

# COMMON ENTRANCE TEST - 2004

<b>Subject : CHEMISTRY</b>
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
<b>A 1</b>	<b>039857</b>

## IMPORTANT INSTRUCTIONS TO CANDIDATES

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

1. 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 2<sup>nd</sup> 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 3<sup>rd</sup> 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 3<sup>rd</sup> 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  $0.5 \times 0.05$  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.

030827

**CHEMISTRY**

1. A nitrogen containing organic compound gave an oily liquid on heating with bromine and potassium hydroxide solution. On shaking the product with acetic anhydride, an antipyretic drug was obtained. The reactions indicate that the starting compound is :
  - 1) Acetamide
  - 2) Nitrobenzene
  - 3) Aniline
  - 4) Benzamide
2. The silver salt of a fatty acid on refluxing with an alkyl halide gives an :
  - 1) ether
  - 2) amine
  - 3) acid
  - 4) ester
3. Pick out the one which does not belong to the family :
  - 1) Ptyalin
  - 2) Lipase
  - 3) Pepsin
  - 4) Cellulose
4. Which of the following is wrongly matched ?
  - 1) Decomposition of  $H_2O_2$  - First order reaction.
  - 2) Combination of  $H_2$  and  $Br_2$  to give  $HBr$  - Zero order reaction.
  - 3) Saponification of  $CH_3COOC_2H_5$  - second order reaction.
  - 4) Hydrolysis of  $CH_3COOCH_3$  - pseudo unimolecular reaction.
5. The diameter of colloidal particles range from :
  - 1)  $10^3 m$  to  $10^{-3}m$
  - 2)  $10^{-3}m$  to  $10^{-6} m$
  - 3)  $10^{-6}m$  to  $10^{-9}m$
  - 4)  $10^{-9}m$  to  $10^{-12}m$

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(Space for Rough Work)



11. On treating a mixture of two alkyl halides with sodium metal in dry ether, 2-methyl propane was obtained. The alkyl halides are :
- 1) Chloromethane and Chloroethane
  - 2) Chloromethane and 1- Chloropropane
  - 3) 2 - Chloropropane and Chloromethane
  - 4) 2 - Chloropropane and Chloroethane
12. Which of the following statements about benzyl chloride is incorrect ?
- 1) It is a lachrymatory liquid and answers Beilstein's test.
  - 2) It gives a white precipitate with alcoholic silver nitrate.
  - 3) It is less reactive than alkyl halides.
  - 4) It can be oxidised to benzaldehyde by boiling with copper nitrate solution.
13. The main product obtained when a solution of sodium carbonate reacts with mercuric chloride is :
- 1)  $HgCO_3$
  - 2)  $HgCO_3 \cdot Hg(OH)_2$
  - 3)  $Hg(OH)_2$
  - 4)  $HgCO_3 \cdot HgO$
14. In the electrothermal process, the compound displaced by silica from calcium phosphate is :
- 1) Phosphorus
  - 2) Phosphorus pentoxide
  - 3) Calcium phosphide
  - 4) Phosphine
15. The enthalpy of combustion of methane at 25°C is 890 kJ. The heat liberated when 3.2 g of methane is burnt in air is :
- 1) - 890 kJ
  - 2) 178 kJ
  - 3) 445 kJ
  - 4) 278 kJ

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(Space for Rough Work)





26. The reagent which does not give acid chloride on treating with a carboxylic acid is :
- 1)  $SOCl_2$
  - 2)  $PCl_3$
  - 3)  $PCl_5$
  - 4)  $Cl_2$
27. Among the halogens, the one which is oxidised by nitric acid is :
- 1) Chlorine
  - 2) Bromine
  - 3) Fluorine
  - 4) Iodine
28. The metal which does not form ammonium nitrate by reaction with dilute nitric acid is :
- 1)  $Pb$
  - 2)  $Mg$
  - 3)  $Al$
  - 4)  $Fe$
29. The elements with atomic numbers 9, 17, 35, 53, 85 are all :
- 1) Heavy metals
  - 2) Light metals
  - 3) Noble gases
  - 4) Halogens
30. In the electrolytic method of obtaining aluminium from purified bauxite, cryolite is added to the charge in order to :
- 1) dissolve bauxite and render it conductor of electricity.
  - 2) lower the melting point of bauxite.
  - 3) minimise the heat loss due to radiation.
  - 4) protect aluminium produced from oxygen.

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(Space for Rough Work)



31. Which of the following is not an amphoteric substance ?
- 1)  $H_2O$
  - 2)  $NH_3$
  - 3)  $HNO_3$
  - 4)  $HCO_3^-$
32. When  $50\text{ cm}^3$  of  $0.2\text{ N } H_2SO_4$  is mixed with  $50\text{ cm}^3$  of  $1\text{ N KOH}$ , the heat liberated is :
- 1) 573 kJ
  - 2) 573 J
  - 3) 11.46 kJ
  - 4) 57.3 kJ
33. An artificial radioactive isotope gave  ${}^{14}_7N$  after two successive  $\beta$ -particle emissions. The number of neutrons in the parent nucleus must be :
- 1) 5
  - 2) 7
  - 3) 9
  - 4) 14
34. Stainless steel does not rust because :
- 1) Nickel present in it, does not rust
  - 2) Iron forms a hard chemical compound with chromium present in it.
  - 3) Chromium and nickel combine with iron.
  - 4) Chromium forms an oxide layer and protects iron from rusting.
35. Which of the following combinations can be used to synthesise ethanol ?
- 1)  $CH_3MgI$  and  $CH_3COOC_2H_5$
  - 2)  $CH_3MgI$  and  $HCOOC_2H_5$
  - 3)  $CH_3MgI$  and  $CH_3COCH_3$
  - 4)  $CH_3MgI$  and  $C_2H_5OH$

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(Space for Rough Work)



41. In qualitative analysis, in order to detect second group basic radical,  $H_2S$  gas is passed in the presence of dilute  $HCl$  to :
- 1) decrease the dissociation of  $H_2S$
  - 2) increase the dissociation of salt solution
  - 3) increase the dissociation of  $H_2S$
  - 4) decrease the dissociation of salt solution
42. Aluminium displaces hydrogen from dilute  $HCl$  whereas silver does not. The E.M.F. of a cell prepared by combining  $Al / Al^{+3}$  and  $Ag / Ag^+$  is 2.46 V. The reduction potential of silver electrode is + 0.80 V. The reduction potential of aluminium electrode is :
- 1) 3.26 V
  - 2) - 1.66 V
  - 3) + 1.66 V
  - 4) - 3.26 V
43. The first fraction obtained during the fractionation of petroleum is :
- 1) Gasoline
  - 2) Diesel oil
  - 3) Hydrocarbon gases
  - 4) Kerosene oil
44. Which of the following compounds gives trichloromethane on distilling with bleaching powder ?
- 1) Ethanol
  - 2) Methanol
  - 3) Methanal
  - 4) Phenol
45. Benzoin is :
- 1)  $\alpha$  - hydroxy aldehyde
  - 2)  $\alpha$  - hydroxy ketone
  - 3) compound containing an aldehyde and a ketonic group
  - 4)  $\alpha, \beta$  - unsaturated acid

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(Space for Rough Work)





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
  - 3)  $4X$  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  $[Cu(NH_3)_4]SO_4$ , the ligand has satisfied only the secondary valency of copper.
  - 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 ligand has satisfied both primary and secondary valencies of ferric ion.
59. 2 - Acetoxy benzoic acid is used as an :
- 1) antiseptic
  - 2) antipyretic
  - 3) antimalarial
  - 4) antidepressant
60. A nucleoside on hydrolysis gives :
- 1) an aldopentose and a heterocyclic base.
  - 2) an aldopentose and orthophosphoric acid.
  - 3) a heterocyclic base and orthophosphoric acid.
  - 4) an aldopentose, a heterocyclic base and orthophosphoric acid

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(Space for Rough Work)



**A-1**

**1**