) 10 μSv/h B) 20 C) 25 D) 5

10) From the following nuclides. The isotones are

$^{40}_{18}Ar$, $^{41}_{19}K$, $^{40}_{21}Sc$, $^{41}_{21}Sc$ and $^{90}_{40}Zr$

A) $^{40}_{18}Ar$, $^{41}_{19}K$ B) $^{40}_{21}Sc$, $^{90}_{40}Zr$ C) $^{41}_{19}K$, $^{40}_{21}Sc$ D) $^{90}_{40}Zr$, $^{40}_{18}Ar$

11) In the reaction ^{32}S (n,γ) ^{33}S with slow neutrons , the γ is produced with an energy of 8.65 MeV. The nuclide mass of ^{33}S is

A) 32.97144 u B) 31.8529 C) 33.0112 D) 32.15432

(The mass of ^{32}S = 31.97207 , mass of $^{1}_{0}$n = 1.00866)

12) The particle needed to complete the nuclear reaction

$^{63}_{29}Cu$ (p, ...) $^{62}_{29}Cu$ *is*

A) $^{2}_{1}H$ B) $^{4}_{2}He$ C) $^{3}_{1}H$ D) $^{3}_{2}He$

13) By natural radioactivity, $^{238}_{92}U$ emits an α. The heavy residual nucleous is called UX_1. UX_1 in turn emits β^- particles. The heavy residual nucleous from this process is called UX_2. The UX_2 nuclide is

A) $^{234}_{91}Pa$ B) $^{234}_{90}Th$ C) $^{239}_{92}U$ D) $^{235}_{90}Th$

14) If ^{127}I is irradiated with protons in a cyclotron and three neutrons are emitted from the nucleous. The product of the nuclear reaction is

A) $^{128}_{53}I$ B) $^{127}_{52}Te$ C) $^{125}_{54}Xe$ D) $^{125}_{53}I$

15) $^{210}_{83}Bi$ decay to $^{210}_{84}Po$. The mode of $^{210}_{83}Bi$ decay is

A) β^- emission B) β^+ C) α D) γ

16) Of the three isobars $^{114}_{48}Cd$, $^{114}_{49}In$, $^{114}_{50}Sn$. The isobar likely to be radioactive is

A) $^{114}_{48}Cd$ B) $^{114}_{49}In$ C) $^{114}_{50}Sn$ D) none of these

17) For the nuclear reaction $^{50}_{24}Cr$ (α,n) the product nuleous is

A) $^{52}_{25}Mn$ B) $^{53}_{26}Fe$ C) $^{51}_{24}Cr$ D) $^{53}_{27}Co$

18) The emitted particle in the decay of $^{106}_{47}Ag$ to give $^{106}_{48}Cd$ is

A) β^- B) β^+ C) p D) α

19) The mass of ^{12}C nucleous is exactly 12 amu. The packing fraction is

A) 7.68 Mev B) 9.22 C) 3.89 D) 4.61

20) The isotope $^{232}_{90}Th$ ($T_{½}$ = 1.41 x 10^{10} y) undergoes α decay .The disintegration / second (dps) would produced in a sample containing 1.0 g of $^{232}_{90}Th$ is

A) 4.0×10^3 dps B) 2.0×10^3 C) 4.0×10^2 D) 2.0×10^4

21) The rate of α decay/sec (dps) would be emitted from 4×10^{-12} g of ^{210}Po ($T_{1/2}$=138 d) is

A) -666.94 dps B) -555.21 C) -421.51 D)-602.23

22) The missing nuclide in the following nuclear reaction $^{24}_{12}Mg$ (d, α) is

A) $^{22}_{11}Na$ B) $^{13}_{13}Al$ C) $^{28}_{15}P$ D) $^{25}_{14}Si$

23) $^{165}_{67}Ho$ nuclide is

A) β^- emitter B) β^+ C) α D) stable

24) $^{172}_{68}Er$ decay by β^- emission ($T_{1/2}$ =49.5 h) .The product nuclide is

A) $^{172}_{70}Yb$ B) $^{172}_{69}Tm$ C) $^{172}_{67}Ho$ D) $^{172}_{66}Dy$

25) A/Ao where A and Ao are activities, the m /mo where m and mo are masses of the same nuclide, which of the following relations is correct?

A) A/Ao > m /mo B) A/Ao < m /mo C) A/Ao = m /mo D) nothing of these relations is correct.

Question No.2: ***(10 Marks)***

From the following nuclear data given below

Ar41
1.83 h
B^-
Y=1294
σ 0.5

A. Sketch the decay scheme of Ar-41. ***(2 Marks)***
B. Write the complete decay equation of Ar-41. ***(2 Marks)***
C. How many atoms are present in 1 mCi of Ar-41 activity? ***(2 Marks)***
D. Insert spin and parity of the parent and of the daughter nuclei. ***(2 Marks)***
E. What is the specific activity of carrier free Ar-41? ***(2 Marks)***

Question No.3: ***(5 Marks)***

If the activity of ^{197}Hg ($T_{1/2}$ =65 hr) is 100 mci (3.7 GBq) on Wednesday noon. What it is activity at 8 AM the Tuesday before?

Question No.4: ***(5 Marks)***

For the treatment of a thyroid patient, 100 mci (3.7 GBq) ^{131}I is required ($T_{1/2}$=8 d). What amount of ^{131}I should be shipped if transportation takes 3 days?

Question No.5: *(5 Marks)*

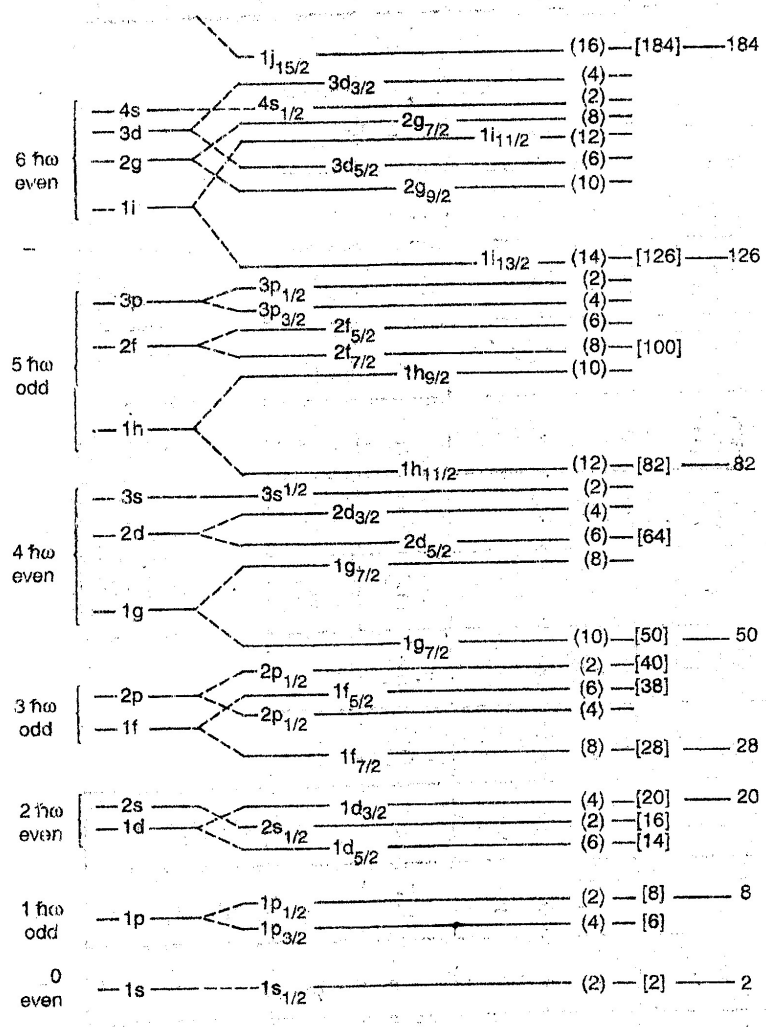
How much time would it take for the decay of 8/9 of a sample of ^{68}Ge ($T_{1/2}$=280 d)?

1Ci = $3.7x10^{10}$ Bq , 1b = $1x10^{-24}$ cm^2, N_A = $6.003X10^{23}$ $mole^{-1}$, m_p = 1.00727u , m_n = 1.00866 u, , mass of ^{3}He = 3.0160293, mass of ^{4}He = 4.0026032.

End of Exam

Best Wishes Prof. Dr. Refaat Mahfouz

Δ Remember ■Understand ●Apply ◊Analysis *Evaluate ◯Create


1j15/2 (16) [184] 184
3d3/2 (4)
4s1/2 (2)
2g7/2 (8)
1i11/2 (12)
3d5/2 (6)
2g9/2 (10)
6 ħω even
4s
3d
2g
1i
1i13/2 (14) [126] 126
3p1/2 (2)
3p3/2 (4)
2f5/2 (6)
2f7/2 (8) [100]
1h9/2 (10)
5 ħω odd
3p
2f
1h
1h11/2 (12) [82] 82
3s1/2 (2)
2d3/2 (4)
2d5/2 (6) [64]
1g7/2 (8)
1g7/2 (10) [50] 50
4 ħω even
3s
2d
1g
2p1/2 (2) [40]
1f5/2 (6) [38]
2p1/2 (4)
1f7/2 (8) [28] 28
3 ħω odd
2p
1f
1d3/2 (4) [20] 20
2s1/2 (2) [16]
1d5/2 (6) [14]
2 ħω even
2s
1d
1p1/2 (2) [8] 8
1p3/2 (4) [6]
1 ħω odd
1p
1s1/2 (2) [2] 2
0 even
1s

The periodic table of elements

with conventional atomic weights scaled to $A_r(^{12}C) = 12$ and physical state (at STP 25 °C and 1 atm)*

	1																	18
	1 H HYDROGEN 1.008	2											13	14	15	16	17	2 He HELIUM 4.0026
	3 Li LITHIUM 6.94	4 Be BERYLLIUM 9.0122											5 B BORON 10.81	6 C CARBON 12.011	7 N NITROGEN 14.007	8 O OXYGEN 15.999	9 F FLUORINE 18.9984	10 Ne NEON 20.1797
	11 Na SODIUM 22.9898	12 Mg MAGNESIUM 24.305	3	4	5	6	7	8	9	10	11	12	13 Al ALUMINIUM 26.9815	14 Si SILICON 28.085	15 P PHOSPHORUS 30.9738	16 S SULFUR 32.06	17 Cl CHLORINE 35.45	18 Ar ARGON 39.948
	19 K POTASSIUM 39.0983	20 Ca CALCIUM 40.078	21 Sc SCANDIUM 44.9559	22 Ti TITANIUM 47.867	23 V VANADIUM 50.9415	24 Cr CHROMIUM 51.9961	25 Mn MANGANESE 54.9380	26 Fe IRON 55.845	27 Co COBALT 58.9332	28 Ni NICKEL 58.6934	29 Cu COPPER 63.546	30 Zn ZINC 65.38	31 Ga GALLIUM 69.723	32 Ge GERMANIUM 72.630	33 As ARSENIC 74.9216	34 Se SELENIUM 78.971	35 Br BROMINE 79.904	36 Kr KRYPTON 83.798
	37 Rb RUBIDIUM 85.4678	38 Sr STRONTIUM 87.62	39 Y YTTRIUM 88.9058	40 Zr ZIRCONIUM 91.224	41 Nb NIOBIUM 92.9064	42 Mo MOLYBDENUM 95.95	43 Tc TECHNETIUM (98)	44 Ru RUTHENIUM 101.07	45 Rh RHODIUM 102.9055	46 Pd PALLADIUM 106.42	47 Ag SILVER 107.8682	48 Cd CADMIUM 112.414	49 In INDIUM 114.818	50 Sn TIN 118.710	51 Sb ANTIMONY 121.760	52 Te TELLURIUM 127.60	53 I IODINE 126.9045	54 Xe XENON 131.293
	55 Cs CESIUM 132.9055	56 Ba BARIUM 137.327	57-71 Ln LANTHANOIDS	72 Hf HAFNIUM 178.49	73 Ta TANTALUM 180.9479	74 W TUNGSTEN 183.84	75 Re RHENIUM 186.207	76 Os OSMIUM 190.23	77 Ir IRIDIUM 192.217	78 Pt PLATINUM 195.084	79 Au GOLD 196.9666	80 Hg MERCURY 200.592	81 Tl THALLIUM 204.38	82 Pb LEAD 207.2	83 Bi BISMUTH 208.9804	84 Po POLONIUM (209)	85 At ASTATINE (210)	86 Rn RADON (222)
	87 Fr FRANCIUM (223)	88 Ra RADIUM (226)	89-103 An ACTINOIDS	104 Rf RUTHERFORDIUM (267)	105 Db DUBNIUM (268)	106 Sg SEABORGIUM (269)	107 Bh BOHRIUM (270)	108 Hs HASSIUM (269)	109 Mt MEITNERIUM (278)	110 Ds DARMSTADTIUM (281)	111 Rg ROENTGENIUM (282)	112 Cn COPERNICIUM (285)	113 Nh NIHONIUM (286)	114 Fl FLEROVIUM (289)	115 Mc MOSCOVIUM (289)	116 Lv LIVERMORIUM (293)	117 Ts TENNESSINE (294)	118 Og OGANESSON (294)

class: metal | metalloid | non-metal | likely metal | unknown

atomic number | chemical symbol | name | standard atomic weight | physical state

Example: 80 Hg MERCURY 200.59 liquid | 33 As ARSENIC 74.9216 solid | 54 Xe XENON 131.293 gas | 105 Db DUBNIUM (268) probably solid | 118 Og OGANESSON (294) unknown

sub-group: 57-71 Ln

Ln LANTHANOIDS	57 La LANTHANUM 138.9055	58 Ce CERIUM 140.116	59 Pr PRASEODYMIUM 140.9077	60 Nd NEODYMIUM 144.242	61 Pm PROMETHIUM (145)	62 Sm SAMARIUM 150.36	63 Eu EUROPIUM 151.964	64 Gd GADOLINIUM 157.25	65 Tb TERBIUM 158.9254	66 Dy DYSPROSIUM 162.500	67 Ho HOLMIUM 164.9303	68 Er ERBIUM 167.259	69 Tm THULIUM 168.9342	70 Yb YTTERBIUM 173.054	71 Lu LUTETIUM 174.9668
An ACTINOIDS	89 Ac ACTINIUM (227)	90 Th THORIUM 232.0377	91 Pa PROTACTINIUM 231.0359	92 U URANIUM 238.0289	93 Np NEPTUNIUM (237)	94 Pu PLUTONIUM (244)	95 Am AMERICIUM (243)	96 Cm CURIUM (247)	97 Bk BERKELIUM (247)	98 Cf CALIFORNIUM (251)	99 Es EINSTEINIUM (252)	100 Fm FERMIUM (257)	101 Md MENDELEVIUM (258)	102 No NOBELIUM (259)	103 Lr LAWRENCIUM (266)

* The symbols listed are those recommended by the International Union of Pure and Applied Chemistry (IUPAC). The atomic masses for hydrogen, lithium, boron, carbon, nitrogen, oxygen, silicon, chlorine, and thallium are the suggested conventional atomic weights regardless of the respective elements terrestrial origin, with the remaining limited to four decimals (whenever needed). Elements with their atomic weight in parenthesis have no stable isotopes, and the value refers to the most long-lived, non-metastable one. Bismuth, thorium, protactinium, and uranium have no stable isotopes either, but these have a characteristic terrestrial isotopic composition allowing a standard atomic mass to be tabulated. For a more detailed description of the determination of atomic masses, se J. Meija et al., *Pure Appl. Chem.* 2016, *88*, 265-291. Please cite this article as D. Lundberg, *The periodic table of elements* (DOI: 10.13140/RG.2.1.4509.7129). Last updated: May 7, 2018

Assiut University
Faculty of science
Chemistry Departement

January 2026
Time 2 hours

Final examination in organic chemistry 211C for non chemistry students(chemistry Of aliphatic compounds and some selected aromatic compounds)

Answer the following questions **50marks**

Question One. Answer five only of the following **20 marks**

a-Predict the product(s) and the type of the following reaction
2-methyl-1,3-butadiene + CL_2/diethyl ether---------- ?
b-Convert allyl alchol to acrylic acid
c-Predict the products of the following reactions
$CH_2(CO_2Et)_2$+$BrCH(CO_2Et)_2$/EtONa/EtOH---------- ? + HCl/heat------- ?
d-Reaction of but-2-enoic acid with the following reagents i-Br_2/CCl_4, ii-H_2/Ni
e-Prepare 1-phenyl-1,4-pentanedione from acetoacetic ester
f-which of the following alkyl bromides is the most reactive in an SN^1 reaction.Explain
i-$(CH_3)_3CBr$ ii-$CH_3CH_2CH_2CH_2Br$ iii-$CH_3CH_2CH(Br)CH_3$

Question Two Answer five only of the following---------- 20 marks

a-Complete and give the type of the following reaction
$CH_3CH_2CH_2CHO$ +HCN----------?
b-Predict the product and give a mechanism of the following reaction
3-bromo-1-butene + NaOH /EtOH/heat----------?
c-prepare 1-bromo-1-phenylethane through wurtz-fittig reaction
d-Reaction of benzene with tert.butyl chloride/$AlCl_3$ and propose a mechanism
e-Complete the following sequence of reactions
m-dinitrobenzene+$(NH_4)_2S$ ------? +$NaNO_2H_2SO_4$/5C-----? + KI----------?
f-Reaction of chlorobenzene with the following reagents and name the products
i-$Br_2/FeBr_3$ ii-Conc.H_2SO_4

Question Three Answer the following----------10 marks

a-Prepare ethyl m-chlorobenzoate from benzene
b-Convert p-chloroaniline to m-chloronitrobenzene

GOOD LUCK Prof.Dr. Sh.M.Radwan

	Assiut University- Faculty of Science Frist Semester- Final Exam 2025-2026 Chemistry Department	**Program:** Animal Zoology **Level :** (2) **Date:** 2 /1/2026 **Time:** 2 h	
Course Title: Animal physiology1 for special Zoology		**Code: 217Z**	
Instructors: Prof. Dr. Mohamed Bassam Al-Salahy			
Important:	**No. of pages : 4**	**No. Of questions : 3**	**Total Mark: 50 degree**

Q1- Answer by √ or X for these sentences:- (20 Marks: ½ mark each)

1- Deficiency of vitamin A leads to Inflammation of conjunctiva (Bitot's spot , white area in the conjunctiva).. ... .( )

2- Gastrin hormone secreted from duodenum, stimulates gastric juice secretion. .... ( )

3- Some vitamins are synthesized by intestinal bacteria such as vitamin B and K , while exposure to ultraviolet rays of sun participates in the formation of vitamin D calciferol in subcutaneous fat. .... ( )

4-_Saliva secreted by three pairs of salivary glands at a rate of one liter per day and Plays an important role in the sense of thirst. ..... ( )

5-Vitamin K is essential for synthesis and activation of blood clotting factors, and its deficiency leads to shortening clotting time. ....( )

6- Vitamin B2 deficiency leads to inflammation of angles of mouth, scaled nose and Photophobia. ....( )

7- In some, pathological cases, the body increase the dependence on body fat to produce energy leading to increases the level of keto bodies in blood called ketonemia.... ....( )

8- The renin enzyme has ability to digest and coagulate milk in stomach of children and small animals to give a time to complete digestion of milk protein (casein) by gastric pepsin enzyme . ...( )

9-Vitamin B3 participates in epithelial glycoprotein synthesis and this maintains the mucosa of urogenital tract, respiratory tract, gastrointestinal tract, the cornea and the skin. ....( )

10- Permanent teeth grow below the milk teeth gradually to be exchanged by them at 3 to5 years old, while wisdom teeth start to grow at 17 -25 years (sometimes delay to 25 years old) .... ( )

11- Both vitamin E and C act as antioxidants in animal and human body and the only dietary source of vitamin B12 are taken from animals . ... ( )

12- Derived lipids include Cholesterol, sex hormones, peptides vitamin D., adrenal cortex hormones. ( )

13-Deamination means that amino group is transferred from one amino acid to keto acid forming a new type of non-essential amino acids. ...( )

14-Function of Vitamin B1 is to increase the activity of acetylcholine at nerve endings by stimulating acetylcholine esterase enzyme. ... ( )

15- In the intestinal juice, proteose enzymes include polypeptidase, tripeptidase and dipeptidase which digest protein reaching it to amino acids. ....( )

16-The cortex of kidney contains all the renal corpuscles, proximal distal convoluted tubules and parts of collecting tubules. ....( )

17- Absorption of dietary fats carried out by lymph capillaries of villi by passive transport, reaching the heart without passage across liver. . ...( )

18- liver cirrhosis can led to prevention of storage of intrinsic factor secreted from gastric mucosa leading to inhibition of vitamin B12 absorbance .... ( )

19- The decreased plasma protein leads to leakage of water from blood to different tissues (called edema disease). .. ( )

20- The main source of energy 70-75% and the end product of glucose oxidation is CO2 and water, it is found in the healthy and diabetic human and animal. ( )

21- Both liver and Skeletal muscles are able to release glucose to blood between meals. ( )

22- Excess of vitamin C leads to the deposition of calcium salts in soft tissues such as kidney and ureter stones. ( )

23- Vitamin B3 (nicotinic acid) deficiency causes a Pellagra disease which characterized by Dermatitis. ( )

24- Vitamin A participates in epithelial glycoprotein synthesis and this protects the mucosa of urogenital tract, respiratory tract... ect. ( )

25- Vitamin K deficiency causes reduced clotting time. ( )

26- Vitamin B1 deficiency leads to weak Krep's cycle, where decarboxylation of pyruvic acid into acetyl CoA is stopped. ( )

27- liver cirrhosis or gastric wall disease can not affect vitamin B12 absorption by intestine. ( )

28- Pernicious anaemia leads to large, fragile, immature erythrocytes and megaloblasts..... ..... ( )

29- Copper deficiency leads to goiter ,enlarged thyroid gland due to lack of thyroxine hormone, severe fatigue and Lethargy. ( )

30- Iron is importance in the transport of oxygen where it enters in the composition of hemoglobin. ( )

31- Bile pigments stored in gall bladder and bilirubin enter later in intestine to give faeces its normal color and used in diagnosis of liver diseases and jaundice. ( )

32-40% of CO2 released from the different tissues is converted into sodium bicarbonate adding to plasma till reaching lungs where the dissociation. ..... ( )

33- Facilitated diffusion of molecules is via proteins channels or carriers (with concentration gradient) without consume energy. ..... ( )

34- Secondary active transport used energy as ATP ..... ( )

35-Pernicious anemia does result from failure of damaged liver to store intrinsic factor which facilitate vitamin B12 absorption. ( )

36-Pyloric sphincter muscle is weak in infants , so rennin enzyme secreted from stomach to compensate this to coagulate milk to be digested by pepsin enzyme. ( )

37- Hepatocellular Jaundice showed an Increase in both_unconjugated (indirect) & conjugated (direct) bilirubin in blood. ( )

38-The harmful salts such as mercury, iodine and lead, is taken out through the saliva. ( )

29- Gastric HCL stimulates duodenal mucosa to secret secretin hormone which reach to the pancreas to be stimulated to secret pancreatic juice( )

40-In the kidney , the diameter of afferent arterioles reaching Malpighian corpuscles are larger three times than efferent arterioles.... ....( )

Q2-MCQ Choose the appropriate letters A, B,C or D. (10 Marks: one mark each):-

1-Derived Lipids include:-

-A: Lipoproteins

-B Waxes

-C: Sex hormones

-D: Not the above.

2-Blood sugar between meals is maintained at normal level by taking glucose from:-

-A: The liver glycogen.

-B: The muscle glycogen.

-C: Gluconeogenesis takes place in the liver

-D:All the above except B.

3-Function of vitamin A includes:-

-A: It synthesizes a photosensitive pigment called rhodopsin (or visual purple in rods.

-B: It synthesizes a photosensitive pigment iodopsin in the Cones which responsible for vision in bright and colored light.

-C: Glycoprotein synthesis and this protects the mucosa

-D: All the above.

4- Deficiency of Vitamin E leads to:-

-A:Sterility in rats (production of immature gametocytes and abortion in pregnant females).

-B: Formation of collagen.

-C: It increases the synthesis of osteomalacia..

D: All except B.

5-The region of renal cortex contains some parts of nephrons such as:-

-A: Parts of collecting tubules.

-B: All Malpighian corpuscles.

-C: Parts of Henle's loop.

-D: All the above.

6-The nerve impulse travel from the sino-atrial node (S-A) rapidly through both atria to reach:-
-A: Atrio-ventricular node (A-V) located in left atrium .
-B: Atrio-ventricular node (A-V) located in right atrium at the junction between the atria and ventricles.
-C: Purkinje network fibers distributed in both ventricles.
-D: His bundle.
7-Deficiency of vitamin D leads to:
-A:Bowed legs and deformity of the thorax and sternum (like "*pigeon chest*).
B: Rickets in young children : bowed legs and deformity of the thorax and sternum (like "*pigeon chest*).
-C:Osteomalacia in adults softening of skeleton due to demineralization
-D: All the above.
8-Osmosis cellular transport characterized by:
-A: Water moves from high to low concentrations of water.
-B:Sodium ions moves from high to low concentrations of water.
-C: It does need neither protein carriers or channels.
-D: the above B & C.
9-Function of renin enzyme secreted from stomach is:
-A: Coagulate and digestion of milk in stomach of children and young animals.
-B: Enzyme has ability to coagulate milk in stomach of children and young animals.
-C: Digestion of milk in stomach of children and young animals.
-D:All the above except A.
10-Function of vitamin B1 includes:-
-A:Decarboxylation of pyruvic into acetyl CoA
-B: Formation of collagen
-C: It increases the activity of acetyl choline at nerve endings by inhibiting acetyl choline esterase enzyme
-D: The above A & C.

Q3- Answer 5 questions only: (20 marks: 4 marks each)

1- Write on the steps of urine formation with drawing nephron unit and its illustrations.
2-Explain the steps of Cardiac beat with drawing ?
3- Discuss the bile juice and its functions in digestion?
4- Discuss the biological function of nutritional lipids. (6 items)
5- What are the functions of hydrochloric acid in the stomach? (4 items)
6-Discuss the blood and lymph pathways of intestinal absorption?
7- Compare between the following according to functions and deficiencies: Fluorine, Iron, Vitamin B6 and Vitamin A. (make your answer in table).

With great success

Prof. Dr. Mohamed Bassam Al-Salahy Elbradei

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Chemistry Department		Program: Chemistry Science Level: (2) Date: 1/June/2026 Time: 3 h
Course Title: Green Chemistry for the 2nd Level Students			Code: 214 C
Instructors: Prof. Dr. Hassan Abdou Kotb Abd El-Aal			
Important: 157 St	No. of pages: 3	No. of questions: 3	Total Mark: 50 degree

Answer all of the following questions? (50 Marks)

1- Choose the correct answer for *ALL* of the following? (18×1.5 = 27 Marks)

(ترصد الأجابة النهائية في نموذج البابل شيت وليس هنا)

1-Which of the following sentences is *NOT TRUE* for DDE?

a) Produced slowly during environmental degradation of DDT.
b) Used as a fungicide for cereal crops.
c) Interferes with the enzyme that regulates the distribution of birds, fish and humans calcium.
d) Soluble in fat and animal tissues

2-Which of the following is *NOT* considered as chemical disposal methods of PCBs?

a) Substitution of a chloride ion with H by using of NaH
b) Substitution of chlorine by polyethylene glycols for 2h/N_2
c) Hydrogen cleavage of C-Cl bond and biphenyl nucleus using copper catalyst
d) Uses of $C_{10}H_8Na$ which results in the expulsion of a chloride ion

3-Which of the following sentence is *NOT* true for the Troposphere oxidation of Methane?

a) Soluble in water
b) No multiple bonds
c) Do not absorb sunlight
d) Slow oxidation initiated by $HO^{\bullet}$

4-Protection mechanism of inorganic active ingredients against UV rays is by ------.

a) absorbing UV light
b) dissipating UV light
c) reflecting UV light
d) adsorbing UV light

5-Benomyl can be synthesized by the reaction of ----- with ----- followed by addition of ----- and finally reaction of the later intermediate with -----.

a) cyanamide & o-$C_6H_4(NH_2)_2$ & methyl chloroformate & CH_3NCO
b) cyanamide & methyl chloroformate & o-$C_6H_4(NH_2)_2$ & C_4H_9NCO
c) methyl chloroformate & o-$C_6H_4(NH_2)_2$ & cyanamide & PhNCO
d) o-$C_6H_4(NH_2)_2$ & cyanamide & methyl chloroformate & $C_5H_{11}NCO$

6-What is going on if there is no nitrogen oxides present over antarctic zone?

a) The Cl_2 molecule is broken down by solar radiation producing two chlorine $Cl^{\bullet}$
b) Nitric acid is incorporated into the polar stratospheric clouds (PSC)
c) HCl and $ClONO_2$ react with each other to produce Cl_2 and HNO_3.
d) Chlorine radicals start a catalytic reaction chains leading to ozone destruction.

7-Which of the following compounds used to prevent fruit drop and increase fruit size in citrus trees?

a) 2,4-Dichlorophenoxyacetic acid (2,4-D)
b) 2-Methyl-4-chlorophenoxyacetic acid (MCPA)
c) Cinnamic acid
d) Glyphosate

8-What is the final product of mechanistic routes B & C sequence of the microbial DDT degradation?

a) 4-Chlorobenzoate
b) 4-Chlorophenyl acetate
c) 4-Chloroacetophenone
d) 4-Chlorobenzaldehyde

ملحوظة: الأختبار مكون من ثلاث صفحات

2- Answer *ALL* of the following with either (T) or (F)? **(11 Marks)**

(ترصد الأجابة النهائية في نموذج البابل شيت وليس هنا)

19. Carboxin is the more effective against plant spores by translocation through the vascular system.
20. The fourth condition over the antarctic included the reaction of HCl and $ClONO_2$ to produce Cl_2 and HNO_3.
21. DDT does not dissolve in water but dissolve in oils and fats.
22. Secondary organic aerosol comes from soot from fuel combustion.
23. Ultrasonic waves applied to water soluble PCBs causing thermolysis and oxidization.
24. Parasitic fungi lives on decaying matter and largely responsible for the breakdown of animal and plant remains in soil.
25. Thiram is used to control grey mould on lettuce, strawberries and as seed dressing.
26. The major biological source of sulfur containing compounds is dimethyl sulfide.
27. Prochloraz is an example of the pyrimidines-type which is effective against a wide range of diseases.
28. Dissolved SO_2 is oxidized by trace amounts of H_2O and O_2.
29. Paraquat is a quick-acting, non-selective and kills green plant tissue on contact.

3- Answer *FOUR* only of the following questions:? **(4×3 = 12 Marks)**

(ترصد أجابات هذا السؤال المقالي هنا في هذه الكراسة)

a) Describe in details the asymmetric synthesis of *R*-Fusilade?
b) Provide short notes on Sulphonylureas herbicides & Chlorsulfuron synthesis?
c) Describe in details the Troposphere oxidation of methane?
d) Describe the catalytic processes contributing to Ozone destruction?
e) Explain by equations ALL of the DDT microbial degradation [A-E] routes?

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Chemistry Department		Program: Industrial Chemistry Level: (2) Date: 4/6/2026 Time: 2 h
Course Title: Chemical Thermodynamics			Code: 208 Chem
Instructors: Prof.Dr. R.M.Gabr			
Important:	No. of pages 1	No. Of questions 2	Total Mark:50 degree

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

1- Answer two only from the following: **(25 Mark)**

a) Discuss the electrical method used for calculating the free energy change of reaction.

b) Show how to calculate q, w, ΔE, ΔH, ΔS, and ΔG, for the following processes:

i) Isothermal and reversible processes upon expansion of an ideal gas.

ii) Expansion of gas at constant pressure and reversible.

c) Derive an expression for estimating ΔS for:

i) Chemical reaction carried out isothermally.

ii) Processes accompanied by temperature change reversibly.

3- Answer two only from the following: **(25 Mark)**

a) Derive the relation between equilibrium constant and temperature.

b) For the reaction $N_2 + O_2 \longrightarrow 2NO$, the enthalpy of formation of NO is 21.6 k cal/mole. Calculate ΔG^0 and the equilibrium constant for the reaction if S^0 for NO, N_2, and O_2 are 50.34, 45.77, and 49.01 cal/mole^{-1}K^{-1}respectively.

c) State the third low hypnosis of thermodynamics and show how to calculate the absolute entropy of a compound.

End of Exam

Best Wishes **Prof. Dr. R.M.Gabr**

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Chemistry Department	Program: Industrial Chemistry Level : (2) Date: 4/6/2026 Time: 2 h	
Course Title: Physical Chemistry		Code: 203 (IC) Industrial Chemistry	
Instructors: Dr. Ahmed GamalEldeen Mohamed			
Important:	No. of pages 8	No. Of questions 3	Total Mark: 50 Marks

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

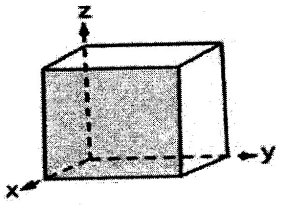
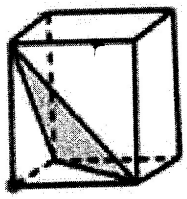
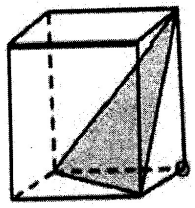
Part (I) Solid State Chemistry

Answer the following questions: **(17 Marks)**

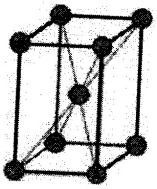
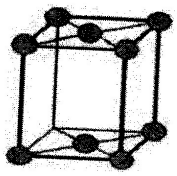
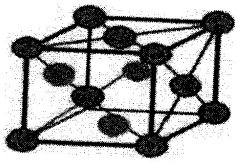
1- Choose the correct answer from the following answers: **(5 Marks)**

1-	**Crystalline solids have:**		
(a) Random arrangement		**(b)** Short-range order only	(c) Long-range order
2-	**The relation for crystal structure is:**		
(a) Structure = atom + bond		**(b)** Structure = lattice + basis	(c) Structure = unit cell + atom
3-	**Atomic solids are held together by:**		
(a) London dispersion forces		**(b)** Metallic bonds	(c) Ionic bonds
4-	**The APF value for FCC is approximately:**		
(a) 0.52		**(b)** 0.68	(c) 0.74
5-	**In Bragg diffraction:**		
(a) Angle of incidence ≠ angle of scattering		(b) Angle of incidence = angle of scattering	(c) Scattering angle is always 90°

2- Find the Miller Indices of the dashed planes in the following crystals (*Two Only*): **(2 Marks)**

i)	ii)	iii)
		
.....	.....	.....

3- Write the crystal system and calculate the number of atoms corresponds to the following structures (*Two only*): (3 Marks)

i) $a = b \neq c$, $\alpha = \beta = y = 90^o$ 	Crystal system ..... Number of Atoms .....
ii) $a \neq b \neq c$, $\alpha = \beta = y = 90^o$ 	Crystal system ..... Number of Atoms .....
iii) $a \neq b \neq c$, $\alpha = \beta = y = 90^o$ 	Crystal system ..... Number of Atoms .....

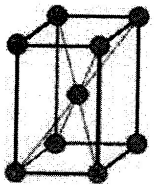
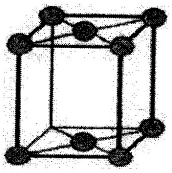
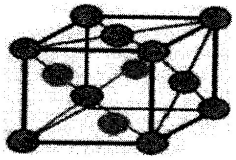
4- Answer *Only two* from the following questions: (3 Marks)

i) Write the Bragg's Law Equation:

ii) What are the uses of XRD?

iii) Define the intrinsic semiconductor.

3- Write the crystal system and calculate the number of atoms corresponds to the following structures (*Two only*): **(3 Marks)**

i) $a = b \neq c$, $\alpha = \beta = y = 90^o$ 	Crystal system ..... Number of Atoms .....
ii) $a \neq b \neq c$, $\alpha = \beta = y = 90^o$ 	Crystal system ..... Number of Atoms .....
iii) $a \neq b \neq c$, $\alpha = \beta = y = 90^o$ 	Crystal system ..... Number of Atoms .....

4- Answer *Only two* from the following questions: **(3 Marks)**

i) Write the Bragg's Law Equation:

ii) What are the uses of XRD?

iii) Define the intrinsic semiconductor.

5- Describe what happens in the crystal structure when substitutional impurities of cations (Ca^{2+} ions) / or anions (O^{2-}) are present in a host crystal of NaCl. (4 Marks)

Part (II) Chemical Kinetics (17 Marks)

Answer the following questions:

1- Choose the correct answer from the following answers: **(5 Mark)**

1-	For the reaction $A + B \rightarrow$products, doubling the concentration of A the rate of the reaction is doubled, but by doubling the concentration of B rate remains unaltered. The overall order of the reaction is		
(a) 1		(b) 2	(c) 3
2-	What is the order of reaction which has a rate expression rate = $K[A]^{3/2}[B]^{-1}$?		
(a) 3/2		(b) 1/2	(c) None of these
3-	The molecularity of reaction can be determined ——————.		
(a) Theoretically		(b) Experimentally	(c) none of these
4-	For the reaction 2A + 3B → 4C + 5D, the rate of the reaction in terms of ΔC would be written as		
(a) +4 $\Delta C/\Delta t$		(b) –1/4 ΔC/Δt	(c) +1/4 ΔC/Δt
5-	In the elementary reaction A+A + B ⟶ products, the rate is ——————.		
(a) Rate = k [A][B]		(b) Rate = $k[A]^2$ [B]	(c) Rate = $k[A]^2$

2- Answer *Only Three* from the following: **(3 Marks)**

i) **Define the Instantaneous Rate.**

ii) **Write the equation of the first order reaction.**

iii) **Write the equation of the second order reaction.**

iv) **Define the half-life period.**

3- The following data were measured for the reaction of nitric oxide with hydrogen: **(6 Marks)**

$2NO_{(g)} + 2H_{2(g)} \rightarrow N_{2(g)} + 2H_2O_{(g)}$

Experiment Number	[NO] (M)	[H_2] (M)	Initial Rate (M/s)
1	0.10	0.10	1.23×10^{-3}
2	0.10	0.20	2.46×10^{-3}
3	0.20	0.10	4.92×10^{-3}

a) Determine the rate law for this reaction.

b) Determine the units of the rate constant for this reaction.

c) Calculating the rate constant for this reaction.

d) Calculate the rate when [NO] = 0.050 M and [H_2] = 0.150 M.

4- The activation energy of a first order reaction is 50.2 kJ/mole at 25°C. At what temperature will the rate constant doublet? (R = 8.314 J/mole.K) (3 Marks)

Part (III) Catalysis (16 Marks)

Answer the following questions: **(16 Marks)**

1- Which of the following sentences is true or false: **(7 Marks)**

1-	In heterogeneous catalysis, the catalyst and reactants are the same phases.	
2-	An autocatalyst is a product of the reaction that acts as a catalyst for the same reaction.	
3-	Iodine can act as a catalyst in the gas-phase decomposition of ethers.	
4-	If the bonding between reactants and the catalyst is too weak, the reaction rate increases.	
5-	Lower surface area increases catalytic activity.	
6-	Different catalysts may lead to different products from the same reactants (selectivity).	
7-	Homogeneous catalysts generally provide higher selectivity compared to heterogeneous catalysts.	

2- Answer *Only Two* from the following questions: **(5 Marks)**

i) Write the mechanism of Haber–Bosch Reaction for preparation of ammonia.

ii) Discuss the mechanism of heterogeneous catalysis.

4- The activation energy of a first order reaction is 50.2 kJ/mole at 25°C. At what temperature will the rate constant doublet? (R = 8.314 J/mole.K) (3 Marks)

Assiut University **Faculty of Science** **Exam time: 2 hours** **Pages: 6 pages**	كلية العلوم جامعة أسيوط **Chemistry Department** **Academic Year: 2025/2026**	**2nd Year– 2nd Semester** **Final Exam (June 2026)** **Course Name: Marketing Research** **Dr: Ahmed Hassaan** **Total Marks: 50 Marks** **Exam date:10/6/2026**

Question One: (1-30) Choose the correct answer for each question, and transfer the answers to your Answer Sheet following the Same Sequence:

1. **Defining the problem is the _____ step in a research project.**
   A) least relevant
   B) optional
   C) most important
   D) final

2. **"Isolate/identify the problem, not the symptoms" means you should:**
   A) measure every symptom first
   B) assume symptoms equal causes
   C) focus on underlying causes
   D) ignore data entirely

3. **Marketing research primarily:**
   A) makes decisions for the firm
   B) gathers and organizes data to assist decision-making
   C) sets prices automatically
   D) guarantees market dominance

4. **A clearly defined marketing research problem should:**
   A) be ambiguous to allow flexibility
   B) align the study's scope, methods, and metrics
   C) be kept secret from the team
   D) avoid mentioning decisions

5. **A research project can be conducted properly only when the problem is:**
   A) controversial
   B) trending
   C) clearly and accurately identified
   D) expensive

6. **A research design should NOT include:**
   a) Measurement/scales
   b) Sampling plan
   c) Data analysis plan
   d) Office seating chart

7. **Descriptive research mainly answers:**
   A. Why X causes Y
   B. Who/what/when/where/how much
   C. Whether a manipulation altered a dependent variable
   D. The mechanism inside the consumer's brain

8. **Longitudinal designs differ from cross-sectional because they:**
   A. Use different samples at each wave
   B. Keep the same sample and measure the same variables over time
   C. Are always cheaper and faster
   D. Can't detect small changes

9. **Which is a primary data collection method?**
   a) Online survey
   b) Industry yearbook
   c) Government census
   d) Library catalog

10. **Customized research firms usually:**
   a) Use one standard report for all clients
   b) Tailor studies (e.g., test markets, new-product development)
   c) Avoid surveys
   d) Publish only syndicated ratings

11. **A single cross-sectional design is best described as:**
   A) Measuring the same respondents repeatedly over time
   B) One sample measured once (a snapshot)
   C) Multiple cohorts measured at identical times
   D) Experimental manipulation with random assignment

12. **Which statement best captures the purpose of research design?**
   A. Entertain stakeholders
   B. Obtain evidence that answers the research question/objectives
   C. Reduce project cost regardless of validity
   D. Guarantee absolute certainty

13. Causal research aims to:

A. Describe market shares only
B. Generate hypotheses only
C. Establish whether X → Y and the nature of that relationship
D. Measure frequencies without inference

14 .A laboratory experiment typically offers:

A. Highest realism and lowest control
B. High control over extraneous variables
C. No manipulation of independent variables
D. No need for random assignment

15. Which statement correctly compares qualitative and quantitative research?

A) Qualitative research uses large standardized samples only
B) Quantitative research avoids statistical analysis
C) Qualitative research uses small, open-ended methods, while quantitative research uses large standardized samples and statistics
D) Both methods require identical sample sizes

16. Secondary vs. primary data: which is correct?

A) Secondary data are slow and expensive; primary data already exist
B) Primary data already exist and are used only for final decisions
C) Secondary data are fast and cheap for defining problems; primary data are collected when needed
D) Primary data always replace secondary data

17. In exploratory work, the data emphasis is typically:

A. Only primary quantitative data
B. Mostly secondary data plus flexible qualitative primary
C. Only experimental data
D. Only panel data

18 .A unique advantage of longitudinal panel data is:

A. Perfect representativeness by default
B. Ability to link individual behavioral changes to marketing tactics
C. Elimination of all response bias
D. No need for compensation or maintenance

19. Which of the following is NOT a primary data method?

A. Questionnaires
B. Experiments
C. Observation
D. Government reports

20. In a structured questionnaire, respondents:

A. Answer only open questions
B. Choose from fixed alternatives
C. Decide the order of questions
D. Write long descriptive responses

21. A major risk of secondary data is that:

A. It's too expensive
B. May be outdated or irrelevant
C. Takes too long to collect
D. Requires many interviews

22. "Are you satisfied with the price and quality?" is an example of:

A. Leading question
B. Ambiguous question
C. Double-barreled question
D. Open-ended question

23. An interview is different from casual conversation because it is:

A. Informal
B. Structured and purposeful
C. Emotional
D. Random

24. The beginning of an interview requires:

A. Technical terminology
B. Skill to build rapport
C. Asking difficult questions
D. Discussing income

25. In-depth interviews use mostly:

A. Closed-ended questions
B. Open-ended, probing questions
C. Multiple-choice items
D. Yes/No questions

26. One major advantage of observation is that it:

A) Eliminates all bias
B) Provides direct information about behavior
C) Is always inexpensive

D) Requires no training

27. One advantage of questionnaires is that they are:

A) Always expensive
B) Free from interviewer bias
C) Difficult to distribute
D) Limited to small samples

28. Questionnaires are especially useful when:

A) Respondents are illiterate
B) Immediate clarification is required
C) Visual observation is necessary
D) The population is geographically dispersed

29. Body language in face-to-face interviews can:

A) Clarify responses
B) Replace verbal responses
C) Eliminate bias
D) Reduce costs

30. Telephone interviews are often shorter because they can be:

A) More enjoyable
B) More expensive
C) Tiring for participants
D) Difficult to schedule

Question Two:(31-44) Indicate which of the following statements is TRUE (A) or FALSE (B):

31. Symptoms may be misleading and not represent the real problem.

a) True	b) False

32. Most business analysis relies on neat, logged data such as sales reports and invoices.

a) True	b) False

33. When symptoms are mistaken for the real problem, research will most likely answer the wrong question.

a) True	b) False

34. Marketing research is a systematic and objective process used to collect information for improving decision-making.

a) True	b) False

35. Problem-solving research is used to provide solutions to defined issues.

a) True	b) False

36. Internal research departments often advantage firms by ensuring method consistency and shared knowledge.

a) True	b) False

37.Secondary data analysis can be part of approach and design stages.

a) True	b) False

38. Problem identification research only focuses on clearly visible and already defined issues.

a) True	b) False

39. Data analysis does not need to align with the hypotheses and research questions.

a) True	b) False

40. The marketing research process usually begins with defining the problem before conducting field interviews.

a) True	b) False

41. Internal research is always cheaper than external research in every case.

a) True	b) False

42. Primary data is data already available from books and reports.

a) True	b) False

43. Interviews are always unstructured and informal.

a) True	b) False

44. Opening questions in a questionnaire should be personal or sensitive.

a) True	b) False

BEST WISHES

د. أحمد حسان محمد علي

Dr. *Ahmed Hassaan Mohammed Ali*
Lecturer in The Department of Business Administration,
Faculty of Commerce, Assiut University

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Chemistry Department	Program: Industrial chemistry Level: 2nd Date: 23/5/2026 Time: 2 hrs.	
Course Title: Organic Chemistry II		Code: 202	
Instructors: Dr. Suzan Abu El-Hassan Sayed			
Important:		Total Mark: 50	

Answer all of the following questions:

A) Choose the correct answer for the following: (10 Marks)

1. Arrange the following compounds in order of decreasing (–I) effect.

A) Benzene, Phenol, Nitrobenzene **B)** Benzene, Nitrobenzene, Phenol

C) Phenol, Benzene, Nitrobenzene **D)** Nitrobenzene, Phenol, Benzene

2. The most reactive position for electrophilic substitution in indole is.....

A) C-2 **B)** C-3 **C)** C-5 **D)** Nitrogen

3. In Fischer indole synthesis, the key intermediate formed is.....

A) Enolate ion **B)** Hydrazone **C)** Carbocation **D)** Nitrile

4. The Vilsmeier–Haack reaction is mainly used for.....and the active electrophile is.....

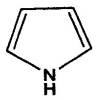
A) Nitration, Carbocation **B)** Formylation, Iminium ion

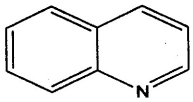
C) Sulfonation, Free radical **D)** Reduction, Carbanion

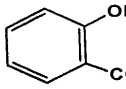
5. Nucleophilic substitution in pyridine occurs mainly at:

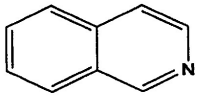
A) C-2 and C-4 **B)** C-3 only **C)** Nitrogen **D)** C-3 and C-5

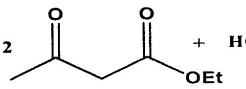
B) Complete the following equations: (10 Marks)

1)  $\xrightarrow{KOH/\ CH_3I}$ .....

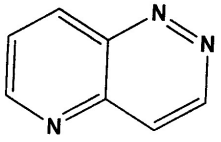
2)  $\xrightarrow{NaNH_2,\ NH_3}$ .....

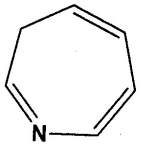
3)  $\xrightarrow[CH_3CO_2H]{(CH_3CO)_2O}$ .....

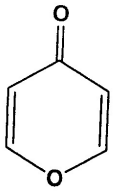
4)  $\xrightarrow{alk.\ KMnO_4}$ .....

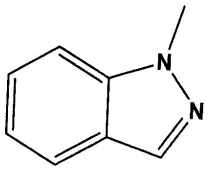
5)  $\xrightarrow{NH_4OAc\ /\ H2O}$ .....

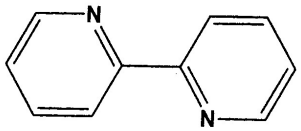
C) **Write the IUPAC name for THREE of the following compounds (or Common name if found).**
(12 Marks)

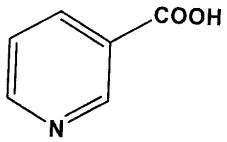
1) 

2) 

3) 

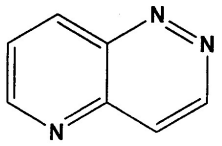
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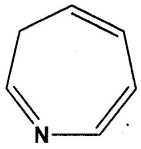
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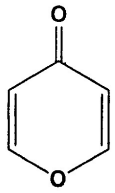
6) 

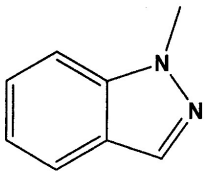
C) Write the IUPAC name for THREE of the following compounds (or Common name if found).

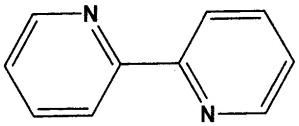
(12 Marks)

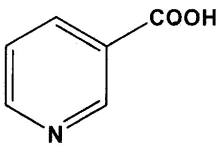
1) 

2) 

3) 

4) 

5) 

6) 

D) <u>Suggest a mechanism for THREE of the following reactions:</u> (9 Marks)

1- pyrrole synthesis.

2- indole synthesis.

3- pyridine synthesis.

4- Kolbe –Schmitt reaction.

E) **<u>Starting from benzene, How can you prepare THREE of the following compounds</u>? (9 Marks)**

1- Trinitrobenzene (TNB) **2-** DDT **3-** Saccharin **4-** Phenol **5-** monobenzal acetone

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Chemistry Department	Program: Physical Chemistry Level : (2) Date: 03/6/2026 Time: 3 h	
Course Title: Physical Chemistry		Code: 232 C	
Instructors: Prof. Dr. Maher M. Girgis and Prof. Dr. Ahmed Fawzy Saad.			
Important:	No. of pages 3	No. Of questions 1	Total Mark: 33 degrees

Q 1: Shade the correct answer; A, B, C or D: (1 degree each)

No.	Phrase
1	Proteins at their isoelectric points ..... . A) move to the anode B) move to the cathode C) sometimes move to the anode and sometimes move to the cathode D) don't have any electric charge
2	..... are common thixotropic gels. A) Silica gels B) Ca-acetate gels C) Certain clays D) Gels of agar-agar
3	The viscosity of lyophilic sols is frequently ..... that of the pure medium. A) higher than B) lower than C) sometimes higher and sometimes lower than D) not different from
4	The charge on hydrous ferric oxide sol is due to ..... ions. A) absorption of Cl^- B) adsorption of Cl^- C) adsorption of Fe^{3+} D) absorption of Fe^{3+}
5	The dispersed phase droplets in emulsions ..... . A) move to the anode B) move to the cathode C) sometimes move to the anode and sometimes to the cathode D) don't have electric charge
6	Many elastic and non-elastic gels shrink in volume on standing, with an accompanying exudation of solvent. This process is called ..... . A) thixotropy B) metathesis C) syneresis D) gelation
7	The effectiveness of Al^{3+}, Na^+, Ba^{2+} ions for precipitating AS_2S_3 sol decreases in the order..... . A) $Na^+ > Ba^{2+} > Al^{3+}$ B) $Al^{3+} > Ba^{2+} > Na^+$ C) $Al^{3+} > Na^+ > Ba^{2+}$ D) $Ba^{2+} > Na^+ > Al^{3+}$
8	A silver sol may be produced by reduction of dilute silver nitrate solution with ..... . A) Formic acid B) Nitric acid C) Tannic acid D) Sulphuric acid
9	According to ....., an emulsifier at the water- oil interface lowers the surface tension on the side of one liquid more than does on the other liquid. A) Burton B) Bancroft C) Sidentopf D) Einstein
10	Emulsions of water in oleic acid can be prepared as long as the proportion of acid in the mixture..... . A) Does not exceed 50% B) exceeds 50% C) does not exceed 40% D) exceeds 40%

11	Cosmetic lotions are examples of ..... . A) solid dispersed in liquid B) gas dispersed in liquid C) liquid dispersed in liquid D) liquid dispersed in solid
12	In lyophobic colloids the Tyndall effect is ..... . A) relatively weak B) relatively high C) sometimes relatively weak and sometimes relatively high D) lyophobic colloids don't show Tyndall effect
13	Platinum sol under an applied electric potential difference ..... . A) move to the anode B) move to the cathode C) sometimes move to the anode and sometimes to the cathode D) don't have electric charge
14	The Gold number of Gelatin, Gum Arabic and Egg albumin is 0.005, 0.10 and 0.08 respectively. Thus, the protective power of Gelatin, Gum Arabic and Egg albumin for a certain colloid is in the order..... . A) Gum Arabic > Egg albumin > Gelatin B) Gelatin > Egg albumin > Gum Arabic C) Gelatin > Gum Arabic > Egg albumin D) Egg albumin > Gum Arabic > Gelatin
15	The cleaning action of soap is due to ..... . A) hydrolysis of salt present in soap B) ionization of salt present in soap C) emulsification properties of soap D) high molecular mass of soap
16	If the sol particles in a given colloid move towards the anode, the dispersion medium carries..... . A) no charge B) positive charge C) negative charge D) sometimes positive and sometimes negative charge
17	Solid alcohol can be obtained by ..... . A) excessive cooling B) mechanical dispersion C) peptization by dispersion medium D) change of solvents
18	In a concentration cell, the electrode kept in contact with a solution of higher concentration acts as ..... . A) anode B) cathode C) reference D) none of these
19	If the direction of flow of electrons in electrochemical cell is left to right, then the cell reaction is ..... A) spontaneous B) non-spontaneous C) reversible D) irreversible
20	Which substance is the oxidizing agent in the following reaction? $4H^+_{(aq)} + 2Cl^-_{(aq)} + MnO_{2(s)} = Cl_{2(g)} + Mn^{2+}_{(aq)} + 2H_2O_{(l)}$ A) $H^+_{(aq)}$ B) $Cl^-_{(aq)}$ C) $MnO_{2(s)}$ D) $Mn^{2+}_{(aq)}$
21	What is the potential of the cell: $2Na + Cl_2 = 2NaCl$, that has a ΔG° of -330 kJ/mol ($F = 96485\ C\ mol^{-1}$)? A) 2.73 B) 0.85 C) 1.71 D) -2.73
22	Which four quantities a, b, c and d are required to balance the following equation: $a\ Fe_2O_{3(s)} + b\ CO_{(g)} \Longrightarrow c\ Fe_{(l)} + d\ CO_{2(g)}$ A) 2,3,4,6 B) 1,3,2,3 C) 1,6,2,6 D) 2,6,4,3

23	What is E^0_{cell} for a cell using Pb^{2+} / Pb and Mg^{2+} / Mg half-reactions? Which metal is the anode? ($E^\circ_{Pb^{2+}/Pb}$ = -0.124 V, $E^\circ_{Mg^{2+}/Mg}$ = -2.37V). A) +2.246 V, Pb is the anode B) -2.246 V, Pb is the anode C) +2.246 V, Mg is the anode D) –2.246 V, Mg is the anode
24	What volume of hydrogen gas, measured at STP, evolved from water electrolysis by passing two amperes for 120 minutes? F = 96485 C mol^{-1} A) 0.0746 B) 0.746 C) 7.46 D) 74.6
25	The potential of ..... electrode depends on the concentration of OH^- ions. A) oxygen B) hydrogen C) calomel D) amalgam
26	When hydrogen gas reacts with sodium, the oxidation numbers of hydrogen and sodium are ..... . A) +1 and -1 B) -1 and +1 C) +2 and –2 D) -2 and +2
27	..... is the process in which electrical energy is used to cause a nonspontaneous chemical reaction to occur. A) Electrolysis B) Photolysis C) Osmosis D) Hydrolysis
28	..... cell is an electrochemical cell that requires a continuous supply of reactants to keep functioning. A) Reversible B) Alkaline C) Daniell D) Fuel
29	What species must copper be oxidized to if the cell potential for one of its redox reactions is 1.5 V and the free energy of the reaction is –145 kJ/mol? A) Cu^{2+} B) Cu^+ C) Cu^{3+} D) Cu^{4+}
30	For an electrolytic cell, which of the following correctly describes the standard electrode potential, E°, and the standard Gibbs free energy change, ΔG°? A) Both ΔG° and E° are zero B) Both ΔG° and E° have the same sign C) ΔG° is negative, and E° is positive D) ΔG° is positive, and E° is negative
31	The emf of the cell: Zn | Zn^{2+}(0.01M) || Ag^+(0.1M) | Ag, (E^0_{Ag/Ag^+} is +0.80 V and $E^0_{Zn/Zn^{2+}}$ is -0.76 V) equals to ..... . A) 3.44 B) 2.04 C) 1.56 D) 1.59
32	What is the standard emf of the cell made of Cd electrode ($E^\circ_{Cd^{2+}/Cd}$ = -0.40 V) in a 1.0 M $Cd(NO_3)_2$ solution and Cr electrode ($E^\circ_{Cr^{3+}/Cr}$ = -0.74 V) in a 1.0 M $Cr(NO_3)_3$ solution? A) -1.34 B) 1.34 C) -0.34 D) 0.34
33	What is the potential of Zn in a 0.1 M $ZnSO_4$ solution at 25 °C, $E^\circ_{Zn^{2+}/Zn}$ = -0.76 V? A) -0.8221 B) -0.7895 C) 0.8812 D) -0.8812

Good Luck

Prof. Dr. Maher M. Girgis and Prof. Dr. Ahmed Fawzy Saad.

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Chemistry Department	Program: Chemistry Level: (2) Date: 3/6/2026 Time: 3 h	
Course Title: Physical Chemistry II		Code: 232 C	
Instructors: Prof. Dr. Maher M. Girgis, Prof. Dr. Maher M. A. Hamed and Prof. Dr. Ahmed Fawzy			
Important:	No. of pages 3	No. Of questions 3	Total Mark:50 degree

Section II, Phase Rule (1 hour)

1- Answer all the following questions: **(17 Marks)**

A) Explain briefly *Only two* from the following: **(10 Marks)**

i) The two-component system A and B forming compound AB with congruent melting point.

ii) Sodium chloride-water system and its uses as Freezing mixture.

iii) The ternary system Na_2SO_4-NaCl-H_2O at 15°Cwhere the hydrate $Na_2SO_4.10H_2O$ is formed.

B) What are the main differences between the phase diagram of Ag-Pb system with that of KI-Water system? **(4 Marks)**

C) Complete each of the following: **(3 Marks)**

i) At maximum points (C, E, G, and I) in $FeCl_3$-Water phase diagram, the system has ..... phases and ..... component.

ii) The three phases ....., ... and ..... co-exist in equilibrium at point C (119°C) in sulphur phase diagram system.

iii) $MgCl_2$-$CaCl_2$-Water system at 0°C shows the formation of ..... while at 25°C the system forms .....

Good Luck

Prof. Dr. Maher M. A. Hamed

	Assiut University- Faculty of Science Frist Semester- Final Exam 2025-2026 Chemistry Department	Program: - Level : (2) Date: 31/12/2025 Time:2 h	
Course Title : Inorganic 1		Code: 220C	
Instructors: Prof. Dr. Prof. Dr. Aref A. M. Aly - Prof. Dr. Mohamed Abd El-Hakeem			
Important: --	No. of pages 2	No. Of questions 7	Total Mark:50 degree

Answer the following

1. A) Discuss For only four of the following : (4Marks)
   - i- Ground ; excited and further excited state of S-atom and account number of unpaired electrons
   - ii- The shape ; hybridization ; number of σ-bonds and Π- bonds of sulphate ions
   - iii- Reaction of H_2SO_4 with barium nitrite and sodium nitrate
   - iv- Effect of cold and hot water on phosphorous trioxide
   - v- Preparation HCl from NaCl (two methods)

   B) Calculation the oxidation number of: (4Marks)
   - i- P-atom in hypophsphouric acid ; pyrophsphouric acid and phosphine
   - ii- N-atom in dintrogen penta oxide and hyponitrous acid

   C) Explain why: (4 Marks)
   - i- $HClO_4$ is an extremely strong acid than HOCl
   - ii- The great reactivity of fluorine

2. Give the preparation of the following (6 Marks)
   - i- One method for the industrial preparation of hydrogen.
   - ii- Laboratory preparation of hydrogen peroxide.
   - iii- one method for magnesium preparation.

3. Give reasons for only TWO of the following (4 Marks)
   - i- Binding energy for group I elements is relatively weak.
   - ii- Be and Al form similar compounds.
   - iv- Lead forms stable dialect compounds.

4. Complete the following (3 Marks)
   - i-.....catalyzes the combination of chlorine with hydrogen.
   - ii- There is a good diagonal relationship between beryllium and.....
   - v- Among group I elements, Lithium is the least and.....is the most reactive.

5. Mark with (T) for true or (F) for false statements (10 Marks)
   - i- BiH_3 is thermally most stable than NH_3
   - ii- Phosphorus penta oxide show oxidizing properties and is a basic in nature
   - iii- SO_3 dissolve in water giving acidic solution
   - iv- HOCl acid is oxidizing agents
   - v- $BaCO_3$ is mixed with sulphur to produce BaO by heating.
   - vi- To transfer graphite into diamond , pressure must be applied because

diamond is denser than graphite.

vii- Silicon carbide has the diamond – structure and is known as ' carborundum '.

viii- Si-Si bond is stronger than C -C bond.

x- Sodium amalgam is liquid when it is low in Sodium.

xi- The chemistry of ammonium salts resembles those of K and Rb in solubility and structure.

6. Complete the following (5 Marks)

i- The halic (I) acid .....more stable

ii- $XeOF_4$ has .....shape

iii- The bromide has an outer electronic structure of

iv- electronic structure of halogen atom in further excited state have .....

v- Zinc fluoride is..... in water

7- Fill in the correct answer : (10 Marks)

i- Reaction of water with XeF_2 gives.....and.....

i-Xe and HF_2 ii-Xe and XeF_6 iii- HF and XeF_6 iv- Xe and XeF

ii- Hydrazine is prepared by the action of .....on ammonia

i-NaOCl ii- NaCl iii-NH_2Cl iv- NH_4Cl

iii- The trihalide .....is easily hydrolyzed

i- $BiCl_3$ ii- NCl_3 iii- $AsCl_3$ iv- SbCl3

iv- Solutions of Be salts are.....

i- Basic ii) neutral iii) acidic iv) slightly basic

v- polarity of water leads to .....properties

i) cohesive ii) adhesive iii) both adhesive and cohesive iv) dissociative

vi- Berylliumhydroxid is.....

i) soluble in water ii) not soluble iii) sparingly soluble iv) moderately soluble

vii. Hydrogen has.....isotopes

i) one ii) two iii) three iv) four.

viii- The diborane B_2H_6 has a.....structure

i) dimeric ii) trimeric iii) tetrameric iv) pentameric

xi-. There is a strong diagonal relationship between boron and.....

i) aluminium ii) germanium iii) silicon iv) selenium

x- CO_2 and SiO_2 are purely.....

i) basic ii) amphoteric iii) acidic iv) weakly basic

End of Exam

Best Wishes

Prof. Dr. Aref A. M. Aly

Prof. Dr. Mohamed Abd El-Hakeem

	Assiut University- Faculty of Science Second Semester- Final Exam 2026 Chemistry Department	Program: Industial Chemistry Level : (2) Date: / /2026 Time: 2 h	كلية العلوم جامعة أسيوط
Course Title: Biochemistry		Code: 210 Industrial Chemistry	
Instructors: Prof. Dr. Adel Mohamed Kamal El-Dean			
Important:	No. of pages 1 / No. Of questions 3	Total Mark: 50 degree	

I. Answer the following questions: .....(30marks)

a. Draw the types of nucleic bases present in DNA and RNA.
b. Show by equation the Strecker Synthesis of amino acids
c. Show by equation using Gabriel's method for synthesis of methionine
d. Show by equation using diethyl malonate for synthesis of phenyl alanine
e. Show by equation how you can elucidate the structure of sucrose.
f. Show by equations the effect of the following reagents on amino acids:
   i. $CHCl_3/KOH$ ii. NOCl iii. $Ba(OH)_2$
   iv. Oxidative deamination of amino acids v. Reductive deamination of amino acids
j. Define the following: i. Isoelectric point ii. Mutarotation iii. Malaprade reaction
k. Draw the structure of lactose and lactulose and show the difference between them.
l. Show by equation applying Kiliani-Fischer synthesis to arabinose by giving the names of products

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

1. Each amino acid has a carboxyl group (COOH), and primary amino group (NH_2), except: a. arginine b. phenylalanine c. proline, which has a secondary amino group-imnio acid)
2. From essential amino acid: a. Cysteine b. glutamic acid c. threonine
3. From non essential amino acids: a. asparagines b. tryptophan c phenylalanine
4. Amino acid containing two amino groups: a. Leucine b. L-lysine c. Threonine
5. From neutral AAs (5-Hetrocyclic): a. histidine b. tyrosine c. valine
6. From Glucogenic amino acid: a. Leucine: b. Aspartic acid c. Cysteine
7. From Ketogenic amino acid: a Glutamic acid b. Glutamine c. leucine
8. Amino acids that are both glucogenic and ketogenic: a. phenylalanine b. Proline c. Serine
9. From polar aminoacids which can forming hydrogen bonds : a. Threonine b. Methionin c. cysteine
10. From acidic amino acids: a. Ornithine b. glutamic acids c. Arginine
11. From basic amino acids: a. Lycine b. aspartic acid c. glutamic acid
12. The isoelectric point is: a. the pH at which an amino acid is electrically neutral b. the pH at which the amino acid cannot form Zwitterion c. the pH at which the amino acid is acidic
13. From achiral aminoacids: a. alanine b. tryptophane c. Glycine
14. Some AAs Classified as Semiessential amino acids like: a. Histidine b. Glycine c. tyrosine
15. When alanine treated with nitrosyl chloride gave: a. acetic acid b. propanoic acid c. chloro acetic acid.
16. Hippuric acid was prepared from reaction of glycine with: a. acetyl chloride b. formaldehyde c. benzoyl chloride.
17. When amino acid treated with Chloroform and KOH gave: a. hydroxyl acid b. chloroacid c. carbylamines (Isocyanoacid).
18. hydroiodic acid reacted with aminoavid to gave: a. Iodo acid b. hydrocy acid c. aliphatic fatty acid.
19. Amino acids when they are heated with barium hydroxide gave: barium salt of anino acid b. aliphatic fatty acid c. primary amine
20. D-Galactose when oxidized with nitric acid gave dicarboxylic acid:
    a. Containing point of symmetry b. Containing plane of symmetry c. it hasn't any element of symmetry

End of Exam

Best Wishes **Prof. Dr. Adel Mohamed Kamal El-Dean**

Δ Remember ■Understand •Apply ◊Analysis *Evaluate ◯Create

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Chemistry Department	Program: Nanotechnology Level : (2) Date: 2/1/2026 Time: 2 h	
Course Title: Nuclear and Radiochemistry			Code: 208 C
Instructors: Prof. Dr. Refaat Mahfouz			
Important:	No. of pages 6	No. Of questions 5	Total Mark: 50 degree

Answer the following questions:

Question No.1: *(25 Marks)*

Chose the correct answer:

1) A radioactive sample has an initial activity of 28 dpmin, ½ h later the activity is 14 dpmin. The number of atoms of the radioactive were there originally ($\lambda\ T_{1/2} = 0.693$) are

A) 1000 atom B) 1200 C) 800 D) 700

2) The activity of 30 μg of Cm-247 is 2.8 nCi .The half-life of Cm -247 is

A) 1.5×10^7 y B) 2.0×10^7 C) 3.5×10^5 D) 2.5×10^5

3) The half-life of K-40 is 1.28×10^9 y. the mass of nuclide has an activity of 1.00 μCi is

A) 0.143 g $^{40}K/\mu ci$ B) 1.250 C) 0.156 D) 0.181

4) From the following nuclides $^{208}_{82}Pb$, $^{8}_{5}B$, $^{150}_{67}Ho$, $^{30}_{13}Al$, $^{120}_{50}Sn$ and $^{94}_{36}Kr$. The probably β⁻emitter are

A) $^{30}_{13}Al$, $^{94}_{36}Kr$ B) $^{30}_{13}Al$, $^{208}_{82}Pb$ C) $^{150}_{67}Ho$ D) $^{120}_{50}Sn$

5) The missing particle in the following nuclear reaction $^{9}_{4}Be\ (p, \alpha)$ is

A) $^{6}_{3}Li$ B) $^{4}_{2}He$ C) $^{14}_{7}N$ D) $^{3}_{2}He$

6) The missing nuclide in a typical neutron – initiated fission

$^{235}_{92}U + {}^{1}_{0}n \rightarrow {}^{97}_{42}Mo + ...+2\ {}^{1}_{0}n$ **is**

A) $^{137}_{50}Sn$ B) $^{130}_{50}Sn$ C) $^{138}_{51}Sb$ D) $^{137}_{51}Sb$

7) The linear attenuation coefficient of 300 KeV gamma ray for tissue is 0.12 cm^{-1}.The half thickness value for the tissue is

A) 5.77 cm B) 57.5 C) 2.18 D) 3.29

8) The annual dose for a worker who spend a full working year (say 2000 h) in an area where the average dose rate is 2.5μSv/h is

A) 5000 μSv B) 4000 C) 1000 D) 3000

9) The approximate dose rate at a distance of 2m from a 240 –MBq cobalt -60 source (Co-60 emits two γ-rays/disintegration of 1.17 and 1.33 MeV) is

Δ Remember ■Understand •Apply ◊Analysis *Evaluate ◯Create

	Assiut University- Faculty of Science **Second Semester- Final Exam 2025-2026** **Chemistry Department**	**Program: Industrial chemistry** **Level: Second** **Date: May 23, 2026** **Time: 2 hours**	
Course Title: Organic Chemistry I		**Code: كم ص 201**	
Instructors: Prof. Dr. Ahmed Abdou O. Abeed			
Important:		**Total Mark: 50**	

Answer the following questions:

Q1. Put (√) for true sentence and (X) for the wrong one: **(10 points)**

1. Benzene has the molecular formula C_6H_6 and all its hydrogen atoms are equivalent.
2. Halogens are activating groups in electrophilic aromatic substitution reactions of benzene.
3. All electron-donating groups direct substitution to the ortho and para positions in the benzene ring.
4. Ketones are compounds that contain a carbonyl group bonded to two alkyl or aryl groups.
5. Structural isomers differ only in the spatial arrangement of atoms.
6. In IUPAC nomenclature for ketones, the carbonyl carbon should be given the lowest possible number.
7. The presence of a double bond in alkenes can lead to the existence of geometric isomers.
8. Aldehydes contain a carbonyl group bonded to at least one hydrogen atom.
9. Tautomerism is a special case of structural isomerism where two forms exist in dynamic equilibrium.
10. In nucleophilic addition reactions to carbonyl compounds, the carbon atom of the carbonyl group is always sp3 hybridized.

Q2. Choose the correct answer for the following sentences: **(10 Points)**

1. Which of the following compounds is considered aromatic?

A) Cyclobutane B) Thiophene C) Cyclohexane D) 1,3-Butadiene

2. What is the major product when benzene reacts with Br_2 in the presence of $FeBr_3$?

A) 1,2-Dibromobenzene B) Bromobenzene C) Benzene bromide D) 1,3,5-Tribromobenzene

3. What type of isomerism exists between butanol and ether ($C_4H_{10}O$)?

A) Chain isomerism B) Functional group isomerism C) Geometric isomerism D) Optical isomerism

4. Which group is a meta-directing group in electrophilic aromatic substitution?

A) -OH B) $-CH_3$ C) $-NO_2$ D) $-OCH_3$

5. The correct IUPAC name for the following compound is: CH_3-CO-CH_2-CH_3

A) 2-butanone B) Butanal C) 3-butanone D) 2-butene

6. Which of the following statements about stereoisomers is correct?

A) They have different molecular formulas B) They have different connectivity of atoms

C) They have the same connectivity but different spatial arrangement D) They are always superimposable

7. The product of nucleophilic addition of HCN to acetone is called:

A) Cyanohydrin B) Diketone C) Imine D) Aldol

8. Which of the following is NOT a carbonyl compound?

A) Acetone B) Benzaldehyde C) Ethanol D) Propanal

9. Which hybridization describes the carbon atom in the carbonyl group (C=O)?

A) sp B) sp^2 C) sp^3 D) sp^3d

10. Which of the following describes a pair of enantiomers?

A) Structural isomers B) Geometric isomers

C) Non-superimposable mirror images D) Compounds with different molecular weights

Q3. How can you prepare? **(10 points)**

(i) Benzaldehyde starting from toluene. (ii) Acetophenone from benzene.

(iii) Propanal from 1-propanol and name the type of reaction and the reagent(s) used.

(iv) Butan-2-ol from 2-butanone and name the type of reaction and the reagent(s) used.

Q4. (i) Name a reagent that can selectively oxidize a primary alcohol to an aldehyde. Write an example reaction. **(3 Points)**

(ii) Which oxidizing agent is commonly used to convert secondary alcohols to ketones, and what is the equation for the oxidation of isopropanol to acetone? **(3 Points)**

(iii) Describe the difference in the oxidation products when using PCC versus potassium dichromate on a primary alcohol.(by equation only). **(3 Points)**

Q5. (1) Define isomers and explain the difference between constitutional isomers and stereoisomers. **(3 Points)**

(2) Describe the main types of constitutional isomerism. **(3 Points)**

Q6. (i) Write the mechanism of ESA sulfonation reaction. **(2 Points)**

(ii) Why are electron-donating groups generally ortho-para directors in electrophilic aromatic substitution reactions? **(3 Points)**

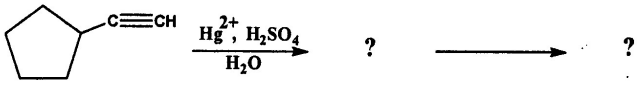
Good Luck

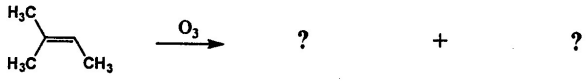
	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Chemistry Department	Program: Industrial Chemistry Level: 2 Date: Dec 26, 2025. Time: 2 h	
Course Title: Organic Chemistry (I)		Code: 201 C	
Instructors: Prof. Dr. Ahmed Abdou O. Abeed			
Important:	No. of Pages 2 / No. of Questions 4	Total Mark: 50 degrees	

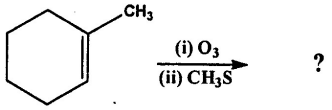
Answer the following questions

Question 1:

a) Complete the following equations: **(5 Marks)**

(i) 

(ii) 

(ii) 

b) Mark (√) for the right statement and (x) for the wrong ones: **(8 Marks)**

(1) The carbon of carbonyl group is SP^3 hybridized.

(2) The chromic acid is the catalyst of Jones oxidation.

(3) Collins's oxidation is used for the oxidation of secondary alcohols.

(4) Methanal is the lowest aliphatic aldehyde.

(5) The carboxylic acid reacted with $SOCl_2$ to give acid amide.

(6) The positional isomers have same the molecular formulas but differ in the position of a functional group.

(7) Cyclobutane and but-1-ene are of functional group isomers.

(8) Diastereomers are optically active isomers that are not enantiomers.

Question 2:

a) Mention the usage of the following reactions and their reagents: **(6 Marks)**

(1) Dess-Martin reaction. (2) Collins's reaction.

(3) Swern reaction.

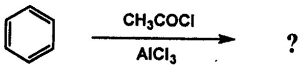
b) Draw the structures of the following compounds: **(6 Marks)**

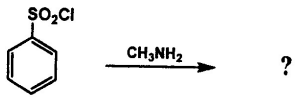
(i) 4-Methyl-2-pentanone
(ii) 2,2-Dimethyl cyclobutane
(iii) (*E*)-But-2-enal
(iv) Propionaldehyde
(v) 2-Chloro-3-methyl butanal
(vi) trans-2-Butene

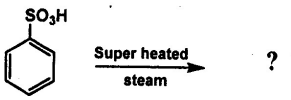
Question 3:

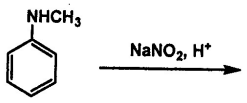
(a) Predict the products of FIVE ONLY of the following reactions, giving the names of the products. **(5 Marks)**

(i) 

(ii) 

(iii) 

(iv) 

(v) 

(vi) 3 mole Acetylene $\xrightarrow{480\ ^\circ C}$?

(b) Explain the Friedel crafts limitation and discuss with an example how you overcome this limitation. **(4 Marks)**

Question 4:

a) Write the reactions for the synthesis of *p*-bromo-and *p*-nitroaniline starting from aniline. **(5 Marks)**

b) Define the activating group and deactivating group, and show which of the following functional groups are ortho-para directors or meta-directors: **(6 Marks)**

NH_2, NO_2, CN, halogen,

OH, CHO, Ph, COOH

c) Write the chemical equations for the reaction of one molecule of aniline with three molecules of methyl chloride. **(5 Marks)**

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Examiner Prof. Dr. Ahmed Abdou O. Abeed

	Assiut University- Faculty of Science Frist Semester- Final Exam 2025-2026 Chemistry Department	Level : (2) Date: 28/12/2025 Time: 3 h	
Course Title: Physical Chemistry		Code: 230 C	
Instructors: Prof. Dr.Y. Temerk and A. Elawaad			
Important:	No. of pages 2 / No. Of sections 2	Total Mark:50 degree	

Section I

Answer the following questions: **(17 Marks)**

Q.1) Answer the following statements with: True (T) or False (F). Write the correct answer in case of the statement is False.

a- Plotting log (a-x) against T gives a straight line of the slope $-K_1/2.303$.

b-The half-life period for the third order reaction is equal $3/2\ K_3$.

c- Hydrolysis of an ester by pure water in the presence of mineral acid is an example of second order reaction.

d- The specific rate of bimolecular reaction in molecules per cm^3 per second should given by $K= Zq^2$

Q.2) Answer only Two from the following:

a-Derive the kinetic equation for the determination the specific rate constant for the following reaction $A+B \xrightarrow{K_2} $ products .

b-Discuss the theory of absolute reaction rate.

c-Discuss the effect of temperature on the reaction velocity.

d-At 378.5°C the half-life period for the first order thermal decomposition of ethylene oxide is 363 min and the energy of activation of the reaction is 52000 cal /mol. From these data estimate the time required for ethylene oxide to be 75% decomposed at 450°C. (R=1.978 cal/degree/mol).

Section II

(R=1.978cal/degree/mol) , (R=0.082 L.atm./mole/ K)

Q.3) Answer the following : **(24 Marks)**

a-Discuss the temperature dependence of entropy.

b-The density of ice at 0°C is 0.9g cm^{-3} and has entropy of 38cal mol^{-1} deg^{-1}. The density of liquid water at this temperature is 1 g cm^{-3} and has entropy of 60 cal mol^{-1} deg^{-1}. Given this date, calculate ΔS, ΔH and ΔE for the conversion of 360 gm of liquid water to ice at the normal melting point. (M.wt. of H_2O=18 g $mole^{-1}$).

C- Three moles of an ideal gas is compressed isothermally at 298°C. If the gas is compressed from 1 atm. to 15 atm., reversibly and irreversibly against an external pressure of 15 atm . Calculate Δ S for both processes.

d- Calculate the enthalpy change when 540 g of water freezes at constant pressure and a temperature of -30°C. At 0°C, ΔH is -1435 cal $mole^{-1}$, and C_p is 18 and 8.8 cal mol^{-1} deg^{-1} for water and ice , respectively .

e- At 760 mm/Hg , 100gm of benzene is vaporized at its boiling point of 80°C. Calculate : a) W_{rev} , b) q , c) ΔH , d) ΔE .Knowing that: The heat of vaporization is 7.6 K cal/mol , M.wt of benzene =78gm/mol.

f- Calculate the change in the melting point of ice when application of 200 atm

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pressure . The volume change upon melting is -1.6x10-2 liter/mole, and the enthalpy of fusion is 1440cal/mole.

Q.4) Choose the correct answer from A,B,C or D: **(9 Marks)**

i- A mixture of two moles of CO and one mole of O_2, in a closed vessel is ignited to convert the CO to CO_2. If ΔH is the enthalpy change and ΔE is the change in internal energy, then

(A) $\Delta H < \Delta E$ (B) $\Delta H > \Delta E$ (C) $\Delta H = \Delta E$

(D) The relationship depends on the capacity of the vessel

ii- The value of ΔG for a hypothetical reaction, X + Y → Z is greater than zero, then

(A) The reaction has tendency to proceed towards Z

(B) The reaction has attained equilibrium

(C) increase in temperature increases the yield of product Z

(D) X and Y predominate in the final mixture

iii- The latent heat of vaporization of a liquid at 500 K and 1 atm pressure is 10 kcal/mol. What will be the change in internal energy (ΔE) of 3 moles of liquid at the same temperature?

(A) 7.03 kcal (B) – 7.03 kcal C) 27.03 kcal (D) – 27.03 kcal

iv-The work done in L. atm for an expansion of one mole of an ideal gas from a volume of 10 liters to 30 liters at 27°C is :

(A) 0.082 (B) 16.4 (C) 8.20 (D)1.64

v- According to the above question, the work done in calories is:

(A) 79.38 (B) 16.4 (C) 39. 68 (D) 396.88

vi- Reaction, $H_{2(g)}+I_{2(g)} \rightarrow 2HI_{(g)}$; ΔH = 12.4 kcal. According to this, heat of formation of HI will be

(A) 6.20 kcal/mole (B) – 12.4 kcal (C) 24.8 kcal (D) 6.20 kcal

vii- The heat of formation of CO(g) and CO_2 (g) are – 26.4 kcal and – 94.0 kcal respectively. The heat of combustion of carbon monoxide will be:

(A) 26.4 kcal (B) – 67.6 kcal (C) – 120.4 kcal D) 52.8 kcal

Viii- Heat of evaporation of benzene is 7350 cal K^{-1} mol^{-1} . Calculate the change in entropy to convert 2 moles gaseous benzene to liquid at 77°C

(A) 42 cal K^{-1} mol^{-1} (B) -42 cal K^{-1} mol^{-1} (C) -42 cal K^{-1} (D) 42 cal K^{-1}

ix- When 2 moles of water are boiled at 100 °C temperature and converted to vapor at the same temperature. Then what will be the change in entropy? H_{vap} =9590 cal./mole

(A) 25.71 (B) 51.42 (C) 21.76 (D) 217.6

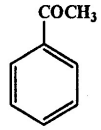
Examiners: Prof.Dr Y.Temerk ; Prof.Dr A.El-Awad

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Chemistry Department	Program: Industrial Chemistry Level: 2 Date: Dec 29, 2025. Time: 2 h	
Course Title: Organic Chemistry (II)		Code: 202 C	
Instructors: Prof. Dr. Ahmed Abdou O. Abeed			
Important:	No. of Pages 2	No. of Questions 4	Total Mark: 50 degrees

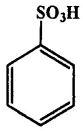
Answer the following questions

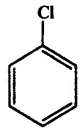
Question 1. Complete the following equations: **(10 Marks)**

1-  $\xrightarrow{H_2SO_4\ Conc.}$ ..... $\xrightarrow{NaOH}$ .....

2-  $\xrightarrow[HCl]{Zn\ (Hg)}$ ..... $\xrightarrow{KMnO_4}$ .....

3- Aniline $\xrightarrow[H_2SO_4\ Conc.]{NaNO_2}$ ..... $\xrightarrow{CuCN}$ .....

4-  $\xrightarrow[HNO_3\ Conc.]{H_2SO_4\ Conc.}$ ..... $\xrightarrow[HNO_3\ Conc.]{H_2SO_4\ Conc.}$ .....

5-  $\xrightarrow[HNO_3\ Conc.]{H_2SO_4\ Conc.}$ ..... + ...

Question 2:

(a) Choose (T) for true sentence or (F) for false sentence: **(10 Marks)**

1. The polymerization of three molecules of acetylene gave toluene.
2. The nitro group direct to ortho and para positions on aromatic ring.
3. The activating group is groups that can donate electron density to the aromatic ring.
4. The reduction of nitrobenzene by Tin and HCl gives aniline.
5. The nitration of benzene is type of nucleophilic substitution reaction.
6. The carboxylic group is one of the deactivating groups.
7. Toluene consist of methyl group ring attached to phenyl ring.
8. The decarboxylation of toluic acid give toluene.

9. The amino group is an example of strong activating group.
10. Primary aromatic amines condensed with aromatic aldehydes to give Schiff's base.

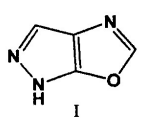
b) Write the chemical equations for the reaction of aniline with 3 moles of CH_3Cl. **(5 Marks)**

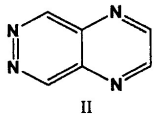
Question 3. Choose (T) for true sentence or (F) for false sentence: **(10 Marks)**

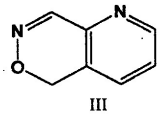
1. Furan is five membered rings with oxygen heteroatom.
2. Condensation of pyrrole with imine and immonium ions is called Mannich reaction.
3. 1,4-Dicarbonyl compounds can be reacted with a source of sulfur to give thiophenes.
4. Indole structure is a benzene ring fused with pyrrole.
5. Isoxazole is 1,2-oxazole type where thiazole is 1,3-thiazole type.
6. Pyridine completely miscible in water due to the hydrogen bonding.
7. Lone electron pair of pyrroles shares in resonance of ring.
8. Nitration of pyridine gives 3-nitropyridine.
9. The reaction of aromatic amines and 1,3-dicarbonyl compounds gives Indole.
10. Pyrrole is one of 1,2-diazole compounds.

Question 4:

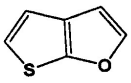
(a) Write the systematic names of the following structures: **(5 Marks)**


I


II


III


IV


V

(b) Give ONE METHOD for the synthesis of the following heterocycles: **(10 Marks)**

(I) Pyrrole ring.
(II) Indole derivative
(III) Pyridine ring.
(IV) Quinoline compound.
(V) Pyrimidine ring.

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Examiner Prof. Dr. Ahmed Abdou O. Abeed

كلية العلوم
جامعة أسيوط

كلية العلوم - جامعة أسيوط

جامعة أسيوط

Final Exam: Physiology 1 (217Z) تاريخ الامتحان ٢٠٢٦/١/٢ **Time: Two Hours**
Chemistry/Zoology Students **First Semester 2025/2026**

1-Choose the correct answer: (20 marks)

1-Macronutrients in includes all the following except .....
a- Proteins b- Lipids c- Carbohydrates d-minerals and vitamins

2-Triacylglycerols are the products of a reaction in which three OH groups of glycerol are esterified with molecules of .....
a-fatty acids b-amino acids c-glycogen d- cholesterol

3-Symptoms of malnutrition includes.....
a- weight loss b- lack of energy and strength c-anemia d- all are true.

4- In gastric mucosa pepsinogen secreted by.....
a-Parietal cells b-Chief cells c-mucosa cells d- all cells are true.

5- GLUT transporters bring ..... into the cell via facilitate diffusion
a-glucose b-fatty acids c-amino acids d- vitamins

6- Polyunsaturated fatty acids are precursor molecules .....
a- steroid hormones b- vitamin D c- bile salts d-All are true

7- Mineral..... is necessary synthesis of hemoglobin.
a- Sodium b-Potassium c-Chloride d-Iron

8-Bile reduces the surface tension and causes.....
a. Emulsification of fat b. Digestion of fat c. Absorption of fat d. All of the above

9. The primary target gland of the hypothalamus is the.....
a. adrenal gland b. gonads c. pituitary gland d. thyroid gland

10- Respiratory center that controls breathing is found in .....
a- medulla oblongata b- lungs c-kidney d- cerebellum

11. Schwann cells which are responsible for myelin formation in the.....
a. PNS b. CNS c. ANS d. a, b and c

12. Motor neurons transmits response from the CNS to.....
a. muscle b. glands c. and &b d. sense organs

13. Amount of air moved into or out of lungs during a single respiratory cycle is.....
a. tidal volume b. vital capacity c. total capacity d. inspiratory reserve volume

14. Which of the following is part of the respiratory system?.....
a. Nose b. Pharynx c. Trachea d. All are True

15. The posterior pituitary stores and releases.....
a. growth hormone and prolactin. b. prolactin and oxytocin.
c. oxytocin and antidiuretic hormone (ADH) d. ADH and growth hormone

16-Which of the following is responsible for the release of surfactant molecules into the air-filled lumen of the alveoli?.....
a. type I alveolar cell b. type II alveolar cell c. lung macrophages d. a & b

17-Stem cells in bone marrow are unspecialized cells that retain the capacity to divide and differentiate to erythrocytes under the effect of .....
a- erythropoietin b- colony stimulating factor c-thrombopoietin d-all are true

18- Ascites (increased abdominal size due to accumulative fluid in the peritoneal cavity) is a disease resulted from decrease of plasma .....
a- Albumin b-globulin c. fibrinogen d-thrombin

19-Lymphatic fluid contains all the components of blood except.....
a- erythrocytes b- platelets c- low level of proteins d- All are true

20-- Macula densa is a collection of specialized epithelial cells in the .....
a- distal convoluted tubule b-proximal convoluted tubule c-collecting duct d-Loop of Henle

II- Put true (T) or false (F) for each one: (15 marks)

1-Systole is the contraction of heart chambers; diastole is their relaxation. ( )

2- The elasticity and vital capacity of lungs were decreased by smoking. ( )

3. Insoluble fiber can help in regulation of cholesterol. ( )

4. Triglycerides are precursor molecules of steroid hormones. ( )

5. When more calories are consumed than needed for ATP production, adipose tissue synthesizes lipids from glucose or amino acids. ( )

6. Sinuo atrial (SA) the pacemaker of the heart is found in right ventricle. ( )

7. Atherosclerosis is due to a build-up of protein under the inner lining of arteries. ( )

8. Automatic breathing is influenced by activity of chemoreceptors that monitor blood $PC0_2$, $P0_2$, & pH in medulla oblongata and in large arteries near heart. ( )

9. Infiltration of fluid through the glomerular capillaries into Bowman's capsule dependent on central nervous system. ( )

10. Creatinine, a normal component of urine, is produced because of the breakdown of creatine phosphate in muscle tissue. ( )

11.Myelin sheath is a fatty layer covering nerve fibers. ( )

12-Animals have sense receptors to provide them with information about their internal and external environment. ( )

13- Short term regulation of food intake is concerned with preventing overeating at meals. ( )

14-Gastric ulcer is erosion of stomach wall due to infection by bacteria. ( )

15-The brain and spinal cord are protected by meninges. ( )

III- Answer on FIVE OLY of the following questions: **(15 Marks)**

1-Write on circulatory system disorders.

2- Compare between nervous and hormonal co-ordination.

3- Mention the role of liver in metabolism.

4- **Discuss the function of Kidneys.**

5- Mention the five basic types of sensory receptors.

Good luck

Dr. Hossam El-Din M Omar, Prof. of Physiology

	Assiut University- Faculty of Science Frist Semester- Final Exam 2025-2026 Chemistry Department	Program: Chemistry Level : (2) Date: 7/6/2026 Time: 3 h	
Course Title: Reaction Mechanism and Carbonyl compounds		Code: 210 Chem.	
Instructors: Prof. Dr. Shaban Radwan			
Important:	No. of pages 2 / No. Of questions 4	Total Mark: 50 degree	

Answer the following questions ..... (50 marks)
Part 1 (Reaction Mechanism)..... (25 marks)
First Question:..... (13 marks)
A. Writ on *Four Only* of the following: (8 marks)

a. Methods determination of the presence of an intermediate.

b. Chemoselectivity and regioselectivity.

c. The differences between carbocation, carbanion and free radical.

d. Nucleophilicity versus basicity. , e. Hyperconjugation.

B. Choose the correct answer for the following questions: (5 marks)
1. Reaction mechanism exhibits second-order kinetics ,stereospecific and regioselective is :
a. S_N1 , b. E1 , c. S_N2 , d. E2
2. Cyclopentyl bromide reacts with sodium cyanid in the preesnse of DMSO to give:
a. cyclopentyl cyanid , b. cyclopentene , c. cyclopentyl cyanid and cyclopentene .
3. Which of the following compounds contain achiral carbon atom ?

a. $Cl_2C{=}CHCH_3$, b. $CH_3CH(Br)CH_2CH_3$, c. $CH_3CH{=}CHCH_3$, d. $(CH_3)_2C{=}CH_2$

4. trans-1-bromo-2-methylcyclohexane reacts with $NaOC_2H_5/C_2H_5OH$/heat to give :
a. 3-methylcyclohexene as major product , b. methylcyclohexene as major product
c. mixture of 3-methylcyclohexene and methylcyclohexene.
5- In the above reaction ,the major product formed according to :
a. Saytzeffs rule , b. anti-Saytzeffs rule , c. Hammond postulate

Second Question: ..... (12 marks)

A. Give reasons for the following: (5 marks)
1. The iodide ion is an excellent leaving group than the bromide or chloride ions.

2. Carbene intermediate is nutral intermediate.

3. Crowding at the carbon that bears the leaving group slows the rate of bimolecular nucleophilic substitution (S_N2).

4. S_N1 reaction some times give product which is partially racemic with more inversion than retention.

5. E2 mechanism is second order reaction.

B. Arrange the following according to its nucleophilicity order: (1 mark)
CH_3O^- , HO^- , $C_6H_5O^-$, CH_3OH , H_2O

C. Show by an arrow the shift of alkyl group or hydrogen and give the structure of the rearranged carbocation. a. $CH_3CH^+CH_3$, b. $(CH_3)_2CHCH^+CH_3$ (1 mark)

انظر الصفحة التالية ←

D. 1. Draw the equation and reaction mechanism of the reaction : (2 Marks)

cis-1-bromo-2-methylcyclopentane + EtONa/EtOH →

2. Complet the following equation and then explain your answer by mechanism: (2 Marks)

$PhCHBrCH_2CH_3$ + CH_3S^- / DMF →

3. For the following reaction, suggest a reaction mechanism and show the type of the reaction: (1 Mark)

$CH_3—CHBr—CH_2—CO—CH_3$ + KOH → $CH_3—CH=CH—CO—CH_3$

Part 2 Carbonyl compounds ----------25 marks

Question three Answer five only of the following---------- 15 marks

a Complete the following reaction

$PhCO_2H$ +2CH_3Li/ether - - - - -? + H_3O^+ work - - - - -?

b-Prepare propanal from 1,3-dithiane

c-Predict the product and the type of the following reaction

CH_3CHO + $CH_3CH_2NH_2$/ ethanol - - - - - ?

d-Reaction of 2-butanone with CH_3Li/ether followed by dilute acid work

e-The synthesis of but-3-en-2-one via aldol reaction

f-The carboxylic acids are much more acidic than alcohols,Explain

Question Four Answer the following(four only) - - - - - - - - - - - - - - - - -10 marks

a-Convert $CH_3CH_2CH_2OH$ to $CH_3CH_2CH(OMe)_2$

b-Prepare methyl acetoacetate(claisen reaction)

c-The structure and uses of DIBAL-H in organic synthesis

d-Reaction of malonic ester with 2-bromobutane/EtONa/EtOH followed by hydrolysis

e-Convert CH_3CH_2MgBr to $CH_3CH(Br)COOH$

End of Exam

Best Wishes Prof. Dr. Shaban Radwan
Prof. Dr. Omima Saad Mohame

انتهت الاسئلة مع اجمل امنياتينا لكم بالتوفيق
ا.د/ شعبان رضوان & ا.د/ اميمة الطوخى

Δ Remember ■Understand •Apply ◊Analysis *Evaluate ◯Create

كلية العلوم جامعة أسيوط	Assuit University-Faculty of Science Second Semester- Final Exam 2025-2026 Chemistry Department	Progarm: Science Level: 2 Date:16/5/2026 Time: 2 h	
Course Titel: Inorganic Chemistry I		Code: C-220	
Instructors: Prof.Dr. Asmaa Ibrahim El-Sayed; Dr. Hanan Mosbah Khalaf			
Important:	No. of pages: 2	No. of question	Total Mark: 50 degree

Section I (25 Marks)

Answer Five only of the following questions: (5 Marks for each question)

1-Give reason(s) of the following:

i-Alkaline earth metals are denser than alkali metal group.

ii-Alkali metal cations have a weak tendency to form complexes.

iii-Some of main group elements in the second period show resemblance to elements of the next group in the third period.

iv-Group II metal oxides become more basic when going down the group.

v-Fluorine and oxygen have lower melting points than nitrogen.

2-Complete the following equations:

i-$4BaO + 2Al$ (electrolysis) → ii-$NaH + H_2O$ → iii- $K_3P + H_2O$ →

iv-$2CaO.MgO$ + Fe/Si(alloy) → v-$BeO + 2\ NaOH$ →

3-i-Calculate the effective nuclear charge on the outer most electron in Cl^{17}.

ii-Compare between electron affinities of beryllium, magnesium and nitrogen.

4-Write about Solvay process for preparing washing soda.

5-i-State the anomalous properties of lithium.

ii-Write the chemical formulas of beryl and strontianite ores.

6-i-Explain the bonding of $BeCl_2$ in both gaseous and solid states.

ii-Show the diagonal relationship between beryllium and aluminium.

[See behind the paper]

Section II: **(25 mark)**

1. **Complete Five Only of the following statements:** **(5 marks)**

   i. The chemical structure of dolomite is .....
   ii. ..... is the most active allotrope of phosphorus.
   iii. Ozone gas is a perceptibly ..... color and is .....
   iv. The hydrides of group VI, with the exception of water, are.....and .....
   v. PCl_5 + ... ⟶ ..... + 5HCl
   vi. Silicon carbide (SiC) and boron carbide (B_4C) are examples for .....

2. **Answer the following:** **(9 marks)**

   i. Phosphorous is obtained by reduction of calcium phosphate, show by equation its preparation method.
   ii. Sulphuric acid is industrially very important acid, show in details by equations its industrial preparation. Draw its structure.
   iii. Write the balanced chemical equations for the preparation of OF_3, Cl_2 and Br_2 gases.

3. **Give reason for Four Only of the following:** **(8 marks)**

   i. Selenic acid differs from sulphuric acid
   ii. The great reactivity of fluorine
   iii. The unexpectedly high boiling point of HF.
   iv. The melting point of diamond is abnormally high (about 3930 °C).
   v. The lower oxidation state (+1) becomes more stable on descending the group III.

4. **Arrange the following according to:** **(3 marks)**

   i. Increase in acid strength:(HCl, HF, HBr, HI)
   ii. Increase in basicity (Al, B, In, Ga and Tl).
   iii. Decrease in acid strength ($HClO_2$, $HClO_4$, HOCl, $HClO_3$)

[Good Luck]

Examiners: Prof. Dr. Asmaa Ibrahim El-Sayed and Dr. Hanan Mosbah Khalaf

	Assiut University- Faculty of Science **Second Semester- Final Exam 2025-2026** **Chemistry Department**	**Program: Chemistry** **Level: (2)** **Date: 17/5/2026** **Time: 3 h**	
Course Title: Physical Chemistry I		**Code: 230 C**	
Instructors: Prof. Dr. Yaseen.Temerk and Prof.Dr. R.M.Gabr			
Important:	**No. of pages 2** / **No. Of questions 3**	**Total Mark:50 degree**	

Section I

1- Answer the following questions: **(17 Mark)**

A) **Answer the following statements with: True (T) or False (F) and write the correct answer in case the statement is false.**

a- Plotting $\frac{1}{a-x}$ against T gives a straight line with slope $-k_1/2.303$.

b- The half life period for first order reaction is equal to $1/k_2a$.

c- Hydrolysis of an ester by alkali when concentration of the base is 0.02 mol/liter represents an example of the first order reaction.

B) Answer only two from the following:

a) Derive the kinetic equation for determination of the specific rate constant for the following reaction.

$$2A \xrightarrow{k_2} \text{Product}$$

b) Discuss the collision theory of bimolecular reactions.

c) In the decomposion of a gas which is first order reaction, the specific rate constant was found to be 2.2×10^{-5} min^{-1} at 457 °C and 3.07×10^{-3} min^{-1} at 510°C. From these data estimate the energy of activation and the specific rate constant at 480°C (R = 1.978).

Section II

2- Answer two only from the following: **(17 Mark)**

a) Two processes involve temperature change: one is reversible where the other is irreversible. How do differ in calculating the entropy change of the universe?

b) Two moles of gas expand isothermally and reversibly at 25°C from 10 atm. to 1 atm. Calculate (W), ΔE, ΔH, ΔS and ΔG for the process [Cp = 7.5 Cal. $mole^{-1}K^{-1}$, R = 1.998 Cal. $mole^{-1}K^{-1}$].

c) Derive an expression for the efficiency of the heat engine working ideally.

3- Answer <u>two only</u> from the following: **(16 Mark)**

a) Explain how the free energy change is related to both enthalpy and entropy changes. Also discuss the physical meaning of ΔG sign in order to predict the eventual course of the reaction:

$$H_2O_{(l)} \rightleftharpoons H_2O_{(g)} \quad [1 \text{ atm.}]$$

and the criteria corresponds to equilibrium position for the above reaction.

b) In an adiabatic event, show by derivation how the volume of gas varies with each temperature and pressure.

c) Derive the relation between the free energy change and the equilibrium for the gaseous reaction:

$$a\,A + b\,B \rightleftharpoons c\,C + d\,D$$

End of Exam

Best Wishes **Prof. Dr. Yaseen.Temerk**
Prof. Dr. R.M.Gabr

Δ Remember ■Understand •Apply ◊Analysis *Evaluate ◯Create

	Assiut University-Faculty of Science Second Semester-Final Exam 2025-26 Chemistry Department	Program: Applied Industrial Chemistry Level: (2) Date: 14-5-2026 Time: 2 h	
Course Title: Electrochemistry		Course Code : Chem 209	
Instructor: Prof. Abou-Elhagag Abdel-Aziz Hermas			
Important	No of pages : 2	No. of questions : 6	Total Mark: 50

Answer Only Five questions from the following:

Q1: Choose the correct answer **(10 mark)**

1- What is the oxidation number of oxygen in the hydrogen peroxide?

A. +2 B. -2 C. -3 D. -1

2- The aqueous ammonium hydroxide solution is a ..... electrolyte

A. weak B. strong C. moderate D. non

3- The Nernst equation is applied to calculate ..... potential.

A. electrode B. cell C. electrochemical D. all above

4- The ionic strength of an aqueous solution containing 0.05 M $BaCl_2$ and 0.1M KCl is .....

A. 1.0 M B. 0.25 M C. 0.5 M D. other

5- Which of the following is not a redox reaction?

A. $Mg + Cu^{2+} \rightarrow Mg^{2+} + Cu$ B. $Pb(CH_3COO)_2 + 2\ NaBr \rightarrow PbBr_2 + 2\ CH_3COONa$

C. $2\ HNO_3 + Zn \rightarrow Zn(NO_3)_2 + H_2$ D. $2FeCl_2 + Cl_2 \rightarrow 2FeCl_3$

6- What is the product of dilute sulfuric acid solution electrolysis at the anode?

A. H_2 gas B. OH^- ions C. O_2 gas D. other

7- The polarization resistance in a cell is due to the resistance of .....

A. electrode B. electrolyte C. connections D. all above

8- Hydrogen ion produce ..... ionic conductivity in the aqueous solution.

A. high B. low C. moderate D. non

9- Solid electrolyte material is typically .....

A. crystalline B. glassy C. polymeric D. all above

10- The $\Delta G°$ for a cell reaction with $E°= 4.37$ V at 25°C and six transfer electrons is equal .....

A. $-2.53x10^2$ kJmol^{-1} B. $-2.53x10^4$ kJmol^{-1} C. -25.30 kJmol^{-1} D. other

Q2: Give True or False for the following statements **(10 mark)**

1- The amount of substance changed during electrochemical reaction is proportional to the applied current.

2- The battery of your Mobile phone is a re-chargeable battery.

3- The electrode reaction of the standard electrochemical potential series is an irreversible reaction.

4- Ohmic resistance (polarization) limit the performance of the battery.

5- Conductivity (κ) and resistivity (ρ) are directly related.

6- Calomel electrode is a type of metal-amalgam electrode.

7- The silver-silver chloride electrode is used as reference electrode, it has a zero potential value.

8- Electrical conductivity arises from the movement of ions in the solution under the influence of an electric field.

9-Kohlrausch's Law is valid at all concentrations of solution.

10- Increasing temperature increase ionic conductivity.

(أنظر بالخلف)

Q3 Complete the following sentences **(10 mark)**

1- Pure water is a poor conductor because it ..... and thus it has very few ions.

2- Tap water is a good conductor because contains ....., which enhance conductivity.

3- Nafion is an organic polymer, it is used as ..... electrolyte.

4- ..... is an electrochemical cell that requires a continuous supply of reactants to keep functioning.

5- Activity is a measure of the ..... of a chemical species in a solution.

6- ..... is a measure of the strength of the electric field generated by overall ions in solutions.

7- The conductivity (κ) unit is .....

8- ..... polarization is due to the energy barrier that must be overcome for an electrochemical reaction.

9- The cell potential deviates from the theoretical potential due to polarization, known as .....

10- The two opposing charge layers on the metal surface are called .....

Q4 Answer the following:

1- Determine the activity coefficient of the Na^+ ion in an aqueous solution that is 0.01 M NaCl. Where, A=0.509. **(4 mark)**

2- Discuss the factors affecting the conductivity of solution. **(6 mark)**

Q5 Answer the following:

1) Calculate the activity of hydrogen ion in 0.01M HCl and its effect on pH value, γ_{H+}=0.902. **(5 mark)**

2) Explain the chemical composition, discharging and charging reactions of the lead storage battery . **(5 mark)**

Q6 Answer the following:

1) The resistance (R) of 0.02 M KCl solùtion is measured using a conductivity cell with a cell constant (G^*) of 1.25 cm^{-1}. The resistance is 120 Ω. Calculate the specific conductivity (κ) and molar conductivity . **(4 mark)**

2) By electrolysis of silver nitrate solution a constant current of 0.1 A is applied for 10 minutes. Calculate the mass of silver deposited on the electrode. Assume 100% current efficiency.(mol. Mass Ag: 107.87, F=96485 C mol^{-1}) **(6 mark)**

مع اطيب التمنيات بالتوفيق..

الاستاذ الدكتور/ أبوالحجاج عبدالعزيز هرماس

Faculty of Science **May 14, 2026**
Chemistry Department **Time: 2 Hours**

Final Examination of Introductory Quantitative Analysis
For 2nd Level Students (C- 240)

Answer Four Questions Only: **(50 Mark)**

I - a - Explain the Volhard titration of chloride.

b - The iron (II) in an acidified solution is titrated with 0.0206 M solution of $KMnO_4$. If the titration required 40.2 ml, how many milligrams iron are in solution?

$$5\ Fe^{2+} + MnO_4^- + 8H^+ = 5\ Fe^{3+} + Mn^{2+} + 4\ H_2O$$

c– What is the electrode potential (vs. NHE) in a solution containing 0.5 M $KBrO_3$ and 0.2 M Br_2 at pH 2.5? ($E^o\ BrO_3^-, Br_2 = 1.52$ V)

$$BrO_3^- + 6\ H+ + 5\ e^- = \tfrac{1}{2}\ Br_2 + 3\ H_2O$$

d - Calculate the potential of a solution obtained by reacting 10 ml each of 0.2 M Fe^{2+} and 0.2 M Ce^{4+}. ($E^o\ Ce^{4+}, Ce^{3+} = 1.61$ V, $E^o\ Fe^{3+}, Fe^{2+} = 0.77$V)

II – a- What are the limitations of Mohr Method?

b- What pH is required to just start precipitation of $Fe(OH)_3$, $K_{sp} = 4x10^{-38}$, from 0.1 M $FeCl_3$?

c- Calculate the pAg and pCl in a solution obtained by mixing 20 ml 0.1 M NaCl solution with 10 ml 0.2 M $AgNO_3$ solution. ($K_{sp}\ AgCl = 1.2 \times 10^{-10}$)

d- What is the ppm concentration of a $2.5x\ 10^{-4}$ M $CaCl_2$ solution?

III - a- Define: i- Titer ii- Redox indicators

b- How many milliliters of concentrated HCl solution, 38 % (w / w) and a specific gravity of 1.19, are required to prepare one litter of 0.1 M solution?

c- Define: i- Ionic strength ii- Systematic error

d- Calculate the pH of water containing 0.15 M KCl at 25°C ($\gamma_{H+} = 0.83$, $\gamma_{OH^-} = 0.76$)

IV- a- Define: i- Peptization ii- Co-precipitation

b- Zinc is determined by precipitating and weighing $Zn_2Fe_2(CN)_6$. What weight of zinc is contained in a sample that gives 0.348 g precipitate?

انظر خلفة باقى الأسئلة

c- What is the pH of a solution prepared by dissolving 1.23 g of 2-nitrophenol (FM = 139.11 ; Ka= 6.2×10^{-8}) in 250 ml.

d- Find the pH of a buffer solution prepared by dissolving 12.43 g of tris (M.wt = 121.135) plus 4.67 g of tris hydrochloride (M.wt = 157.596) in 1.0 L of water ($pk_a = 8.61$)

V- a- Write briefly on the theory of acid-base indicators.

b- Calculate the pH of solution that that is 0.05 in Formic acid and 0.01 M in sodium format. ($K_a = 1.76 \times 10^{-4}$)

c- The total phosphate concentration in a blood sample is determined to be 3.0×10^{-3} M. If the pH of the blood sample is 7.45, what are the concentration of $H_2PO_4^-$ and HPO_4^{--} in the blood? ($pK_{a2} = 7.12$).

d- A buffer solution is 0.2 M in acetic acid and in sodium acetate. Calculate the change in pH upon adding 1.0 ml of 0.1 M HCl to 10 ml of this buffer solution. ($K_a = 1.75 \times 10^{-5}$).

.....

At.wts: (Ca = 40.08, Cl = 35.45, Fe = 55.48, Zn = 65.37, C =12 , N =14)

Good Luck

Examiners:

Prof. Dr. Hassan Sedaira

Prof. Dr. Elham Y. Hashem

	Assiut University- Faculty of Science **Second Semester- Final Exam 2025-2026** **Chemistry Department**	**Program: Chemistry** **Level: (2)** **Date: 19/5/2026** **Time: 3 h**	
Course Title: Computational Chemistry			**Code: C-234**
Instructors: Dr. Ahmed A. K. Mohammed			
Important:	**No. of pages: 4**	**No. Of questions: 2**	**Total Mark: 50**

Answer the following questions:

Question One: Choose the correct answer for the following: (30 Marks)

1. ..... is the fastest method in this group.
   a) Semi-empirical b) DFT c) molecular mechanics
2. A stable molecule has ..... imaginary frequency/frequencies.
   a) **0** b) **1** c) **2** d) more than **1**
3. ..... is the most accurate method in this group.
   a) Semi-empirical b) DFT c) molecular mechanics
4. ..... relie(s) on experimental parameters.
   a) HF b) molecular mechanics c) semi-empirical methods d) b and c
5. ..... is the most flexible basis set in this group.
   a) 6-31G(d,p) b) STO-3G c) 6-31G(d) d) 6-31++G
6. ..... calculations give the UV-Vis spectrum of a molecule.
   a) Optimization b) Single Point c) Frequency d) TD-DFT
7. ..... calculations give the IR spectrum of a molecule.
   a) Optimization b) Single Point c) Frequency d) TD-DFT
8. The energy difference between a reactant and a transition state is .....
   a) enthalpy b) free energy c) activation energy
9. ..... functionals treat electron-electron interactions differently at long and short ranges.
   a) GGA b) Hybrid c) Long-range corrected d) LDA
10. ..... functionals are the least accurate in this group.
    a) GGA b) Hybrid c) Long-range corrected d) LDA
11. ..... visualize noncovalent interactions.
    a) RDG plots b) MEP c) TD-DFT d) QTAIM
12. ..... identify nucleophilic and electrophilic sites within a molecule.
    a) RDG plots b) MEP c) TD-DFT d) QTAIM
13. Chemical reactivity is ..... the HOMO-LUMO gap.
    a) directly dependent on b) inversely dependent on c) independent of
14. ..... include actual solvent molecules.
    a) Explicit solvent models b) Implicit solvent models c) a and b
15. Molecular mechanics can simulate .....
    a) reactions b) charge transfer c) UV-Vis spectra d) none of the preceding
16. Solvents can stabilize .....
    a) ions b) transition states c) intermediates d) all of the preceding

17..... basis sets are recommended for noncovalent interactions

a) Minimal b) Polarized c) Diffused d) a and c

18..... simulates the movement of a protein.

a) Machine learning b) Molecular docking c) Molecular dynamics d) QSAR

19..... predicts how a drug binds to a protein.

a) Machine learning b) Molecular docking c) Molecular dynamics d) QSAR

20..... correlates chemical structure with biological activity.

a) Machine learning b) Molecular docking c) Molecular dynamics d) QSAR

Please insert your answers in the following table:

1	2	3	4	5	6	7	8	9	10
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**

Question 2: Answer the following (20 marks)

a) Can the HF method calculate bond energies accurately? Why? For which molecules does HF perform the worst?

b) DNA strands are held together into a double helical structure by non-covalent interactions. Is B3LYP-D3 appropriate for calculating these interactions? Why?

c) What are the main differences between GGA and hybrid functionals?

d) Do you recommend using 6-31G for calculating bond energies? Why?

e) Do molecules with very small HOMO-LUMO gap have potential as drugs? Why?

End of Exam

Best Wishes Dr. Ahmed A. K. Mohammed

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Chemistry Department		Program: Nanotechnology Level: (4) Date: 19/5/2026 Time: 2 h
Course Title: Computational Chemistry			Code: 406 Chem
Instructors: Dr. Ahmed A. K. Mohammed			
Important:	No. of pages: 4	No. Of questions: 2	Total Mark: 50

Answer the following questions:

Question One: Choose the correct answer for the following: (30 Marks)

1. ..... is the fastest method in this group.
   a) Semi-empirical b) DFT c) molecular mechanics
2. A stable molecule has ..... imaginary frequency/frequencies.
   a) **0** b) **1** c) **2** d) more than **1**
3. ..... is the most accurate method in this group.
   a) Semi-empirical b) DFT c) molecular mechanics
4. ..... relie(s) on experimental parameters.
   a) HF b) molecular mechanics c) semi-empirical methods d) b and c
5. ..... is the most flexible basis set in this group.
   a) 6-31G(d,p) b) STO-3G c) 6-31G(d) d) 6-31++G
6. ..... calculations give the UV-Vis spectrum of a molecule.
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7. ..... calculations give the IR spectrum of a molecule.
   a) Optimization b) Single Point c) Frequency d) TD-DFT
8. The energy difference between a reactant and a transition state is .....
   a) enthalpy b) free energy c) activation energy
9. ..... functionals treat electron-electron interactions differently at long and short ranges.
   a) GGA b) Hybrid c) Long-range corrected d) LDA
10. ..... functionals are the least accurate in this group.
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11. ..... visualize noncovalent interactions.
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12. ..... identify nucleophilic and electrophilic sites within a molecule.
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20..... correlates chemical structure with biological activity.

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Please insert your answers in the following table:

1	2	3	4	5	6	7	8	9	10
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**

Question 2: Answer the following (20 marks)

a) Can the HF method calculate bond energies accurately? Why? For which molecules does HF perform the worst?

b) DNA strands are held together into a double helical structure by non-covalent interactions. Is B3LYP-D3 appropriate for calculating these interactions? Why?

c) What are the main differences between GGA and hybrid functionals?

d) Do you recommend using 6-31G for calculating bond energies? Why?

e) Do molecules with very small HOMO-LUMO gap have potential as drugs? Why?

End of Exam

Best Wishes Dr. Ahmed A. K. Mohammed

كلية العلوم جامعة أسيوط	Assuit University-Faculty of Science Second Semester- Final Exam 2025-2026 Chemistry Department	Progarm: Industrial Chemistry Level: 2 Date:8/6/2026 Time: 2 h	جامعة أسيوط
Course Titel: Inorganic Chemistry		Code: 207 C	
Instructors:Dr. Hanan Mosbah Khalaf			
Important:	No. of pages: 2	No. of question: 4	Total Mark: 50 degree

Answer the following questions:

I. Choose the correct answer for the following: (15 Mark)

1. **The primary catalyst used in the industrial steam reforming of methane to produce hydrogen is:**
   a) Iron b) Promoted Nickel c) Platinum d) Copper
2. **Which Group IA element forms a superoxide (MO2) when burned in an excess of air?**
   a) Lithium b) Sodium c) Potassium d) Beryllium
3. **The "Inert Pair Effect" is most pronounced in which of the following elements?**
   a) Boron b) Aluminum c) Gallium d) Thallium
4. **Which allotrope of Carbon is a good conductor of electricity due to delocalized pi-electrons?**
   a) Diamond b) Graphite c) Coke d) Charcoal
5. **Beryllium shows a diagonal relationship with which element?**
   a) Magnesium b) Aluminum c) Lithium d) Silicon
6. **Which gas is known as "laughing gas" and is used as a mild anesthetic?**
   a) NO b) NO_2 c) N_2O d) N_2O_5
7. **In the Hall-Héroult process for Aluminum smelting, the electrolyte used is Alumina dissolved in:**
   a) Molten Sodium Chloride b) Molten Cryolite c) Liquid Ammonia d) Sulfuric Acid
8. **Which of the following phosphorus allotropes is the most reactive and must be stored under water?**
   a) Red Phosphorus b) Black Phosphorus c) White Phosphorus d) Violet Phosphorus
9. **With the exception of group IIIB elements, all the transition elements exhibit**
   a) Only two oxidation state b) only one oxidation state
   c) Seven oxidation state d) more than one oxidation state
10. **The molecule P_4O_{10} is a powerful dehydrating agent. What is its common name?**
    a) Phosphorus trioxide b) Phosphorus pentoxide c) Phosphoric acid d) Phosphine
11. **F_2O gas is obtained on passing F_2 through:**
    a) 2% NH_4OH b) 2% H_2SO_4 c) 2% NaOH d) Copper powder
1. **all the members of groups VA, VIA, and VIIA have group valences of:**
   a) (5-N) b) (8-N) c) (7-N) d) (6-N)
12. **Which allotrope of Phosphorus is more active**
    a) Red phosphours b) white phosphorus c) black phosphorus d) green phosphorus
13. **Which Group IIA metal does NOT react directly with Hydrogen to form a hydride?**
    a) Magnesium b) Calcium c) Beryllium d) Barium
14. **The electronegativity of the elements in the periodic table.....ascending the group.**

a) increase b) not affected c) decrease d) the same

15. Zinc, cadmium and mercury is regarded as:

a) transition elements b) Non-transition elements c) lanthanides d) rare earth element

II. Answer only three of the following question: **(15 marks)**

1. What is organometallic chemistry? Show Examples.
2. Compare between the coordination compound and the double salt.
3. Writ briefly on the similarity between lanthanides and actinides, and explain he major cause for lanthanide contraction.
4. Zinc is found naturally as $ZnCO_3$ and ZnS, writ briefly on its extraction.

III. Give reason for Only Four of the following: **(8 marks)**

1. Boron chemistry is different from the other members in its group.
2. Gallium has the same atomic radius as aluminum.
3. Diamond is denser than graphite.
4. Aluminum is amphoteric.
5. The most stable oxidation stat of thallium is +1.

IV. Show by equation the preparation of Only Four of the following: **(12 marks)**

i. Industrial preparation of Hydrogen.
ii. Isolation of copper from copper pyrites.
iii. The preparation of Manganese metal in a thermite-type reaction from pyrolusite ore.
iv. Preparation of diborane from sodium borohydride with BF_3.
v. Industrial preparation of Sulphuric acid.

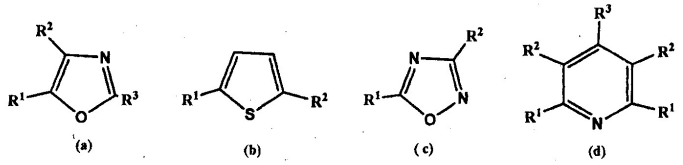
End of Exam
With Best Regards
Dr. Hanan Mosbah Khalaf

	Assiut University- Faculty of Science **Second Semester- Final Exam 2025-2026** **Chemistry Department**	**Program: Chemistry** **Level: Second** **Date: June 7, 2026** **Time: 3 hours**	
Course Title: Organic Chemistry II		**Code: 212 C**	
Instructors: Prof. Dr. Zeinab A. Hozien and Prof. Dr. Ahmed Abdou O. Abeed			
Important:		**Total Mark: 50**	

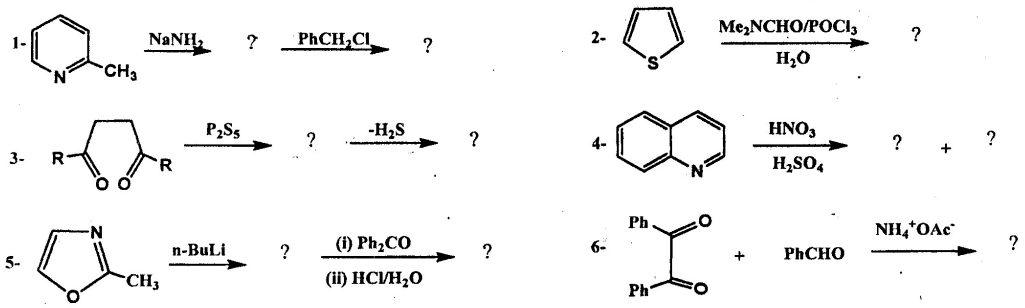
Part I (Heterocyclic Chemistry)

Answer the following questions:

Q1. (a) Use retrosynthetic analysis to devise a synthesis of Three Only from the following, indicated starting material and any necessary reagents: **(6 Points)**



(b) Complete (Five Only) from the following equations: **(5 Points)**



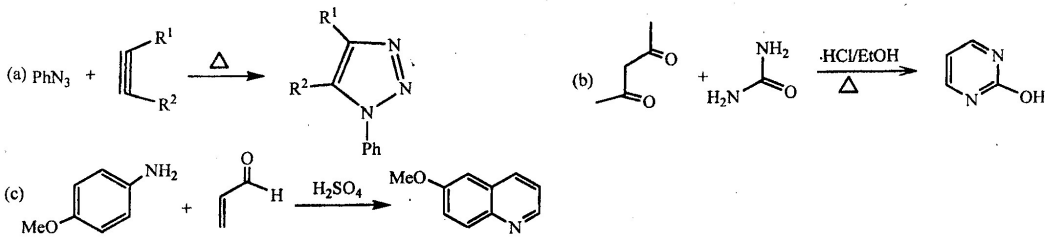
(c) Give the reaction name of (Two Only) from the following: **(2 Points)**

i) A mixture of aniline and glycerol is heated in nitro benzene /H_2SO_4 to give quinoline.

ii) Reaction of α-halo carbonyl compounds with β-keto ester in presence of NH_3 giving Pyrrole derivatives.

iii) Treatment of thiophene with benzoyl chloride in presence of $AlCl_3$.

Q2. (a) Work out the mechanism of (Two Only) from the following transformation: **(4 Point)**



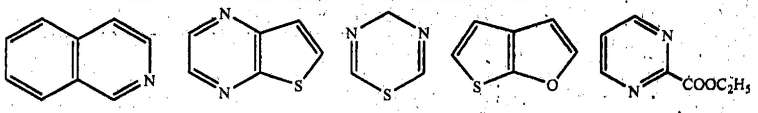
(b) Explain by equations (Tow Only) from the following, why? **(4 Point)**

(i) Nitration of imidazole with conc. HNO_3/R.T. give 4- Nitro imidazole.

(ii) In pyrrole C_2 is easily attack by electrophile.

(iii) Treatment of 2-butanone with phenyl hydrazine in presence of $ZnCl_2$ may lead to two isomeric indole derivatives.

(c) Write the systematic name for (Four Only) from the following: **(4 Point)**



(i) (ii) (iii) (iv) (v)

Part II (Aromatic Chemistry)

Q3. Answer the following questions **(8 points)**

1. Explain why benzene is considered an aromatic compound despite having a highly unsaturated molecular formula.
2. Describe the general mechanism of electrophilic aromatic substitution (EAS) in benzene, including the main steps.
3. Explain the effect of groups (OH, CN, OCH_3, NO_2) on the acidity of aromatic carboxylic acids (in para position).
4. Describe the mechanism and significance of the Cannizzaro reaction with examples in aromatic aldehydes.

Q4. Put (√) for true sentence and (X) for the wrong one: **(5 points)**

1. All electron-donating groups direct substitution to the ortho and para positions. ( )
2. The sulfonation reaction is an addition reaction on the benzene ring. ( )
3. Phenol can be prepared from sulfonic acids by fusion with sodium hydroxide. ( )
4. A nitro group on benzene speeds up electrophilic aromatic substitution reactions. ( )
5. Chlorobenzene reacts with NaOH to give phenol under normal conditions. ( )

Q5. Predict the final product **(6 points)**

1. Given the following reaction sequence: Predict the final major

$C_6H_6 \rightarrow (CH_3Cl/AlCl_3) \rightarrow (Cl_2, UV) \rightarrow (H_2O, Ca(OH)_2)$

2. Write the equation for the synthesis of *m*-nitrobenzoic acid starting from toluene, including all necessary reagents and steps.
3. Benzene is converted to picric acid. Write the chemical equations for this reaction, including all reactants and products.

Q6. Give a reason for the following statement: **(6 points)**

1. Benzene does not readily undergo addition reactions with bromine water like alkenes do but requires a catalyst for substitution.
2. Aniline is more reactive toward electrophilic aromatic substitution than nitrobenzene ($C_6H_5NO_2$)
3. *m*-Dinitrobenzene is easily synthesized by direct nitration of nitrobenzene, but *o*-dinitrobenzene cannot be prepared by direct nitration of nitrobenzene.
4. Pyrrole is considered an aromatic compound, while cyclohexane is not.

Good Luck

تنبيه هام : سوف يعقد امتحان الشفوى اليوم في تمام الساعة 12 ونصف بنفس مكان انعقاد الامتحان النهائى

	Assiut University- Faculty of Science Second Semester- Final Exam 2026 Chemistry Department	Program: Industial Chemistry Level : (2) Date: / /2026 Time: 2 h	كلية العلوم جامعة أسيوط
Course Title: Biochemistry			Code: 210 Industrial Chemistry
Instructors: Prof. Dr. Adel Mohamed Kamal El-Dean			
Important:	No. of pages 1	No. Of questions 3	Total Mark: 50 degree

I. Answer the following questions: .....(30marks)

a. Draw the types of nucleic bases present in DNA and RNA.
b. Show by equation the Strecker Synthesis of amino acids
c. Show by equation using Gabriel's method for synthesis of methionine
d. Show by equation using diethyl malonate for synthesis of phenyl alanine
e. Show by equation how you can elucidate the structure of sucrose.
f. Show by equations the effect of the following reagents on amino acids:
   i. $CHCl_3/KOH$ ii. NOCl iii. $Ba(OH)_2$
   iv. Oxidative deamination of amino acids v. Reductive deamination of amino acids
j. Define the following: i. Isoelectric point ii. Mutarotation iii. Malaprade reaction
k. Draw the structure of lactose and lactulose and show the difference between them.
l. Show by equation applying Kiliani-Fischer synthesis to arabinose by giving the names of products

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

1. Each amino acid has a carboxyl group (COOH), and primary amino group (NH_2), except: a. arginine b. phenylalanine c. proline, which has a secondary amino group-imnio acid)
2. From essential amino acid: a. Cysteine b. glutamic acid c. threonine
3. From non essential amino acids: a. asparagines b. tryptophan c phenylalanine
4. Amino acid containing two amino groups: a. Leucine b. L-lysine c. Threonine
5. From neutral AAs (5-Hetrocyclic): a. histidine b. tyrosine c. valine
6. From Glucogenic amino acid: a. Leucine: b. Aspartic acid c. Cysteine
7. From Ketogenic amino acid: a Glutamic acid b. Glutamine c. leucine
8. Amino acids that are both glucogenic and ketogenic: a. phenylalanine b. Proline c. Serine
9. From polar aminoacids which can forming hydrogen bonds : a. Threonine b. Methionin c. cysteine
10. From acidic amino acids: a. Ornithine b. glutamic acids c. Arginine
11. From basic amino acids: a. Lycine b. aspartic acid c. glutamic acid
12. The isoelectric point is: a. the pH at which an amino acid is electrically neutral b. the pH at which the amino acid cannot form Zwitterion c. the pH at which the amino acid is acidic
13. From achiral aminoacids: a. alanine b. tryptophane c. Glycine
14. Some AAs Classified as Semiessential amino acids like: a. Histidine b. Glycine c. tyrosine
15. When alanine treated with nitrosyl chloride gave: a. acetic acid b. propanoic acid c. chloro acetic acid.
16. Hippuric acid was prepared from reaction of glycine with: a. acetyl chloride b. formaldehyde c. benzoyl chloride.
17. When amino acid treated with Chloroform and KOH gave: a. hydroxyl acid b. chloroacid c. carbylamines (Isocyanoacid).
18. hydroiodic acid reacted with aminoavid to gave: a. Iodo acid b. hydrocy acid c. aliphatic fatty acid.
19. Amino acids when they are heated with barium hydroxide gave: barium salt of anino acid b. aliphatic fatty acid c. primary amine
20. D-Galactose when oxidized with nitric acid gave dicarboxylic acid:
    a. Containing point of symmetry b. Containing plane of symmetry c. it hasn't any element of symmetry

End of Exam

Best Wishes **Prof. Dr. Adel Mohamed Kamal El-Dean**

Δ Remember ■Understand •Apply ◊Analysis *Evaluate ◯Create