	Mansoura University
(logo)	**Mansoura University** **Faculty of Science** **Chemistry Department**
Second Level Biochemistry **Course Title: Amino acids & Proteins** **Metabolism** **Code No.: Biochemistry 277**	**Summer Course Examination** **Date: 22/ 8 / 2013** **Time allowed: 2 hours** **Full Mark: 80 Marks**

Note: Express your answers by formulae, equations, pathways, figures and diagrams wherever possible,

Answer all questions

Question 1:   **(20 Marks)**

A- Write the chemical structure for the following: (12 Marks)
- **i-** Glycochollic acid.
- **ii-** Carnosine.
- **iii-** Hippuric acid.
- **iv-** Dopamine.
- **v-** Anserine.
- **vi-** Histamine.

B- Write (√) or (X): (8 Marks)

i- Type I citrullinemia usually appears in the first few days of life however, Type II citrullinemia usually appear during adulthood.

ii- Excretion of Figlu following a dose of arginine has been used to detect folic acid deficiency.

iii- Glycinuria results from a defect in renal tubular reabsorption.

iv- The 24-hour urinary excretion of creatinine is proportional to muscle mass.

v- All defects in urea synthesis result in ammonia intoxication.

vi- Ochronosis results in late and advanced steps of Alkaptonuria.

vii- Serotonin and 5-hydroxytryptophane are metabolized to the corresponding acids by monoamine oxidase.

viii- N-Acetylation of Serotonin, followed by o-methylation in the pineal body, forms melatonin.

Question 2:   **(20 Marks)**

A- Choose the correct answer: (12 Marks)

1- These are neurotransmitters derinved from amino acids, except:
- a) Histamine.
- b) Epenephrine.
- c) Dopamine.
- d) γ–aminobutyrate.

2- The following cases are negative nitrogen balance except one:
- a) Marasmus.
- b) Advanced cancer.
- c) Kwashiorkor.
- d) Pregnant women.

3- All are glucogenic amino acids except:
- a) Aspartate.
- b) Lysine.
- c) Glutamate.Asparagine.
- d) Cysteine.

4- The metabolic defect of tyrosine aminotransferase (reaction 1) is detected in……..
- a) Neonatal tyrosinemia.
- b) Tyrosinemia Type 2
- c) Tyrosinemia Type 1.
- d) Alkaptonuria.

5- One of these cases is associated with low urinary levels of 3-methylhistidine:

    a) Carnosinuria.   b) Homocarnosinosis.

    c) Wilson's disease.   d) Histidinemia.

6- Mammalian tissues form β–alanine from the following, <u>except</u>:

    a) Cytosine.   b) Cysteine.

    c) Carnosine.   d) Anserine.

B- Define each of the following: *(8 Marks)*

  i) Hyperargininemia.   ii) Hyperprolinemia Type.

  iii) Positive nitrogen balance.   vi) Protein $t_{1/2}$.

Question 3:

                                                  (20 Marks)

  A-Give an account on the following: *(10 Marks)*

    i- Hartnup disease.

    ii- Maple syrupe urine disease.

  B- Write the steps of urea cycle. *(10 Marks)*

Question 4:

                                                  (20 Marks)

  Illustrate the biosynthesis of the following by chemical equations:

 i- Anserine from histidine.

ii- Epinephrine from tyrosine.

iii- Creatine and creatinine.

iv- Glycine from 3-phosphoglycerate.

      Examiner: *Dr. Nivin A. Salah*

Mansoura University
Faculty of Science
Chemistry Department
Chem. 241
Physical Chemistry (1)
(Chem.Thermodynamics)

Second Year Biochem.
20/8/2013
Time Allowed: 2 hrs
Full Mark: [60]
Final Exam

كلية العلوم
جامعة المنصورة

Answer the following questions:

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(1) Complete the following: (each of 1 mark = 10 marks)

a) Enthalpy equals ---------------- b) Isothermal means-------------c) A equals ------------------------

d) Specific heat capacity is -------------------- e) Joule-Thompson experiment proves ------------------

f) For expansion of an ideal gas, for isothermal change the change in enthalpy is ------------ and

for adiabatic change is ------------------- g) During the isothermal expansion of an ideal gas against

atmospheric pressure, the internal energy will -------------------- h) When there is exchange of heat

and mass between system and surroundings the process is said to be -------------------- i) The

properties which are dependent on the total amount of the substance of the system are called------

-------- j) For adiabatic expansion of an ideal gas the relation between volume and pressure is ----

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2) Discuss the following:

a) Entropy of an ideal gas   (5 marks)

b) Formulation of the third law of thermodynamics and how entropy can be determined from it?
                                                                                                   (10 marks)

c) Relation between temperature and volume for adiabatic processes   (10 marks)

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3) a) For a certain process, ΔA (system) > 0 the process: (a,b each of 4 marks)

i-is spontaneous   ii- is isothermal   iii- is endothermic   iv- is at equilibrium

b) The equilibrium constant for a chemical reaction will be equal to one when:

i) $\Delta H > 0$ and $\Delta S < 0$ ii) $\Delta H > 0$ and $\Delta S > 0$ iii) $\Delta H < 0$ and $\Delta S > 0$ iv) $\Delta H = 0$ and $\Delta S = 0$

c) An ideal gas ($C_p = 15$ J mol^{-1} K^{-1}) is expanded reversibly and adiabatically from a volume of 5 L at a pressure of 760 mm Hg and temperature 27 °C until the volume is 10 L calculate: a) the final temperature and pressure of the gas b) q, w, ΔU and ΔH for the process.   (17 marks)

Examiner: Prof. Dr. Abd El-Aziz S. Fouda

Mansoura University		Summer Semester
Faculty of Science		2 nd level(Chemistry)
Chemistry Department		Date:Aug. 2013
Subject: Analytical Chemistry		Time allowed:2 hours
Course: **Titrimetry (Volumetry)**		Full Mark:60 Marks
Course code:Chem(211)		

Answer the Following Questions

1) **Discuss Five methods used for expressing the concentration of a solution.**

2) **Number of moles of 5.8 g NaCl = ……………, when dissolved in 500 ml, the solution has molarity of ……….(At.wt Na=23 Cl=35.5)**

3) **Calculate the volume of conc. nitric acid, *having sp. gravity 1.42 and 69% w/w percentage concentration*, required to prepare 1.00L of 0.20 M HNO3. What is the volume of the prepared acid needed to react quantitatively with 0.0106g of Na_2CO_3 (H= 1.00, N=14.00, O= 16.00, Na=23.00, C=12.00)**

4) **Write equivalent weight with respect to molecular weight for the following compounds**

   (i) Na_2CO_3 using ph.ph as indicator ,   eq.wt=M.wt/……

   (ii)H_3PO_4 using M.O as indicator,   eq.wt=M.wt/……

   (iii)$Cr_2(SO_4)_3$ eq.wt=M.wt/……

5) **Calculate the pH of 50ml of 0.1M CH_3COOH on addition of the following volumes of 0.05M NaOH:**
    a) 0 ml   b) 50ml   c) 100ml   d) 120ml

Knowing that (Ka $_{CH3COOH}$= 1.8x10^{-5}, pKa= 4.76)

6) **Indicate in details the types of EDTA titrations and its application in analysis of mixtures**

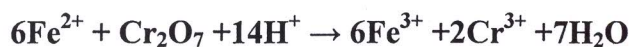7) **Define the following:**
(i) Standard solution   (ii) Oxidation- reduction reaction

(iii) Self indicator.   iv) Solubility product

8- **In titration of Fe^{2+} in acidic medium with 0.0206M $K_2Cr_2O_7$, volume of $K_2Cr_2O_7$ necessary was 40.2ml according to the following equation:**

$$6Fe^{2+} + Cr_2O_7 +14H^+ \rightarrow 6Fe^{3+} +2Cr^{3+} +7H_2O$$
   Calculate the weight of iron(in mg)

9- Suppose 0.7144 gm of KHP was used to standardize $Mg(OH)_2$ solution, as in the following reaction:

$$Mg(OH)_2 + 2KHC_8H_4O_4 \rightarrow Mg(KC_8H_4O_4)_2 + 2H_2O$$
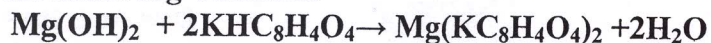
If 31.18ml of $Mg(OH)_2$ was needed, what is the normality of Mg(OH)2?

10- Prove that pH range for neutralization indicators is given by pH= pKa ± 1

11-Discuss the different methods for detecting the equivalent point in precipitation titrations.

12- Define the following terms: F test, confidence limit, accuracy and precision.

13- Explain why metal ion titrated with EDTA need to be buffered at definite pH

14 - 0.5 gm of $CaCO_3$ is dissolved in HCl and titrated with EDTA solution .If 50 ml of EDTA is needed at equivalent point. Find the molarity of EDTA (Ca=40, C=12, O =16)

15-
i-Define: metallic indicators, buffer solution, titration error, equivalence and end points.
 ii-Why buffer solutions resist the change in the pH when small amount of strong acid or strong base is added to it?

(Fe=56, K=39, O=16, C=12,Ca=40, H= 1.)

_____

Good luck

Prof. Dr Mohamed El Defrawy
prof.Dr. Magdi E. Khalifa

Mansoura University		**Summer term Examination**
Faculty of Science		**Subject: Chemistry (241)**
Chemistry Department		**Second level**
Course: Physical Chemistry		**Full Mark: 60 Marks**
Date : 20/ 08/ 2013		**Time Allowed : 2hours**

Answer the Following Questions - 20 marks for each question:

Question-I

1- Prove that the efficiency of Carnot cycle $= 1 - T_c/T_h$.

2- Prove for spontaneous process $\Delta G < 0$

3- For a given reaction, $\Delta H = -19.9$ kJ/mol and $\Delta S = -55.5$ J/K-mol. At what temperature the reaction will have $\Delta G = 0$. Assuming that ΔH and ΔS do not vary with temperature.

4- The standard Gibbs energy of reaction for the following reaction at $25°C$ is -457.14 kJ: $2H_{2(g)} + O_{2(g)} \rightarrow 2H_2O_{(g)}$. In a system where $P_{H2} = 0.775$ atm, $P_{O2} = 2.88$ atm and $P_{H2O} = 0.556$ atm, determine ΔG_{rxn} and predict the direction in which the system will shift to reach equilibrium.

Question-II

1- Prove for adiabatic expansion $P_1 V_1^\gamma = P_2 V_2^\gamma$

2- Drive the relation $\Delta G = -RT \ln K_{eq}$

3- What is the change in entropy when 2.5L of O_2 and 4.5L of N_2 each at 1atm and $25°C$ are mixed to form homogenous mixture at same condition?

4- The normal boiling point of n-butanol is $118.0°C$ and the heat of vaporization at this temperature is 10.61 kJ mol^{-1}. At what temperature does n-butanol boil at a pressure of 20 mm Hg?

Question-III

1- Derive the relationship: $\Delta G_{sys} = -T \Delta S_{univ}$

2- Calculate the entropy change for 1.00 mole of HF when it is cooled at constant pressure from 500 K to 250 K. $C_p = (5/2)R$.

3- One mole of ideal gas at 27 °C and 100 bar is allowed to expand reversibly and isothermally to 5 bar. Calculate the amount of heat adsorbed

3- For the following reaction: $2H_2S_{(g)} + SO_{2(g)} \rightarrow 2H_2O_{(l)} + 3S_{(s)}$. Using the following data calculate the equilibrium constant at $25°C$.

Substance	$H_2S_{(g)}$	$SO_{2(g)}$	$H_2O_{(l)}$	$S_{(s)}$
$\Delta H°_{f, 298K}$ (kJ/mol)	-22.2	-296.6	-285.9	0
$\Delta S°_{298K}$ (J/mol. K)	205.6	247.9	70.1	31.9

GOOD LUCK   **Prof. Dr. A. I. Ahmed, Dr. K .Shalabi and Dr. A. Awad**

الفرقة : الثانية	كلية العلوم – قسم الرياضيات	امتحان الفصل الصيفى
المادة : رياضيات بحته – ر ٢٠١		الزمن: ساعتان
الدرجة الكلية : ٨٠ درجة		التاريخ : ٢٠١٣/٨/١٨

الشعب: ك +ك حيوى+ميكروبيولوجى+ك ونبات+ك وحيوان +جيولوجيا+علوم بيئة

أجب عن الأسئلة الآتية: كل سؤال ٢٠ درجة

[1] أ) ناقش اتصال الدالة الآتية عند النقطة (0,0)

$$f(x,y) = \begin{cases} \dfrac{3x^2 y}{7x^2 + y^2} & , \quad (x,y) \neq (0,0) \\ 0 & , \quad (x,y) = (0,0) \end{cases}$$

ب) اذا كانت $u = \tan^{-1}(\dfrac{x^3 + y^3}{x - y})$ فاثبت أن $xu_x + yu_y = \sin 2u$.

[2] أوجد الحل العام للمعادلات التفاضلية

a) $(x + y - 1)dx - (3x + 3y + 1)dy = 0$

b) $(x^2 + xy + 3y^2)dx = (x^2 + 2xy)dy$

[3] أ) استخدم قاعدة السلسلة لحساب $\dfrac{\partial z}{\partial u}$ اذا كانت $z = x \ln y$, $x = 3u + 2v$, $y = uv$

ب) أوجد الحل الخاص للمعادلة $y' + \dfrac{1}{x} y = \dfrac{1}{x^2}$, $y(1) = 1$.

[4] أ) أوجد قيمة التكامل $\iint_R (x^2 + y^2)dxdy$ حيث R هى المنطقة المحصورة بين الدائرتين

$x^2 + y^2 = 16$, $x^2 + y^2 = 4$.

ب) احسب التكامل الخطى $\int_c xy\,dx + x^2 dy$ حيث c هى القطعة المستقيمة من النقطة (2,1) الى النقطة (4,5).

مع أطيب التمنيات بالتوفيق   أسرة التدريس

Mansoura University

Faculty of Science

Physics Department

Summer Exam.

Date: Aug. 2013

Time Allowed: 2 hours

Full Mark: 80 Marks

Subject: Physics   Course: 221 ف Physical Optics

Answer the following questions:

1] A) Demonstrate an explanatory diagram of the optical arrangement of Young's experiment of interference. Drive the theory of interference for this experiment.

[18 Marks]

B) When one of the beams of Mach-Zehnder interferometer passes through a wide tunnel of length 20 meters, 200 fringes cross the field of view. Calculate the change in refractive index if the wavelength of light is equal to 5890 A°.

[9Marks]

2] A) Explain with the necessary theory the interference in thin films due to reflected light.

[16 Marks]

B) Explain how you can obtain plan polarized light by reflection.

[11 Marks]

3] A) Discuss Fraunhofer diffraction pattern when using a rectangular slit. Drive and expression for the intensity distribution of observed diffraction pattern.

[20 Marks]

B) Calculate the angular spectrum separation of two D lines of Sodium of wavelengths 5890 A° and 5896 A° in the second older spectrum produced by diffraction grating. The light being incident normally on the grating which have 6000 lines / Cm.

[6 Marks]

Good Luck
Examiner: Prof. Dr. Taha Sokkar

Mansoura university
Faculty of science
Chemistry Department
Subject : Biochem.271
Course : Biochemistry
of carbohydrates

summer Exam 2013
Second Level BioChem
Students
Date : 27 August, 2013
Time Allowed : 2 hours
Total Mark : 80 Marks

Answer the following questions
Provide your answer with formula, equations, pathways, figures or tables wherever possible

[1] A) Complete the following biotransformations: (30 marks)

1- HCN + D- glucose →
2- Conc. HNO_3 + D-fructose →
3- Bromine water + oxygen + glyceraldehydes →
4- Hydrogen peroxide + dil.HNO_3 + D-glucose →
5- Conc. H_2SO_4 + D-galactose →
6- Dilute alkali (under low heat condition) + D-glucose →

[2] A) Give the structure and give ONE important function for each of the following: (15 marks)

1-Sialic acid
2-Glucuronic acid
3-Saponins
4-Cellulose
5-Hyaluronic acid

B) What is the meaning of : (15 marks)
1- Galactosemia
2- Semen sugar
3- Mutarotation.
4- Racemic mixture
5- Deoxy sugar

PTO

[3] A) Put (√) for write sentence and put (X) for wrong sentence:(20 marks)

1- Stereoisomerism is molecules having the same structure but differ in position of their different groups ant atoms in the space.

2- Reduction of fructose gives sorbitol and mannitol.

3- Ribose and arabinose both gave erythrose on ruff-degradation.

4- Erythrose gave a mixture of ribose and arabinose on Killiani-Fischer synthesis.

5- Arabinose gave a mixture of glucose and mannose on Killiani-Fischer synthesis.

6- Lactose is non-fermentable due to absence of lactase enzyme from yeast.

7- Sucrose is non-ozazone forming, not mutarotating and non-reducing sugar.

8- Amylopectin is the inner part of starch granules and is water soluble and give blue color with iodine.

9- Starch is the stored form of carbohydrates in animals.

10- Glucose transport via (gluT4) in the muscle cells and and adipocytes is not under the control of insulin.

Good Luck   Prof. Abdel-Aziz Fatouh

Answer The Following Questions

I. Give an explication of SEVEN ONLY of the following : [28 Marks]

1. A positive ion is smaller than the corresponding atom **whereas** a negative ion is bigger than the corresponding atom.

2. The increasing of reactivity of alkali metals, with increasing of the atomic number, is demonstrated by their reactions with water.

3. The differences between beryllium and the other group-II metals. **Give five differences.**

4. Boron trifluoride (BF_3) is Lewis acid.

5. Boron trioxide (B_2O_3) is amphoteric.

6. Carbon monoxide is a good reducing agent and also, is an important ligand **Explain and support with an example** for each of both properties.

7. i) Univalent thallium ($_{81}Tl$) compounds are the most stable.
   ii) The nitrogen molecule (N_2) is generally unreactive.

8. i) White phosphorus should never be allowed to come into contact with body skin.
   ii) Photochromic eyeglasses have a small amount of added silver chloride.

II. A) Write shortly on UNDERLINE FOUR ONLY of the following, on the basis of the chemical reaction equations : [20 Marks]

1. Biological importance of carbon dioxide.
2. Isolation of the pure elemental **silicon** from **silica** (SiO_2)
3. Production of nitric acid (HNO_3) by **Ostwald** process.
4. Separation of aluminum metal from its **ore (bauxite)**, AlO(OH).
5. Photodissociation of nitrogen dioxide (NO_2) and ozone (O_3) levels in sunny days.

II. B) Complete the following chemical reaction equations: [10 Marks]

1. Li_3N + D_2O $\rightarrow$
2. $_3Li^6$ + $_0n^1$ $\rightarrow$
3. CaC_2 + H_2O $\rightarrow$
4. $Na_2B_4O_7 \cdot 10H_2O$ + $2 HCl$ $\rightarrow$
5. $Ca_3(PO_4)_2$ + H_2SO_4 $\rightarrow$

III.

1) (i) Give an account of **the ionic (like- salt) hydrides.** [8 Marks]
   (ii) Diamond and graphite are two important allotropic forms of carbon. **Discuss.**

2). Describe the structure and nature of bonding **of Diborane (B_2H_6),** [4 Marks]

3). An insulator like silicon can be converted to a semiconductor (n-type and /or p- type). **Explain.** [6 Marks]

4). Account for the high (1st IE's) for ($_4Be$, $_7N$ and $_{10}Ne$) and the low (1st IE) for ($_8O$). [4 Marks]

.... Best Wishes ....

Dr. Doaa Abd-El-Latif & Prof. Dr.Tawfik Rakha

كميا رصور - 2 22

PART (I)

(I) Answer the following questions using labeled diagram. (30marks)

1) Briefly illustrate the fate of erythrocyte.

2) Discuss in short the types and functions of plasma proteins.

3) Shortly illustrate the types of leucocytes

PART (II)

(II): A- True or False. (10 marks)

1- Growth hormone is a protein that stimulates the growth of bones, muscles, and other organs by promoting protein synthesis.

2- The adrenal cortex consists of two regions, with each region producing a different group or type of hormones.

3- The gonads, the primary reproductive organs, are only responsible for secreting hormones and are considered to be endocrine glands.

4- The heart also acts as an endocrine organ in addition to its major role of pumping blood.

5- Diabetes sometimes forms during pregnancy, and usually ends when the child is born.

6- The endocrine system acts through neurotransmitters called hormones that influence growth, development, and metabolic activities.

7- Endocrine glands have ducts that carry their secretary product to a surface.

8- A negative feedback system causes a reversal of increases and decreases in body conditions in order to maintain a state of stability or homeostasis.

9- Type 1 diabetes is an auto immune disease where antibodies destroy the pancreatic islets.

10- Some glands have endocrine and non-endocrine regions, which function differently.

(II): B- Choose the correct answer. (20 marks)

أد/ محمد عمرو المسيرى   أد/ ماهر عامر   تمنياتنا بالتوفيق

1. Endocrine glands such as the pituitary, thyroid and adrenal gland: (a) have ducts; (b) produce many different products; (c) produce hormones; (d) use the product locally.
2. The Islets of Langerhans are the endocrine portion of the: (a) adrenal cortex; (b) adrenal medulla; (c) anterior pituitary; (d) posterior pituitary; (e) pancreas.
3. Insulin and glucagon are antagonistic hormones because they increase and decrease: (a) calcium; (b) potassium; (c) glucose; (d) cell metabolism.
4. Which of the following is produced in the adrenal cortex? (a) male sex hormones; (b) aldosterone; (c) cortisol; (d) all of the preceding; (e) none of the preceding.
5. Calcium/Phosphate levels in the blood are regulated by: (a) aldosterone; (b) cortisol; (c) ACTH; (d) PTH & calcitonin.
6. What hormone is primarily responsible for glucose storage as glycogen; stimulating fat storage, and stimulate protein synthesis? (a) GH; (b) TSH; (c) insulin; (d) cortisol.
7. Too much GH in an adult results in: (a) gigantism; (b) acromegaly; (c) Simmond's disease; (d) diabetes insipidus.
8. Cyclic AMP is best matched with: (a) steroid hormones; (b) protein hormones; (c) muscle cells; (d) the male hormone, testosterone.
9. The primary effect of T3 and T4 is to: (a) decrease blood glucose; (b) promote the release of calcitonin; (c) promote heat-generating (metabolic) reactions; (d) stimulate the uptake of iodine by the thyroid.
10. An increase in blood glucose and an anti-inflammatory effect are important effects of: (a) epinephrine; (b) glucagon; (c) cortisol; (d) insulin; (e) ADH.
11. The primary target for glucagon is the: (a) liver; (b) hypothalamus; (c) adrenal cortex; (d) pancreas; (e) kidney.
12. The only hormone that promotes the anabolism (building up) of glycogen, fats, and proteins is: (a) GH; (b) insulin; (c) epinephrine; (d) aldosterone; (e) cortisol.
13. Most hormones that use a second messenger (cyclic AMP) are: (a) proteins; (b) enzymes; (c) steroids; (d) nucleic acids.
14. Blood glucose is raised by all of the following EXCEPT: (a) glucagon; (b) GH; (c) epinephrine; (d) cortisol; (e) insulin.
15. Diabetes insipidus results from: (a) hyposecretion of insulin; (b) hypersecretion of insulin; (c) hyposecretion of aldosterone; (d) hypersecretion of ADH; (e) hyposecretion of ADH.
16. What hormone causes contraction of smooth muscle surrounding milk glands of the mammary gland? (a) oxytocin; (b) ADH; (c) TSH; (d) GH; (e) prolactin.
17. A simple goiter results from: (a) lack of TSH ; (b) too much PTH; (c) lack of iodine; (d) lack of iron; (e) autoimmunity.
18. What gland produces calcitonin? (a) parathyroid; (b) thyroid; (c) adrenal cortex; (d) adenohypophysis.
19. Steroid hormones are made from precursor molecules of: Cholesterol B) a single modified amino acid C) amino acid chains D) fatty acids.
20. All of these cause increased secretion of hormones from the adrenal medulla EXCEPT: A) High blood glucose level. B) Emotional excitement. C) Stress D) Exercise

أد/ محمد عمرو المسيرى   أد/ ماهر عامر   تمنياتنا بالتوفيق

Mansoura University
Faculty of Science
Chemistry Department
Subject: Chemistry
Course(s): Vitamins
Biochem 278
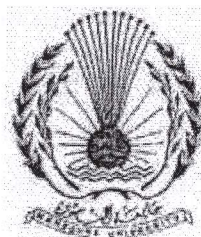
2ⁿᵈ Level Biochemistry Students
Date : August 2013
Time Allowed : 2 hours
Full Mark: 80 Marks

ANSWER THE FOLLOWING QUESTIONS

I.   **[25 Marks]**

a) The main function of vitamin E is as a free radical trapping antioxidant in cell membranes. <u>Comment</u> on this statement.   **[10 Marks]**

b) Vitamin A has a function in eye vision. (Discuss the mechanism).   **[10 Marks]**

c) Describe the biosynthesis of Niacin.   **[5 Marks]**

II.   **[25 Marks]**

a) Complete the missing parts in the following statements: **[20 Marks]**

1) ......[1]...... is the smallest amount of a substance needed by a person to prevent a deficiency syndrome.

2) The Nutritional Value of the vitamins can be lost by ......[2]......, ...[3]......, ...[4]......, ...[5]......, ...[6].......

3) Three compounds have the biologic activity of vitamin K: ......[7]...... which is found in green vegetables; ......[8]......, synthesized by intestinal bacteria, and ......[9].......

4) The deficiency of niacin causes ......[10]......., which is characterized by ......[11]......, ...[12]......, ...[13].......

5) Vitamin C acts as an electron donor for different enzymes: such as ......[14]......, ...[15]......, ...[16].......

6) Vitamin A is associated with several important Functions: Vision, ...[17]......, ...[18].......

Best wishes for our dear students,   باقي الأسئلة في الخلف

Dr. Amr Negm

7) ......[19]....... is the active form of vitamin B6 and is a cofactor in many reactions of amino acid metabolism, including ......[20].......

b) True or false? and correct if the statement is false   **[5 Marks]**
1. Vitamin B12 is important in the production of NADPH via the glycolytic pathway.   [   ]
2. The liver can synthesize niacin from the essential amino acid tyrosine.   [   ]
3. Deficiency of pantothenic acid can cause hyperglycemia and impaired energy production.   [   ]
4. Vitamin D prevents histamine release and increases the detoxification of histamine.   [   ]
5. Thiamine deficiency can be assessed by measuring erythrocyte transketolase activity.   [   ]

III.   Do as shown between the brackets: **[30 Marks]**
1. The metabolism of vitamin D. (Draw the enzymatic equations)
2. Pernicious Anemia. (Define).
3. Synthetic pathways connecting riboflavin and its two cofactors, FMN and FAD. (Draw the enzymatic equations)
4. Vitmin A toxicity. (Define)
5. Dry and Wet beriberi. (Compare between them)

Best wishes for our dear students,

Dr. Amr Negm