



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

- Describe the vegetative structure of the thulus and mode of sexual reproduction in Spirogyra.
- List the distinguishing features of fungi. Describe the structure of yeast.
- What are lytic viruses? State briefly the steps of their infection.
- 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)**

- Shapes and arrangement of bacteria.
- General characters of chlorophyta, cyanophyta and euglenophyta.
- Life cycle of Rhizopus. Explain the steps with help of diagrams.

Q3: **Complete (15 Mark)**

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

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- Puccinia 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- Cleistothecium	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- Marchantia	d- All of above
15- Euglena contains			
a- One flagellum	b- Two flagella	c- Ring of flagella	d- Two or more flagella
16- Most fungi are			
a- Filamentous form	b- Unicellular form	c- Colonial form	d- All of above
17- Peptidoglycan 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



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- Aspergillus 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

Mansura University
Faculty of Science
Chemistry Department
El-Mansoura, Egypt

First Term Examination Jan. 2009

Educational Year: First Level

Program: Botony and Zoology

Time: 2 hours

Subject : Chemistry

Date: 21/1 / 2009

Course : Chem (121)

Full Mark : 90 Marks

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ANSWER THE FOLLOWING QUESTION

- 1- a) On the basis of Molecular orbital theory, answer **THREE** only of the following: (7.5 Marks)
- Which molecule is more stable O_2 or O_2^- ?
 - Which molecule is paramagnetic N_2 or O_2 ?
 - Is Be_2 molecule stable?
 - Calculate the bond order of C_2^{2-} ?
 - Predict the relative stability of N_2^+ and N_2^- ?
- b) What is the empirical formula of a compound composed 50% oxygen and 50% sulphur 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 corresponds to an electron transition from the third to the second level (Rydberg constant = 109678 cm^{-1}). Does this line occur 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 : (5 Marks)
($POCl_3$ - SO_4^{2-} - NH_3)
- d) Draw the resonance structures for N_2O or CO_3^{2-} (2.5 Marks)
($_{15}P$, $_{8}O$, $_{17}Cl$, $_{16}S$, $_{7}N$, $_{1}H$)
- 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 ($_{4}Be$, $_{5}B$, $_{17}Cl$, $_{35}Br$, $_{3}Li$, $_{11}Na$)
- b) Write (✓) or (x) on the following statements : (4 Marks)
- The size of atom increases with increasing atomic number in period 2 .
 - The first ionization energy is less than the second ionization energy .
 - The size of Fe^{3+} is smaller than Fe^{2+} .
 - The first ionization energy decreases with 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:
 (SF₄, H₂O, ClF₄⁻) (₁₆S, ₉F, ₈O, ₁₇Cl, 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 SF₆ or BF₃
 (₁₆S⁶⁺, ₉F, ₁₅B) (2.5 Marks)

4-a) Define **TOW** only of the following : (2 Marks)

i) Percentage yield ii) Empirical formula iii) Limiting reactant

b) How many grams of CO₂ will be formed when a mixture containing 4.6 gram C₂H₅OH and 4.8 gram O₂ 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 Fe₂O₃. (2 Marks)
 (atomic weight Fe = 55.8, O= 16), Avogadro s number = 6.022x 10²³

d) Write the four quantum number for the last electron (4p⁴, 3s²). (3 Marks)

e) Complete the following table : (4.5 Marks)


Element	Electronic configuration	Group	Period	Type
₃₅ A	[Ar]
₅₁ B	[Kr]
₅ C	[He]

Type = Metal or nonmetal .

Examiners : 1- Prof. Dr. M. M. Bekheit
 3- Prof. Dr. A.A. El-Asmy

2- Prof. Dr. G. M. Abu -Elreash
 3- Dr. R. M. El-Shazly

Best my wishes

<p>Mansoura University Faculty of Science Chemistry Department Subject: Chemistry Course(s): Principal Inorganic (Chem 121)</p>		<p>First Term First level Date: Jan. 2009 Time Allowed : 2 hours Full Mark: 60 Points</p>
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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, C₂H₄ (1.93 gm) burns in air , O₂ (5.92 gin) to form CO₂ and H₂O. (10 points)
 - (i) Which reactant is the limiting reactant?
 - (ii) How many grams remain from the remaining reactant?
 - (iii) How many grams of CO₂ produced?
 - (iv) If the actual yield of CO₂ is 4.0 gm; Calculate the yield percent of CO₂.
- 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 ClO₃⁻. (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) BeCl₂
 - (ii) SnCl₂
 (8 points)
- 7) On the bases of the Molecular Orbital Theory (MOT), calculate the bond order for NO and O₂ molecules? (7 points)
- 8) What hybrid orbitals would be expected for the central atom in BF₃? (3 points)
- 9) Chose the most correct answer: (15 points)
 - 1- The atom with Z = 15 is
 - a) [Ne] 3s⁰ 3p⁵
 - b) [Ne] 3s¹ 3p⁴
 - c) [Ne] 3s² 3p³
 - d) [Ar] 3s² 3p³
 - e) [Ne] 4s² 4p³
 - 2- The element with electronic configuration 1s² 2s² 2p⁴ 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 CO₂ is
 - a) Octahedral
 - b) Tetrahedral
 - c) T-shape
 - d) Linear
 - e) Non of the above
 - 4- The ionization energy of B isthan 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 O₂ 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 percent 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

Mansoura University
Faculty of science
Physics Department
El-Mansoura, Egypt



جامعة المنصورة
كلية العلوم
قسم الفيزياء
المنصورة- مصر

First Term Examination Jan. 2009

Educational Year: First Year
Time: 2 Hours
Date: 17 / 1 / 2009

Subject: Physics
Course(S): 101 Phy.
Properties of matter & Heat
Full Mark: 60

Answer the following questions :

- 1) A- Define the following : Stefan's law – The black body – Mechanical heat equivalent – Specific heat capacity . [6]Mark
B- The melting point of gold is 1064°C , express this temperature (i) in degree Fahrenheit and (ii) in Kelvin . [4]Mark
C- Discuss the change of phase for water. [5]Mark
- 2) A- Explain and drive an expression for
i) Temperature distribution along a uniform perfectly lagged bar. [5]Mark
ii) Relation between the coefficient of area expansion and the coefficient of linear expansion. [5]Mark
iii) Bunsen's ice calorimeter . [5]Mark
- 3) A- Define the following : Hooke's law – Shear modulus – Kepler's laws for planetary motion – Pascal's principle – Viscosity. [9]Mark
B- A 80 Kg mass is hung on a steel wire having 18 m long and 3mm diameter. What is the elongation of the wire, knowing Young's modulus for steel is $21 \times 10^{10} \text{ N/m}^2$. [6]Mark
- 4) A- Prove that Bernoulli's equation in fluids mechanics is a good example of conservation of energy (derive the equation and explain). [8]Mark
B- Find the escape speed for an atmospheric particle 1000 Km above the earth's. Earth's radius is $R = 6.4 \times 10^6 \text{ m}$ and $g = 9.8 \text{ m/sec}^2$ on the earth's surface. [7]Mark

Examiners Dr. Nivine Radwan & Dr. M.Kabeel

Mansoura University
Faculty of Science
Zoology Department
Subject: Zoology
Courses: Principles 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 three 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