDP there is handshaking before the two processes start to communicate.
A) True B) False

50-UDP provides an reliable data transfer service.
A) True B) False

Good Luck

Assiut University **Faculty of Science** **Physics Department**		**Final Exam 2022** **Date:** June 19th, 2022 **Allowed Time:** 3 hours

Course Name: ***Solid State Physics*** **Course Code:** *P353*
Coordinator: Dr. *Alaa Abd-Elnaiem*

Answer all the following questions

Question (I): Put (√) or (×) for all the following sentences: **(20 Marks)**

1. Crystal structure = base + lattic ( ).
2. A crystalline material is one in which the atoms are randomly distributed relative to each other ( ).
3. The unit cell is the basic structural unit or building block of the crystal structure and defines the crystal structure by its geometry and the atom positions within it ( ).
4. The primitive unit cell contains the same kind of atoms, while the Bravais lattice contains only one lattice point ( ).
5. Non-crystalline or amorphous materials are not crystallized, or the atoms are randomly arranged ( ).
6. The primitive cell is large and contains more than one lattice point ( ).
7. In Bravais lattice, all lattice points are equivalent and all atoms in the crystal are of the same kind ( ).
8. In a simple cubic (SC) crystal structure, the number of atoms per unit cell is 2 ( ).
9. The cubic system has the greatest degree of symmetry, but the orthorhombic system has the least symmetry ( ).
10. In a simple cubic (SC) crystal structure, the atomic packing factor (APF) for this structure is 0.57 ( ).
11. The coordination number is the number of nearest neighbors or touching atoms ( ).
12. In a simple cubic (SC) crystal structure, the coordination number for this structure is 6 ( ).
13. The unit cell geometry is completely defined in terms of six parameters (lattice parameters of a crystal structure): the three edge lengths a, b, and c, and the three inter-axial angles α, β, and γ ( ).
14. In Face-Centered Cubic (FCC) crystal structure, the relation between atomic radius, R, and unit cell length, a, given by $a=2\sqrt{2}R$ ( ).
15. In the cubic system $a = b = c$ and $\alpha = \beta = \gamma = 120^\circ$ ( ).
16. In the triclinic system $a \neq b \neq c$ and $\alpha \neq \beta \neq \gamma$ ( ).
17. In a simple cubic (SC) crystal structure, the relation between atomic radius, R, and unit cell length, a, is given by $R=2a$ ( ).
18. In Body-Centered Cubic (BCC) crystal structure, the coordination number for this structure is 8 ( ).
19. In Face-Centered Cubic (FCC) crystal structure, the number of atoms per unit cell is 6 ( ).

20. In the Hexagonal Close-Packed (HCP) crystal structure, the coordination number for this structure is 8 ( ).
21. In Face-Centered Cubic (FCC) crystal structure, the atomic packing factor (APF) for this structure is 0.74 ( ).
22. In Hexagonal Close-Packed (HCP) crystal structure, the ratio between c and a is $\frac{\sqrt{8}}{3}$ ( ).
23. In Body-Centered Cubic (BCC) crystal structure, the number of atoms per unit cell is 4 ( ).
24. In Face-Centered Cubic (FCC) crystal structure, the coordination number for this structure is 10 ( ).
25. In Body-Centered Cubic (BCC) crystal structure, the atomic packing factor (APF) for this structure is 0.54 ( ).
26. In the Hexagonal Close-Packed (HCP) crystal structure, the atomic packing factor (APF) for this structure is 0.74 ( ).
27. In Body-Centered Cubic (BCC) crystal structure, the relation between atomic radius, R, and unit cell length, a, given by $a = \frac{4\sqrt{3}R}{3}$ ( ).
28. The substance in which measured properties are independent of the direction of measurement is isotropic material ( ).
29. In the Hexagonal Close-Packed (HCP) crystal structure, the number of atoms per unit cell is 4 ( ).
30. Precipitates are classified as volume defects while grain boundaries are classified as linear defects ( ).
31. In Hexagonal Close-Packed (HCP) crystal structure, the relation between atomic radius, R, and unit cell length, a, is given by $a = 2R$ ( ).
32. Planar density (PD): is taken as the number of atoms per unit area that are centered on a particular crystallographic plane ( ).
33. Schottky is equivalent to a missing atom that leaves its original site and migrates to another position in the crystal ( ).
34. Both dislocation and external surfaces can be classified as two-dimensional imperfection ( ).
35. The atomic radius (R) is defined as the distance between the atom center and the atom surface. ( ).
36. Point defects are thermodynamically stable defects ( ).
37. A screw dislocation is formed by shear stress that is applied to produce the distortion ( ).
38. Linear density (LD): is defined as the number of atoms per unit length whose centers lie on the direction vector for a specific crystallographic direction ( ).
39. A single crystal is a crystalline solid, in which the atoms' periodic arrangement is perfect or extends throughout the entirety of the specimen without interruption ( ).
40. The most efficient packing is present in BCC and SC cells ( ).

Question (II): **(18 Marks)**

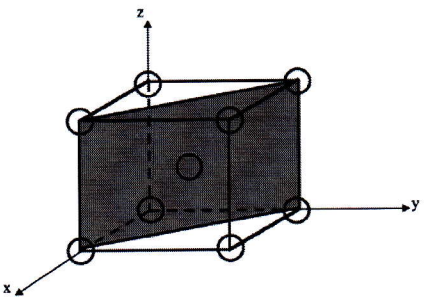
In the following multiple-choice questions, circle the correct answer. You MUST write down the steps to get the correct answer.

1. **Iridium has an FCC crystal structure, a density of 22.4 g/cm^3, and an atomic weight of 192.2 g/mol, then the radius of an iridium atom is:**

   A. 0.553nm **B. 0.439nm** **C. 0.363nm** **D. 0.211nm** **E. 0.136nm**

2. **Miller indices for the indicated plane in the figure below is:**

   A. (001) **B. (110)** **C. (101)** **D. $(\bar{1}01)$** **E. $(0\bar{1}1)$**



3. **Iron has a BCC crystal structure, an atomic radius of 0.124 nm, and an atomic weight of 55.85 g/mol; its theoretical density is closest to [Hint: N_A=6.025×10^{23} atoms/mol]:**

   A. 9.92 g/cm^3 **B. 8.40 g/cm^3** **C. 7.90 g/cm^3** **D. 6.35 g/cm^3** **E. 4.3 g/cm^3**

4. **The linear density expression for FCC [100] direction in terms of the atomic radius R is:**

   A. $\frac{1}{2\sqrt{2}R}$ **B.** $\frac{1}{\sqrt{2}R}$ **C.** $\frac{1}{2\sqrt{6}R}$ **D.** $\frac{1}{6R}$ **E.** $\frac{1}{2\sqrt{3}R}$

5. **Copper has a density of 8.89 g/cm^3, an FCC crystal structure, and an atomic weight of 63.5 g/mol. Then its atomic radius in nm [Hint: $N_A=6.023\times10^{23}$ atoms/mol]:**

A. 0.63 **B. 0.128** **C. 0.612** **D. 1.59** **E. 2.021**

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6. **Aluminum has FCC cubic structure of lattice constant a=4.04 Å, then the inter planner spacing d_{100} in Å is:**

A. 3.73 **B. 8.18** **C. 8.6** **D. 4.04** **E. 2.8**

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7. **For BCC iron, calculate the diffraction angle (2θ) for the (220) set of planes. If the lattice parameter for iron is 0.2866 nm. Also, assume that monochromatic radiation having a wavelength of 0.1790 nm is used, and the order of reflection is 1.**

A. 124.26° **B. 35.66°** **C. 88.42°** **D. 100.36°** **E. 62.13°**

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8. **For which set of crystallographic planes (hkl) will a first-order diffraction peak occur at a diffraction angle of 46.21 for BCC iron when monochromatic radiation having a wavelength of 0.0711 nm is used? (Hint: radius of the iron atom is 0.1241 nm)**

A. (310) **B. (101)** **C. (002)** **D. (300)** **E. (222)**

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9. Rhodium has an atomic radius of 0.1345 nm, its atomic weight is 102.91 g/mol, and a density of 12.41 g/cm^3. Then the crystal structure of Rhodium should be:

A. SC **B. FCC** **C. BCC** **D. HCP** **E. None of them**

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Question (III): **(12 Marks)**

In the following multiple-choice questions, circle the correct answer.

1. Which of the following is not a characteristic of a crystalline solid?

A. Definite and characteristic heat of fusion.
B. Isotropic nature.
C. A regular periodically repeated pattern of arrangement of a constituent.
D. Particles in the entire crystal.
E. A true solid.

2. Cations are present in the interstitial sites in:

A. Frenkel defect.
B. Schottky defect.
C. Vacancy defect.
D. Metal deficiency defect.
E. None of the above.

3. The Schottky defect is observed in crystals when:

A. Some cations move from their lattice site to interstitial sites.
B. An equal number of cations and anions are missing from the lattice.
C. Some lattice sites are occupied by electrons.
D. Some impurity is present in the lattice.
E. None of the **above.**

4. In which pair of most efficient packing is present?

A. HCP and BCC.
B. HCP and FCC.
C. BCC and FCC.
D. BCC and simple cubic cell.
E. None of the above.

5. **Which of the following statement is not true about the hexagonal close packing?**
   A. The coordination number is 12.
   B. It has a 74% packing efficiency.
   C. Tetrahedral voids of the second layer are covered by the spheres of the third layer.
   D. In this arrangement spheres of the fourth layer are exactly aligned with those of the first layer.
   E. None of the above.

6. **Which of the following defects decreases the density?**
   A. Interstitial defect.
   B. Vacancy defect.
   C. Frankel defect.
   D. Schottky defect.
   E. None of the above.

BEST WISHES,