

132653

Sr. No. :

CET (UG) – 2017Booklet Series Code : **A**

Important : Please consult your Admit Card / Roll No. Slip before filling your Roll Number on the Test Booklet and Answer Sheet.

(In Figures)

(In Words)

Roll No. :

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O.M.R. Answer Sheet Serial No. :

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Signature of the Candidate :

Subject : **CHEMISTRY**

Time : 70 Minutes]

[Maximum Marks : 120

No. of Questions : 60]

[Total No. of Printed Pages : 16

DO NOT OPEN THE SEAL ON THE BOOKLET UNTIL ASKED TO DO SO**INSTRUCTIONS :**

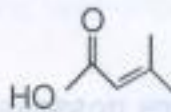
- Write your Roll No. on the Question Booklet and also on the OMR Answer Sheet in the space provided and nowhere else.
- Enter the Subject and Series Code of Question Booklet on the OMR Answer Sheet. Darken the corresponding bubbles with **Black Ball Point/Black Gel pen**.
- Do not make any identification mark on the Answer Sheet or Question Booklet.
- To open the Question Booklet remove the paper seal gently when asked to do so.
- Please check that this Question Booklet contains **60** questions. In case of any discrepancy, inform the Assistant Superintendent within 10 minutes of the start of test.
- Each question has four alternative answers (A, B, C, D) of which only one is correct. For each question darken only one bubble (A or B or C or D), whichever you think is the correct answer, on the Answer Sheet with **Black Ball Point/Black Gel Pen**.
- If you do not want to answer a question, leave all the bubbles corresponding to that question blank in the Answer Sheet. No marks will be deducted in such cases.
- Darken the bubbles in the OMR Answer Sheet according to the Serial No. of the questions given in the Question Booklet.
- Negative marking will be adopted for evaluation i.e., 1/4th of the marks of the question will be deducted for each wrong answer. A wrong answer means incorrect answer or wrong filling of bubble.
- For calculations, use of simple log tables is permitted. Borrowing of log tables and any other material is not allowed.
- For rough work only the sheets marked "Rough Work" at the end of the Question Booklet be used.
- The Answer Sheet is designed for **computer evaluation**. Therefore, if you do not follow the instructions given on the Answer Sheet, it may make evaluation by the computer difficult. **Any resultant loss to the candidate on the above account, i.e., not following the instructions completely, shall be of the candidate only.**
- After the test, hand over the Question Booklet and the Answer Sheet to the Assistant Superintendent on duty.
- In no case the Answer Sheet, the Question Booklet, or its part or any material copied/noted from this Booklet is to be taken out of the examination hall. Any candidate found doing so, would be expelled from the examination.
- A candidate who creates disturbance of any kind or changes his/her seat or is found in possession of any paper possibly of any assistance or found giving or receiving assistance or found using any other unfair means during the examination will be expelled from the examination by the Centre Superintendent/Observer whose decision shall be final.
- Telecommunication equipment such as pager, cellular phone, wireless, scanner, etc., is not permitted inside the examination hall. Use of calculators is not allowed.

1. What is the role of sodium cyanide in the froth floatation process of an ore containing zinc sulphide and lead sulphide ?
- (A) It acts as a water repellent
(B) It acts as a froth stabilizer
(C) It acts as depressant to separate the two ores
(D) It helps in the concentration of ore
2. Which of the following oxides is paramagnetic in the gaseous state and is responsible for the appearance of dark brown color in the ring test for nitrate ion ?
- (A) NO
(B) N_2O_3
(C) NO_2
(D) N_2O_4
3. Which of the following ions is not a pseudohalide ion ?
- (A) NO^-
(B) CN^-
(C) SCN^-
(D) N_3^-
4. Pick a correct statement from the following :
- (A) The highest oxidation state of rhenium is +8
(B) Ferromagnetism is the extreme case of paramagnetism
(C) MnO and MnO_2 are basic while Mn_2O_3 is acidic in nature
(D) In acidic medium $KMnO_4$ is oxidized to MnO_2
5. Which of the following is wrong for lanthanoids and actinoids ?
- (A) Both have +3 as common oxidation state
(B) Both exhibit spectral and magnetic properties
(C) Both show size contraction
(D) Both are radioactive in nature

6. Predict the geometry of $\text{Ni}(\text{CO})_4$ and $[\text{Ni}(\text{CN})_4]^{2-}$
- (A) Square planar and tetrahedral, respectively
(B) Both are square planar
(C) Tetrahedral and square planar, respectively
(D) Both are tetrahedral
7. Which of the following ligands is not a chelating ligand ?
- (A) Acetylacetonate (B) Triphenylphosphine
(C) Ethylenediamine (D) 2,2-bipyridyl
8. Which of the following has maximum mass ?
- (A) 1.672×10^{21} molecules of water
(B) 1.0×10^{23} molecules of H_2S
(C) 6.022×10^{23} atoms of O
(D) 1×10^{23} molecules of O_2
9. Which of the following parameters will be same for the equal volumes of two different gases under constant temperature and pressure ?
- (A) Density of gases
(B) Mass of gases
(C) Atoms of gases
(D) Molecules of gases
10. If the principle quantum number (n) is 4, what will be the number of orbitals having $l = 3$?
- (A) 9 (B) 7
(C) 5 (D) 3

11. Which is not isotone of each other from the following species ?
- (A) $^{14}_6\text{N}$ (B) $^{15}_7\text{N}$
(C) $^{14}_7\text{N}$ (D) $^{16}_8\text{N}$
12. Which of the following represents increasing order of ionic radii ?
- (A) $\text{Na}^+ < \text{F}^- < \text{O}^{2-} < \text{N}^{3-}$
(B) $\text{N}^{3-} < \text{O}^{2-} < \text{F}^- < \text{Na}^+$
(C) $\text{Na}^+ < \text{N}^{3-} < \text{O}^{2-} < \text{F}^-$
(D) $\text{Na}^+ < \text{N}^{3-} < \text{O}^{2-} < \text{F}^-$
13. Which of the following has maximum dipole moment ?
- (A) HF (B) HCl
(C) HBr (D) HI
14. Which of the following pairs is iso-structural ?
- (A) XeF_4 and SF_4
(B) NH_3 and BCl_3
(C) XeF_2 and IF_2^-
(D) SiCl_4 and PtCl_4^{2-}
15. Which of the following hydrides possesses ionic bond between central atom and hydrogen ?
- (A) Sodium hydride (B) Diborane
(C) Lithium aluminium hydride (D) Palladium hydride

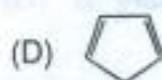
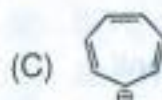
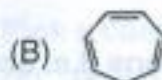
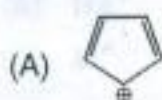
16. Which of the following has largest size in aqueous solution ?
- (A) Na^+ (B) K^+
(C) Li^+ (D) Cs^+
17. Pick a correct statement for boron and its compounds :
- (A) Boron consists of octahedral B_{20} units in its crystalline form
(B) B_5H_9 can be named as pentaboron
(C) Boron nitride resembles with graphite
(D) BF_3 is strongest Lewis acid among the boron trihalides
18. What is the total number of electrons surrounding Kr in KrF_2 ?
- (A) 2 (B) 6
(C) 8 (D) 10
19. Which of the following compounds neither acts as oxidizing nor as reducing agent ?
- (A) H_2S (B) H_2O_2
(C) SO_2 (D) HNO_2
20. Which of the following is responsible for the formation of PAN ?
- (A) SO_3 (B) NO
(C) CH_4 (D) CO
21. The IUPAC name for the compound with formula given below is :



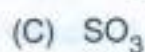
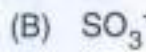
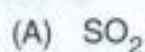
- (A) 2-Methyl but-2-enoic acid
(B) 3-Methyl but-3-enoic acid
(C) 3-Methyl but-2-enoic acid
(D) 2-Methyl but-3-enoic acid

22. Which of the following behaves as an electrophile ?
- (A) H_2O (B) NH_3
 (C) H_2S (D) BF_3
23. Increasing order of stability among the three main conformations (i.e. eclipse, anti, gauche) of ethane is :
- (A) Eclipse < gauche < anti (B) Gauche < eclipse < anti
 (C) Eclipse < anti < gauche (D) Anti < gauche < eclipse
24. Acid catalyzed hydration of 2-phenyl propene gives :
- (A) 2-phenyl-2-propanol (B) 2-phenyl-1-propanol
 (C) 3-phenyl-1-propanol (D) 1-phenyl-2-propanol
25. In the reaction sequence shown below the compound X is :
- $$Cl-\text{CH}_2-\text{CH}_2 + HCl \longrightarrow X$$
- (A) 1,1-Dichloroethane
 (B) 1, 2-Dichloroethane
 (C) Tetrachloroethylene
 (D) Tetrachloroethane
26. A hydrocarbon with molecular formula C_6H_{12} on ozonolysis gives only one compound which does not respond to Tollen's reagent test but gives positive iodoform test. The hydrocarbon is :
- (A) 2-Methyl-2-pentene
 (B) 2-Hexene
 (C) 3-Hexene
 (D) 2, 3-Dimethyl-2-butene

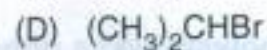
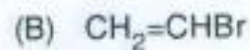
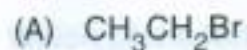
27. Which of the following compounds/ions is aromatic in nature ?



28. Which of the following species participates in the sulphonation of benzene ?



29. Which of the following compounds undergoes nucleophilic substitution most rapidly through $\text{S}_{\text{N}}2$ mechanism ?



30. Primary, secondary and tertiary alcohols can be distinguished by use of :

(A) Lucas reagent

(B) Baeyer's reagent

(C) Brady's reagent

(D) Tollen's reagent

31. Which of the following combinations can be used for synthesis of 2-methyl-2-butanol ?
- (A) $\text{CH}_3\text{CH}_2\text{MgBr}$ and CH_3COCH_3 (B) $\text{CH}_3\text{CH}_2\text{MgBr}$ and HCOOC_2H_5
 (C) $\text{CH}_3\text{CH}_2\text{MgBr}$ and CH_3CHO (D) $\text{CH}_3\text{CH}_2\text{MgBr}$ and $\text{CH}_3\text{CH}_2\text{OH}$
32. Which reactive intermediate is involved in Riemer-Tiemann reaction ?
- (A) $\ominus\text{CCl}_3$ (B) $:\text{CCl}_2$
 (C) $\oplus\text{CHCl}_2$ (D) $\cdot\text{CCl}_3$
33. Which one of the following aldehyde does not undergo Cannizzaro reaction ?
- (A) Acetaldehyde (B) Benzaldehyde
 (C) Trimethyl acetaldehyde (D) Formaldehyde
34. Which of the following is strongest acid ?
- (A) Butanoic acid (B) 2-Chlorobutanoic acid
 (C) 3-Chlorobutanoic acid (D) 4-Chlorobutanoic acid
35. Primary, secondary and tertiary amine can be distinguished by use of :
- (A) Baeyer's reagent (B) Fehling solution
 (C) Hinsberg reagent (D) Tollen's reagent
36. Which reagent is used for the conversion of benzenediazonium chloride to benzene ?
- (A) H_3PO_4 (B) H_3PO_2
 (C) H_3PO_3 (D) P_2O_5
37. $\alpha\text{-D-(+)-glucose}$ and $\beta\text{-D-(+)-glucose}$ are :
- (A) Conformers (B) Epimers
 (C) Anomers (D) Enantiomers

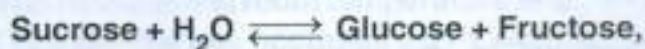
38. Which of the following is a polyamide ?
 (A) Nylon-66 (B) Polyethylene
 (C) Polystyrene (D) Bakelite
39. Alkyl benzene sulphonates are important intermediate in production of :
 (A) Soaps (B) Perfumes
 (C) Synthetic detergents (D) Antibiotics
40. Artificial sweetener Aspartame derived from which amino acids :
 (A) Glycine & Phenyl alanine (B) Phenyl alanine & Aspartic acid
 (C) Phenyl alanine & Glutamic acid (D) Phenyl alanine & Valline
41. A balloon is filled with hydrogen at room temperature and it will burst if pressure exceeds 0.2 bar. If at 1 bar the gas occupies 2.27 L volume, up to what volume the balloon be expanded ?
 (A) > 22.35 (B) < 11.35
 (C) = 33.35 (D) 0
42. At STP, the value of gas constant R is :
 (A) $1.99 \times 10^{-3} \text{ kcal K}^{-1} \text{ mol}^{-1}$ (B) $8.314 \times 10^7 \text{ erg K}^{-1} \text{ mol}^{-1}$
 (C) $8.20 \times 10^{-2} \text{ L atm K}^{-1} \text{ mol}^{-1}$ (D) $8.314 \text{ JK}^{-1} \text{ mol}^{-1}$
43. The elevation in boiling point of a solution of 13.44 g of CuCl_2 in 1 kg of water using the following information will be (Molecular weight of $\text{CuCl}_2 = 134.4$ and $K_b = 0.52 \text{ kg molal}^{-1}$):
 (A) 0.16 (B) 0.05
 (C) 0.1 (D) 0.2
44. The packing efficiency in *Body Centred cubic* structure is :
 (A) 45.2% (B) 52.4%
 (C) 68% (D) 74%
45. The appearance of colour in solid alkali metal halides is generally due to :
 (A) Schottky defect (B) Frenkel defect
 (C) Interstitial position (D) F-Centres

46. Effect of dilution on conductance is as follows :
- (A) Both increase with dilution
 - (B) Both decreases with dilution
 - (C) Specific conductance increases, molar conductance decreases
 - (D) Specific conductance decreases, molar conductance increases
47. If the molar conductance at infinite dilution of NaCl, HCl and CH_3COONa are 126.4, 425.9 and $91.0 \text{ S cm}^2 \text{ mol}^{-1}$ respectively. The molar conductance at infinite dilution for Acetic acid is :
- (A) $290.5 \text{ S cm}^2 \text{ mol}^{-1}$
 - (B) $300.9 \text{ S cm}^2 \text{ mol}^{-1}$
 - (C) $390.5 \text{ S cm}^2 \text{ mol}^{-1}$
 - (D) $409.9 \text{ S cm}^2 \text{ mol}^{-1}$
48. The relationship between C_p and C_v is :
- (A) $C_p + C_v = R$
 - (B) $C_p - R = C_v$
 - (C) $C_p + R = C_v$
 - (D) $C_p + C_v = -R$
49. 6 moles of an ideal gas at 327 K is allowed to expand isothermally and reversibly from a volume of 10 liters to 20 liters. Compute enthalpy change ΔU in kJ :
- (A) 0 kJ
 - (B) 1 kJ
 - (C) -8.83 kJ
 - (D) 8.83 kJ

50. In which of the following conditions, entropy will decrease :

- (A) $\text{H}_2(\text{g}) \longrightarrow 2 \text{H}(\text{g})$
- (B) Temperature of a crystalline solid is raised from 0 K to 115 K
- (C) A liquid crystallizes into a solid
- (D) Sodium bicarbonate decomposes into sodium carbonate, carbon dioxide and water

51. K_c for the following reaction is 2×10^{13} at 300 K



the value of ΔG at 300 K is :

- (A) $-3.82 \times 10^4 \text{ Jmol}^{-1}$
 - (B) $3.82 \times 10^4 \text{ Jmol}^{-1}$
 - (C) $-7.64 \times 10^4 \text{ Jmol}^{-1}$
 - (D) $7.64 \times 10^4 \text{ Jmol}^{-1}$
52. The pK_a of acetic acid and pK_b of ammonium hydroxide are 4.76 and 4.75, respectively. The pH of ammonium acetate is :

- (A) 7
- (B) 9
- (C) 11
- (D) 13

53. Molarity of a solution containing 5 g of NaOH in 450 mL :

- (A) 0.134 M
- (B) 0.278 M
- (C) 0.398 M
- (D) 0.482 M

54. Mountain climbers feel weak and show symptoms of anoxia at high altitude because :

- (A) At high altitudes, the partial pressure of oxygen is less than that at the ground level.
- (B) At high altitudes, the partial pressure of oxygen is more than that at the ground level.
- (C) At high altitudes, the partial pressure of oxygen is same as that at the ground level.
- (D) At high altitudes, the partial pressure of oxygen is zero

55. Which is the correct order of reduction potential ?

- (A) $F_2 > H^+ > Li^+$
- (B) $F_2 < H^+ < Li^+$
- (C) $F_2 = H^+ > Li^+$
- (D) $F_2 = H^+ \leq Li^+$

56. The equilibrium constant of the reaction having $E_{\text{cell}} = 0.46 \text{ V}$ is :



- (A) 1.02×10^{15}
- (B) 2.02×10^{15}
- (C) 3.92×10^{15}
- (D) 5.92×10^{15}

57. Which of the following statements is incorrect ?

- (A) Physisorption arises because of van der Waals forces
- (B) Physisorption is reversible in nature
- (C) Physisorption requires high activation energy
- (D) Physisorption is not specific in nature

58. The enzyme required for converting maltose to glucose is :

- (A) Maltase
- (B) Diastase
- (C) Zymase
- (D) Urease

59. The overall order of the reaction which has the following rate expression

$$\text{Rate} = k [A]^{3/2} [B]^{-1} :$$

- (A) Half order
- (B) First order
- (C) Second order
- (D) Third order

60. For the first order reaction, time required for completion of 99.9% of the reaction

is :

- (A) 2 times half-life ($t_{1/2}$)
- (B) 5 times half-life ($t_{1/2}$)
- (C) 10 times half-life ($t_{1/2}$)
- (D) 15 times half-life ($t_{1/2}$)