Q1: **Answer THREE only (15Mark)**

a- Describe the vegetative structure of the thulus and mode of sexual reproduction in Spirogyra.

b- List the distinguishing features of fungi. Describe the structure of yeast.

c- What are lytic viruses? State briefly the steps of their infection.

d- Explain briefly the general characters of Bryophyta. Describe the vegetative structure of any one of them.

Q2: **Write short notes on the following (15 Mark)**

a- Shapes and arrangement of bacteria.

b- General characters of chlorophyta, cyanophyta and euglenophyta.

c- Life cycle of Rhizopus. Explain the steps with help of diagrams.

Q3: **Complete (15 Mark)**

1. Bacteria belong to the kingdom --------------.
2. Euglena is normally ---------- and reproduce by -------------.
3. Viruses have been classified into three groups: ------------ viruses, ---------- viruses and ----------- viruses.
4. In monokaryotic fungi, each cell contain a single -----------.
5. Basidiomycetes produce special types of spore called ----------.
6. Rod-shaped bacteria are normaly known --------------.
7. Protein sheath (Capsid) is composed of protein subunits called ---------.
8. Walls of diatoms consist basically of 2 parts: --- and ---------------.
9. The plant body of every lichen consists of two different plants: ------------- and -------.
10. Oscillatoria is --------- filament.

Q4: **Choose the one best response to each question (15 question only) (15 Mark)**

1- Cellulose is absent from the cell wall of
a- Fungi   b- Algae   c- Bryophyta   d- Bacteria

2- Procaryotic cells lack:
a- Nuclear membrane   b- Cell membrane   c- Genome   d- Cell wall

3- Bacterial cell with only one flagellum is termed as:
a- Lophotrichous   b-- Amphitrichous   c- Mono trichous   d- Peritrichous

4- Penicillium reproduces asexually by
a- Zoospores   b- Conidiospores   c- Sporangiospores   d- Chlamydospores

5- Chlamydomonas is a
a- Unicellular algae   b- Colonial alga   c- Filamentous alga   d- All of above

6- Shapes of viruses are
a. Oval   b. Spherical   c. Polyhedral   d. All of above

7- Gelatinous coating around the bacterial cells is known as
a- Capsule   b- Cell wall   c- cell membrane   d- All of above

8- The normal mode of reproduction in bacteria is by
a- Endospores   b- Binary fission   c- Budding   d- Non of above

9- Puccina graminis is an obligate parasite on
a- Zea   b- Wheat   c- Berberis   d- Wheat and Berberis

10- In volvox, the following types of cells can be recognized

| a- Somatic cells | b- Gonidia | c- Antheridia and oogonia | d- All of above |

11- Ascomycetes produce special types of ascocarps:

| a- Apothecium | b- Perithecium | c- Cleistotheium | d- All of above |

12- Reserve products of Phaeophyta consist of

| a- Laminarin | b- Mannitol | c- Starch | d- a+b |

13- Classification of fungi is based mainly on

| a- Sexual reproduction | b- Structure of mycelium | c- a+b | d- Non of above |

14- Gametophyte is leafy shoot in

| a- Riccia | b- Funaria | c- Marchntia | d- All of above |

15- Euglena contains

| a- One flagellum | b- Two flagella | c- Ring of felleglla | d- Two or more felagella |

16- Most fungi are

| a. Filmentous form | b. Unicellular form | c. Colonial form | d. All of above |

17- Peptido glycan polymer is a principal cell wall component of

| a- Fungi | b- Bacteria | c- Algae | d- A+b |

18- Colour of Cyanophyta is due to the following pigment:

| a- Chlorophyll a | b- β-Carotene | c- Phycocyanin | d- All of above |

| **Examiners:** | Prof. Mohammed El-Nagar | Prof. Mohammed Ismeal |
| | Dr. Adel El-Morsey | Dr. Doaa Darwish |

Mansoura University
Faculty of Science
Botany Department
El-Mansoura, Egypt

جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة - مصر

Final Examination in Botany
Jan 2009

Educational Year: First Level   **Program (Branch):** Geology
Subject: B (101)   **Course(s):** Systematic Botany
Time: 2 hrs   **Date:** 12/1/2009   **Full mark:** 60   **Question mark:** 15

Answer the following questions:

Q1: Fill in the blanks:
 a- Unicellular, non-motile, spherical green alga is ------------------------.
 b- Vegetative reproduction takes place by budding in --------------------.
 c- Eukaryotic cell contains endoplasmic reticulum, ---------, -----------, --------, and --------------.
 d- Bacterial cell with single polar flagellum described as ------------------and that with two polar flagellum, one at each end described as ----------.
 e- Fruiting body of Peziza is called ------------------------.
 f- Spirogyra chloroplast is -------------- shaped and Chlamydomonas is ---------- ----- shaped.
 g- Cyanobacteria reproduce asexually by ---------- and ----------.
 h- Fucus reproduces sexually by means of ------------- and ------------.
 i- Uniseriate, unbranched, non-heterocystous filament of cyanobacteria is ------.

Q2: Write short notes with labeled illustrations on **THREE** only of the following:
 a- Compare prokaryotic cell and Eukaryotic cell structure.
 b- Lytic cycle of T-even Bacteriophage.
 c- Structure of perfect flower.
 d- Structure of Lycopodium Strobilus.

Q3: A- Choose the correct answer:
 1- The Tetraspore of polysiphonia germinates to produce:
  a- Cone   b- Sporophyte
  c- Carposporophyte   d- Tetrasporophyte
 2- Which of the following is belonging to kingdom Protista:
  a- Puccinia graminis   b- Pinus
  c- Anabaena   d- Ulva
 3- Which of the following does not reproduce sexually
  a- Asperigillus   b- Chlamydomonas
  c- Fucus   d- Nostoc
 4- Fungal cell wall consists mainly of
  a- cellulose   b- chitin
  c- glycogen   d- mucilage

 B- With labeled diagrams compare and contrast sporophytes of Riccia and Marchantia.

Q4: Discuss the Whittaker's System of classification of living organisms, giving the characteristic features of each group.

Examiners: Prof. Samy Shaaban   Prof. Zakaria Awad
                   Prof. Yehia Osman   Dr. Mervat Hosney

ANSWER THE FOLLOWING QUESTION

1- a) On the basis of Molecular orbital theory, answer **THREE** only of the following:
(7.5 Marks)

    i) Which molecule is more stable O_2 or O_2^-?
    ii) Which molecule is paramagnetic N_2 or O_2?
    iii) Is Be_2 molecule stable?
    iv) Calculate the bond order of C_2^-?
    v) Predict the relative stability of N_2^+ and N_2^- ?

  b) What is the emperical formula of a compound composed 50% oxygen and 50% sulpher by mass (Atomic weight of O = 16 , S =32) (4 Marks)

  c) How many grams of $AgNO_3$ are needed to prepare 500 ml. of 0.3 Molar?
(Atomic weight Ag = 107, N = 14, O = 16) (3.5 Marks)

2-a) Define the following: Hund's Rule- Pauli exclusion principle (3 Marks)

  b) Calculate the wavelength in **(nm)** of the line in the spectrum of hydrogen atom that corresonds to an electron transition from the third to the second level (Rydberg constant = 109678 cm-1). Does this line occure in the visible light region? , Which series does this line belong? (4.5 marks)

  c) Draw the Lewis structure for **TWO** only of the following :
($POCl_3$ - SO_4^{--} - NH_3) (5 Marks)

  d) Draw the resonance structures for N_2O **or** CO_3^{--} (2.5 Marks)
($_{15}P$, $_8O$, $_{17}Cl$, $_{16}S$, $_7N$, $_1H$)

3- a) Choose the atom with larger first ionization energy : (1.5 Marks)
    i) Be or B   ii) Cl or Br   iii) Li or Na   ($_4Be$, $_5B$, $_{17}Cl$, $_{35}Br$, $_3Li$, $_{11}Na$)

  b) Write ($\checkmark$) or (x) on the following statements : (4 Marks)
    i) The size of atom increases with increasing atomic number in period 2 . .
    ii) The first ionization energy is less than the second ionization energy .
    iii)The size of Fe^{3+} is smaller than Fe^{2+} .
    iv) The first ionization energy decreases whith increasing atomic number in group IA .
  c) Define: Lattice energy - Electron affinity (2 Marks)

d) On the basis of VSEPR , predict the geometry of **TWO** only of the following:
(SF_4 , H_2O , ClF_4^-) ($_{16}S$, $_9F$, $_8O$, $_{17}Cl$, $_1H$)   (4 Marks)

e) Which bonds is more polar : i) N-O or C-O   ii) S-F or O-F   (1 Marks)

f) Indicate the type of hybridization and structure of SF_6 or BF_3
($_{16}S$, $_9F$, $_{15}B$)   (2.5 Marks)

4-a) Define **TOW** only of the following :   (2 Marks)
  i) Percentage yield   ii) Emperical formula   iii) Limiting reactant

b) How many grams of CO_2 will be formed when a mixture containing 4.6 gram
  C_2H_5OH and 4.8 gram O_2 is ignited ?
  (atomic weight C=12 , O=16 , H=1)   (3.5 Marks)

c) Calculate the number of atoms of Fe in 7.98 gram of Fe_2O_3 .   (2 Marks)
  (atomic weight Fe = 55.8 , O= 16) , Avogadro s number = 6.022×10^{23}

d) Write the four quantum number for the last electron ($4p^4$, $3s^2$) .   (3 Marks)

e) Complete the following table :   (4.5 Marks)

Element	Electonic configuration	Group	Period	Type
$_{35}A$	[Ar] ………..	….	…..	….
$_{51}B$	[Kr] …………	….	….	….
$_5C$	[He] ………..	…..	….	…

Type = Metal or nonmetal .

Examiners : 1- Prof. Dr. M. M. Bekheit   2- Prof. Dr. G. M. Abu –Elreash
          3- Prof. Dr. A.A. El-Asmy   3- Dr. R. M. El-Shazly

Best my wishes

✿✿✿

ANSWER THE FOLLOWING QUESTIONS

1) What is the empirical formula for a compound composed of 43.7% P and 56.3% O by mass? **(5 points)**

2) Ethylene, C_2H_4 (1.93 gm) burns in air , O_2 (5.92 gm) to form CO_2 and H_2O. **(10 points)**
   (i) Which reactant is the limiting reactant?
   (ii) How many grams remain from the remaining reactant?
   (iii) How many grams of CO_2 produced?
   (iv) If the actual yield of CO_2 is 4.0 gm; Calculate the yield percent of CO_2.

3) For elements with Z = 3, Z = 8. What are the four quantum numbers for the last electron in each element? **(4 points)**

4) Diagram the Lewis structure for ClO_3^-. **(4 points)**

5) What are the frequency and wave length of the line in the hydrogen spectrum that corresponds to an electron transition from n = 3 to the n = 2 level ? **(4 points)**

6) Using Valence Shell Electron Pair Repulsion model (VSEPR-model), predict the geometry of the following molecules:
   (i) $BeCl_2$ (ii) $SnCl_2$ **(8 points)**

7) On the bases of the Molecular Orbital Theory (MOT), calculate the bond order for NO and O_2 molecules? **(7 points)**

8) What hybrid orbitals would be expected for the central atom in BF_3? **(3 points)**

9) Chose the most correct answer: **(15 points)**
   1- The atom with Z = 15 is
      a) $[Ne] 3s^0 3p^5$ b) $[Ne] 3s^1 3p^4$ c) $[Ne] 3s^2 3p^3$ d) $[Ar] 3s^2 3p^3$ e) $[Ne] 4s^2 4p^3$
   2- The element with electronic configuration $1s^2 2s^2 2p^4$ is present on
      a) Second period   b) s-block   c) Second group   d) All the above   e) Non of the above
   3- The geometry of CO_2 is
      a) Octahedral   b) Tetrahedral   c) T-shape   d) Linear   e) Non of the above
   4- The ionization energy of B is ....than that of Be
      a) Same   b) lower   c) higher   d) no relation   e) non of the above
   5- On the bases of the Molecular Orbital Theory (MOT), the bond order of O_2 molecule is
      a) 2.5   b) 3   c) 1   d) 0.5   e) 2

→

6- The antibonding molecular orbital energy is .... than that of the bonding
   a) Lower   b) Same   c) Higher   d) Not present   e) All the above are wrong

7-   The angle in NH_3 is $107°$ while in CH_4 is $109.5°$ due to
   a) Temperature change   b) Presence of unshared electron pairs   c) Pressure effect
   d) Non of the above   e) All the above

8- All the compounds are covalent except
   a) O_2 b) CH_4 c) NO   d) CaO   e) F_2

9- The persent composition of S in SO_2 is
   a) 40%   b) 32%   c) 50%   d) 74%   e) 91%

10- The molarity of NaOH (40 g dissolved in 500 ml) solution is
   a) 1M   b) 2M   c) 0.35M   d) 0.5 M   e) 6M

(Molar mass: H = 1, C = 12, O = 16, Na = 23, P = 31, S = 32)

(Atomic number: H = 1, Be = 4, B = 5, C = 6, N = 7, O = 8, F = 9, Mg = 12, Cl = 17, Sn = 50)

Best Wishes
Prof. Kamal Ibrahim
Prof. Nagwa Nawar
Prof. Sahar Mostafa
Dr. Raafat Mansour

جامعة المنصورة
كلية العلوم
قسم الرياضيات
المادة: رياضيات أساسية (1) جبر وهندسة (ر 111)

امتحان دور يناير 2009م
الفرقة الأولي – المستوي الأول: برامج*
الزمن: ساعتان – التاريخ: 2009/1/14
الدرجة الكلية: 80 درجة

*برامج: كيمياء – نبات وكيمياء – ميكروبيولوجي – كيمياء حيوي – جيوفيزياء – جيولوجيا – فيزياء حيوي – علوم البيئة

أجب عن الأسئلة الآتية

السؤال الأول: (20 درجة)

(أ) أثبت باستخدام مبدأ الاستقراء الرياضي أن: (10 درجات)

$$\frac{1}{1\times3}+\frac{1}{3\times5}+\ldots+\frac{1}{(2n-1)(2n+1)}=\frac{n}{2n+1}$$

(ب) حلل الكسر $\dfrac{x+8}{x^3-16x}$ إلى كسوره الجزئية. (10 درجات)

السؤال الثاني: (18 درجة)

(أ) أوجد قيمة $(1+i)^{3/4}$. (9 درجات)

(ب) بدون فك المحدد، أوجد قيمة x التي تحقق: (9 درجات)

$$\begin{vmatrix} 1 & -1 & 1 \\ 1 & x & x^2 \\ 1 & x^2 & x^4 \end{vmatrix}=0$$

السؤال الثالث: (22 درجة)

(أ) باستخدام معكوس المصفوفات، حل نظام المعادلات الخطية الآتية: (12 درجات)

$$x+y+2z=9$$
$$2x+4y-3z=1$$
$$3x+6y-5z=0$$

(ب) أوجد معادلة الخط المستقيم الذي يمر بنقطة تقاطع المستقيمين $2x+3y+5=0, \; x-3y+5=0$، وعمودي علي المستقيم $x-2y+1=0$. (10 درجات)

السؤال الرابع: (20 درجة)

(أ) أوجد كل من: الرأس ومعادلة المحور ومعادلة الدليل والبؤرة وطول الوتر البؤري العمودي للقطع المكافئ: $x^2-2x-4y-3=0$ ، ثم ارسمه. (10 درجات)

(ب) عين معادلة القطع الناقص الذي مركزه $(5,-3)$، وإحدى بؤرتيه $(3,-3)$ وطول محوره الأصغر يساوى $4\sqrt{3}$. (10 درجات)

مع أطيب أمنيات أسرة التدريس بالتوفيق

أجب عن الأسئلة الآتية: (٨٠ درجة)

السؤال الأول: (٢٠ درجة)

(أ) أثبت باستخدام مبدأ الاستقراء الرياضي أن :

$$1^2 + 3^2 + 5^2 + \ldots + (2n-1)^2 = \frac{n(4n^2-1)}{3}$$

(ب) أوجد حل مجموعة المعادلات الآتية **باستخدام المصفوفات:**

$$3x + 2y + z = 3, \quad x + y + z = 2, \quad x - 3y + z = 6$$

السؤال الثاني: (٢٠ درجة)

(أ) حل الكسر الآتي إلى كسوره الجزئية:

$$\frac{4x - 2}{(x^2 - 2x + 1)(x^2 + 1)}$$

(ب) أوجد حل معادلة الدرجة الثالثة الآتية باستخدام طريقة كردان:

$$x^3 - 6x - 4 = 0$$

السؤال الثالث: (٢٠ درجة)

(أ) أوجد مفكوك $\cos^5 \theta$ بدلالة جيوب و جيوب تمام الزاوية θ .

(ب) أوجد قيمة c بحيث تمثل المعادلة $x^2 - 5xy + 4y^2 + x + 2y + c = 0$ خطين مستقيمين ، ثم أوجد المعادلة المشتركة للمستقيمين المارين بنقطة تقاطع هذين المستقيمين و عموديين عليهما.

السؤال الرابع: (٢٠ درجة)

(أ) أوجد المحل الهندسي لنقطة تتحرك في المستوى بحيث يكون بعدها عن النقطة $(5,0)$ يساوي نصف بعدها عن المستقيم $x = 20$.

(ب) أوجد إحداثي كل من البؤرة و الرأس ومعادلتي الدليل و المحور و طول الوتر البؤري العمودي للقطع الذي معادلته $y = x^2 - 4x + 2$ ثم ارسمه.

تمنياتنا بالتوفيق و التفوق ،،،

Mansoura University
Faculty of Science
Zoology Department
Subject: Zoology
Courses: Principals of cell biology,
histology and genetics (Z 101)

Educational year: 1ˢᵗ year science
Branch: Biology; Zoology/chemistry,
Botany/chem., Microbiology, Environmental S
Date: 26/1/2009
Time allowed: 2 hrs
Full mark: 60 Mark (20/question)

Attempt only <u>three</u> questions

1. Write short accounts on:

   a) Gene structure in prokaryotes and eukaryotes.   10 Marks

   b) Chromosome morphology.   10 Marks

2. Only with drawings describe:

   a) DNA labeling by primer extension.   10 Marks

   b) Stages of mitosis.   10 Marks

3. Only with drawings describe:

   a) Plasma membrane.   10 Marks

   b) Types of epithelial tissues giving an example for each type.   10 Marks

4. Write all what you know about:
   a) Mitochondria.   10 Marks
   b) Cells and fibers of the proper connective tissue.   10 Marks

Our Best Wishes
Examiners:
1. Prof. Dr. Ahmed M. Abdeen
2. Ass. Prof. Sherif H. Abdeen
3. Dr. Doaa A. Sakr
4. Dr. Mohamed Sobh