COMMON ENTRANCE TEST - 2004

Subject: CHEMISTRY

DATE: 19.05.2004

TIME: 2.30 P.M. TO 3.50 P.M.

MAXIMUM MARKS: 60

MAXIMUM TIME: 80 MINUTES

	-		
		•	Please fill your CET No. below

QUESTION BOOKLET					
VERSION CODE	SERIAL NUMBER				
A 1	039857				

IMPORTANT INSTRUCTIONS TO CANDIDATES

(Please read the following instructions carefully, before you start answering on the OMR answer sheet)

- The OMR answer sheet is issued at the start of the examination at 2.15 p.m., the candidate should first enter only Name and CET No. on the OMR answer sheet.
- 2. After the 2nd bell at 2.30 p.m. the Question Papers will be issued. Now, the candidate should enter the Version Code and Serial Number of question booklet on the OMR answer sheet. But, he shall not remove the staples on the right side of this booklet OR look inside the question booklet OR start answering on the OMR answer sheet until the 3rd bell rings.

As answer sheets are designed to suit the Optical Mark Reader (OMR) system, special care should be taken to fill those items accurately.

DO NOT DAMAGE OR MUTILATE THE TIMING, MARKS ON THE OMR ANSWER SHEETS.

- 3. Remove the staples at the right side to open the question paper booklet only after the 3rd bell at 2.40 p.m.
- 4. This question booklet contains 60 questions.
- 5. During the subsequent 70 minutes:
 - a) Read each question carefully.
 - b) Determine the correct answer from out of the four available choices given under each question.
 - c) Completely darken / shade the relevant circle with a blue or black ink ballpoint pen against the question number on the OMR answer sheet.

For example:

Q. No. 14: The product of 0.5×0.05 is : 1) 0.05 2) 0.005 3) 0.025 4) 0.25

As the correct answer is option no. 3, the candidate should darken the circle corresponding to option no. 3 completely with a blue or black ink ballpoint pen on the OMR answer sheet, as shown below :



- 6. For each correct answer, one mark will be awarded. For each wrong answer, quarter (1/4) mark will be deducted and if more than one circle is darkened for a given question, one mark will be deducted. Even a minute unintended dot will also be recognised and recorded by the scanner. Please avoid multiple markings of any kind.
- 7. Rough work should be done only on the blank space provided on each page of the question booklet. Rough work should not be done on the OMR answer sheet.
- 8. Please stop writing when the last bell rings at 3.50 p.m. Hand over the OMR answer paper set to the invigilator, who will separate the top sheet and will retain the same with him and return the bottom sheet replica to you to carry home.

NOTE: The candidate should safely preserve the replica of the OMR answer sheet for a minimum period of one year from the date of Common Entrance Test.

CHEMISTRY

1.	potassit	gen containing organic comp um hydroxide solution. On sh as obtained. The reactions in	laking the pi	an oily liquid on heating with bromine and oduct with acetic anhydride, an antipyretic the starting compound is:
	1)	Acetamide	2)	Nitrobenzene
	3)	Aniline	4)	Benzamide
2.	The silv	er salt of a fatty acid on refl	uxing with:	an alkyl halide gives an
	1)	ether	2)	amine
	3)	acid	4)	ester
3.	Pick out	the one which does not belo	ong to the fa	mily
	1)	Ptyalin	2)	Lipase
	3)	Pepsin	4)	Cellulose
4.	Which of	f the following is wrongly m	atched?	
	1)	Decomposition of H_2O_2 - Fi		action
	2)	Combination of H_2 and Br_2	to give HBr	- Zero order reaction
	3)	Saponification of CH_3COO	CH_{\star} - secon	d order reaction
	4)	Hydrolysis of CH_3COOCH_3	- pseudo un	imolecular reaction.
5.	The dian	neter of colloidal particles ra		
	1)	$10^3 m \text{ to } 10^{-3} m$	2)	$10^{-3}m$ to 10^{-6} m
	3)	$10^{-6}m$ to $10^{-9}m$,	$10^{-9}m$ to $10^{-12}m$
	•	··· = •• •	4)	10 111 to 10 ""[[[

6.	The nun	nber of z p electro	ons naving spi	n quantu	III IIUIIIDOI A	, , , , , , , , , , , , , , , , , , , ,	
	. 1)	2			2) 3	• . •	
	3)	6		,	4) 0		
7.	Pick out	the alkane whic	h differs from	the other	members o	f the group :	
	1)	2 - methyl buta	ine	2)	2, 2 - dime	thyl butane	,
	3)			4)	Pentane	• ,	
8.	ammoni	nitrogen and 8 g o ia are present. Th pectively :	of hydrogen gas ne equilibrium	s are heat number o	ed in a close f moles of ni	d vessel. At equilib trogen, hydrogen ar	rium 34 g of id ammonia
		1, 1, 2		2)	2, 1, 2		
		1, 2, 2		4)	2, 2, 1	1. 1	
9.	A proce	ss is taking place	e at constant to	emperatu	re and pres	sure. Then :	•
	1)	$\Delta H = 0$	•	2)	$\Delta S = 0$	•	
	3)	$\Delta H = \Delta E$		4)	$\Delta H = T \Delta$	S	
10.	In a gal	lvanic cell, the el	ectrons flow fr	om:		·	
	1)	Anode to catho	ode through th	e externa	l circuit.		j.
	2)	Cathode to and	ode through th	e externa	l circuit.	• .	
,	3)	Anode to catho	ode through th	e solution	1.		
	4`	Cathode to an	ode through th	e solution	ı.	**	

11.	On treat	ting a mixture of two alkyl h ained. The alkyl halides are	alides with s	odium metal in dry ether, 2-methyl propane
	1)	Chloromethane and Chlor	oethane	•
	2)	Chloromethane and 1- Ch	loropropane	
	3)	2 - Chloropropane and Ch	loromethane	3
0	4)	2 - Chloropropane and Ch	loroethane	
12.	Which o	f the following statements a	about benzyl	chloride is incorrect?
	1)	It is a lachrymatory liquid	l and answe	rs Beilstein's test.
	2)	It gives a white precipitat	e with alcoh	olic silver nitrate.
•	3)	It is less reactive than alk	4	
	4)			boiling with copper nitrate solution.
13.	The mai	n product obtained when a so	olution of sod	ium carbonate reacts with mercuric chloride
	1)	$HgCO_3$	2)	$HgCO_3 \cdot Hg (OH)_9$
	3)	$Hg(OH)_2$		$HgCO_3 \cdot HgO$
14.	In the el	ectrothermal process, the co	mpound dis	placed by silica from calcium phosphate is:
	1)	Phosphorus	2)	Phosphorus pentoxide
	3)	Calcium phosphide	4)	Phosphine
15.	The entl	nalpy of combustion of mether is burnt in air is :	ane at 25°C	is 890 kJ. The heat liberated when 3.2 g of
	1)	– 890 kJ	2)	178 kJ

4) 278 kJ

3) 445 kJ

16.	The pres	sure and	temperature gas would be	of 4 dm³ of :	carbor	n dioxide g	as are d	oubled.	Then:	the vol	ume
		$4 dm^3$	9	2 - 6 52	2)	$8 dm^3$	•			•	
		$2 dm^3$	•	. Ver	4)	$3 dm^3$		1			
17.	4g of cop	per was d gave 5g of	issolved in co f its oxide. Th	ncentrateo le equivale	d nitric	acid. The	copper r per is :	nitrate so	olutio	n on sti	rong
	1)	12						1 51 July 1 :		. '	
	3)	23		14 8 1 1	(, [,] . 4).	32	• • •	* * * * * * * * * * * * * * * * * * * *			· · · · · · · · · · · · · · · · · · ·
18.			re of ammoni ≥ 2NH _{3(g)} +				ring con	ditions i	s unfi	avoural	ble ?
		Reducin	g the temper	ature	2)	Removing Increasing	g ammo	nia as it			٠.
19.	The che	mical equ	ilibrium of a	reversible	reactio	on is not in	fluence	d by:			
	1)		ration of the					•			
	3)	Pressur	e	* * * *	4)	Catalyst		.4			
20.	Cumene Cumene		s the most in	nportant c	ommer	cial metho	d for th	e manuf	actur	e of pho	enol
•	1)	Vinyl be	enzene			Propyl be		tg	* 2		٧.٠
_	3)		yl ethyl benz	ene	4)	Ethyl ber	nzene	, .		<i></i>	
		· · · · · · · · · · · · · · · · · · ·		(Space for	Rough	Work)					

21.	A solution contains 1.2046 x 10	24 hydrochloric	acid mole	ecules ir	\mathbf{n} one dm	³ of the s	solution.	The
	strength of the solution is :		*					

1) 4 N

2) 8 N

3) 6 N

4) 2N

Nuclear theory of the atom was put forward by: 22.

1) Neils Bohr

2) J. J. Thomson

3) Rutherford

4) Aston

In acetylene molecule, the two carbon atoms are linked by: 23.

- 1) three sigma bonds
- 2) three pi bonds
- 3) one sigma bond and two pi bonds 4) two sigma and one pi bond

24. The enthalpy of the reaction,

$$H_{2(g)} + \frac{1}{2}O_{2(g)} \rightarrow H_2O_{(g)}$$
 is ΔH_1 and that of

$$H_{2(g)} + \frac{1}{2}O_{2(g)} \to H_2O_{(l)}$$
 is ΔH_2 . Then

1) $\Delta H_1 > \Delta H_2$

2) $\Delta H_1 = \Delta H_2$

3) $\Delta H_1 < \Delta H_2$

- 4) $\Delta H_1 + \Delta H_2 = 0$
- A radioactive isotope decays at such a rate that after 192 minutes only $\frac{1}{16}$ of the original amount remains. The half life of the radioactive isotope is:
 - 12 min

2) 24 min

3) 32 min

4) 48 min

26.	The reag	ent which does not g	ive acid chloride or	n treating with a	carboxylic acid is:
â	1)	$SOCl_2$	2)	PCl_3	, , , , , , , , , , , , , , , , , , ,
•	3)	$PCl_{_{5}}$	4)	$Cl_{_2}$	
27.	Among t	he halogens, the one	which is oxidised	oy nitric acid is:	
	1)	Chlorine	2)	Bromine	
	3)	Fluorine	4)	Iodine	
28.	The met	al which does not for	m ammonium nitr	ate by reaction v	vith dilute nitric acid is :
		Pb	2)	Mg	
	3)	Al	4)	Fe	•
29.	The elen	nents with atomic nu	mbers 9, 17, 35, 53	3, 85 are all :	· · · · · · · · · · · · · · · · · · ·
	1)	Heavy metals		Light metals	
٠.	3)	Noble gases	4)	Halogens	
30.		lectrolytic method of narge in order to :	obtaining alumini	um from purified	l bauxite, cryolite is added
	1)	dissolve bauxite an	d render it conduc	tor of electricity.	
•	2)	lower the melting p	oint of bauxite.		
	3)	minimise the heat	loss due to radiation	on.	
	4)	protect aluminium	produced from oxy	gen.	
	···		(Space for Rough	Work)	:

2) NH₃

Which of the following is not an amphoteric substance?

	3)	HNO_3	4)	HCO_3
32.	When 50	$0~{ m cm^3~of}~0.2~N~H_2{ m SO}_4~{ m is~mi}$	xed with 50 c	cm³ of 1N KOH, the heat liberated is:
	1)	573 kJ	2)	573 J
	3)	11.46 kJ	4)	57.3 kJ
33.	An artifi	cial radioactive isotope ga	we $\frac{14}{7}N$ after	c two successive eta -particle emissions. The
	number	of neutrons in the parent i	nucleus must	be:
	1)	5	2)	7
	3)	9	4)	14
34.	Stainles	s steel does not rust becau	se:	
	1)	Nickel present in it, does	not rust	
	2)	Iron forms a hard chemic	al compound	with chromium present in it.
	3)	Chromium and nickel cor	mbine with ir	on.
•	4)	Chromium forms an oxid	e layer and p	rotects iron from rusting.
35.	Which of	f the following combination	ns can be used	d to synthesise ethanol?
	1)	$CH_3 Mg I$ and $CH_3 COC$	C_2H_5	en e
	2)	CH ₃ Mg I and HCOOC ₂ H	I_5	
	3)	$CH_3 Mg I$ and $CH_3 COC$	H_3	
				•

(Space for Rough Work)

4) $CH_3 Mg I$ and $C_2 H_5 OH$

31.

 $1) \quad \boldsymbol{H}_2\boldsymbol{O}$

36.	The reaction, $2SO_{2(g)} + O_{2(g)} \rightleftharpoons 2SO_{3(g)}$ separately. The ratio of the reaction velo) is carried out in a $1 dm^3$ vessel and $2 dm^3$ vessel ocities will be :
	1) 4:1 3) 1:8	2) 8:14) 1:4
37.	In a mixture of acetic acid and sodium acid is increased ten times. Then the pH	cetate the ratio of concentrations of the salt to the of the solution:
	1) decreases ten fold	2) increases ten fold
	3) increases by one	4) decreases by one
38.	When a mixture of methane and oxygen main product formed is: 1) Methanol 3) Methanoic acid	is passed through heated molybdenum oxide, the 2) Methanal 4) Ethanal
39.	Benzene can be obtained by heating either are respectively:	er benzoic acid with 'X' or phenol with 'Y'. 'X' and 'Y'
	Zinc dust and sodium hydroxid	le 2) Soda lime and copper
	3) Zinc dust and soda lime	4) Soda lime and zinc dust
40.	An organic compound is boiled with alcowith <i>HCl</i> . A white solid separates out. T	oholic potash. The product is cooled and acidified the starting compound may be:
	1) ethyl acetate	2) methyl acetate
-	3) ethyl benzoate	4) ethyl formate

	3)	Methanal	4)	Phenol	
44.	Which o powder ?		gives trich 2)	nloromethane on distilling with blead Methanol	ching
	3)	Hydrocarbon gases	4)	Kerosene oil	
	1)	Gasoline	. 2)	Diesel oil	
43.		fraction obtained during the			
		+ 1.66 V		- 3.26 V	
		3.26 V	-	- 1.66 V	
		eared by combining Al / Al^{+3} a e is $+ 0.80$ V. The reduction j	A	t is 2.46 V. The reduction potential of aluminium electrode is	silve
42.		•		Whereas silver does not. The E.M.F	
	3)	increase the dissociation of	H_2S 4)	decrease the dissociation of salt solu	ition
	1)	decrease the dissociation of	H_2S 2)	increase the dissociation of salt solu	tion
41.		tative analysis, in order to dence of dilute HCl to :	etect secon	ld group basic radical, $H_{\scriptscriptstyle 2}\!S$ gas is pass	sed ir

- 2) α hydroxy ketone
- 3) compound containing an aldehyde and a ketonic group
- 4) α , β unsaturated acid

46.		ocity constant of a r ture is raised to 310			and the second s	3.2×10^{-3} S	3 ⁻¹ . Wh	en the
	1)	9.6×10^{-3}		2)	1.28×10^{-2}	• • • • • • • • • • • • • • • • • • • •		
	3)	6.4×10^{-3}		4)	3.2×10^{-4}		,	•
47.	Select th	ne pK_a value of the st	rongest acid from	m t	he following :		:	
	1)	2.0		2)	4.5			
	3)	1.0	in the second of	4)	3.0			
48.	Pick out	the unsaturated fat	ty acid from the	foll	lowing:			
	1)	Oleic acid	1- 11 at	2)	Palmitic acid	•		
	3)	Stearic acid		4)	Lauric acid	•		
49.	Nylon is	not a:				, , , .		- 4
	1)	Copolymer	•.	2)	${\bf Homopolymer}$			
	3)	Condensation poly	mer	4)	Polyamide	•		
50.	The coal	l tar fraction which c	ontains phenol i	s:	, ·	•		
	1)	Heavy oil		2)	Light oil	£ .		
,	3)	Middle oil		4)	Green oil			
			(Space for Pou	ıah	Work)	4		· · · · ·

51.	The cor	\mathbf{n} pounds A and B	are mixed in	a equi	molar	proportio	on to form	ther	roducts			
	The compounds A and B are mixed in equimolar proportion to form the products, $A + B \Longrightarrow C + D$. At equilibrium, one third of A and B are consumed. The equilibrium											
		t for the reaction is	1		ano oq	AMIDITUIN						
	.1)	2.5		2)	0.25	:	4	*****				
	3)	0.5		4)	4.0			1.				
52.	In froth floatation process for the purification of ores, the particles of ore float because:											
	1)	They are insoluble			- 01 00,	orio par oro	ios of ore in	oar bee	ausc .			
	2)	They bear electros			:	· · · · · · · · · · · · · · · · · · ·						
	3)	Their surface is no	•	ed by v	vater	1						
	4)	They are light										
53.	Which of the following statements about amorphous solids is incorrect?											
	1)											
	2)	They are rigid and				1						
	3)	They melt over a r	_		9.							
•	4)	They are anisotrop	. -		,	1 1		·				
54.	Hydrogo	n diffuses six times		A D	n1	1	43.		•			
04.	Hydrogen diffuses six times faster than gas A. The mol						of gas A is:	,	, -			
	1)	24		2)	36							
	3)	72	•	4)	6		* # * * * * * * * * * * * * * * * * * *					
55.	Dulong and Petit's law is valid only for:											
	1)	gaseous elements		2)	solid e	elements	,		• ,			
	3)	metals		4)	non-n	netals			£			

56.	. Identify the gas which is readily adsorbed by activated charcoal:									
	1)	H_2	2)	O_2						
	3)	N_{2}	4)	SO_2						
57.	If the distance between Na^+ and Cl^- ions in sodium chloride crystal is X pm, the length of the edge of the unit cell is :									
	1)	$\frac{X}{2}$ pm	2)	2X pm	1					
	3)	4 <i>X</i> pm	4)	$\frac{X}{4}$ pm						
58.	Which of the following statements is incorrect?									
	1)) In $K_4[Fe(CN)_6]$ the ligand has satisfied both primary and secondary valencies of ferrous ion.								
	2)	In $\left[Cu\left(NH_3\right)_4\right]SO_4$, the ligand has satisfied only the secondary valency of copper.								
	3)	3) In $K_3[Fe(CN)_6]$, the ligand has satisfied only the secondary valency of ferric ion.								
•	4)	In $K_3[Fe(CN)_6]$, the ligar of ferric ion.	nd has satisfi	ed both primar	y and secondary valencies					
59.	2 - Aceto	xy benzoic acid is used as	an:	r	,					
	1)	antiseptic	2)	antipyretic	1					
	3)	antimalarial	4)	antidepressan	t ·					
60.	A nucleoside on hydrolysis gives :									
	1) an aldopentose and a heterocyclic base.									
	. 2)	2) an aldopentose and orthophosphoric acid.								
	3)	3) a heterocyclic base and orthophosphoric acid.								

4) an aldopentose, a heterocyclic base and orthophosphoric acid

