

Entrance Test for Ph.D. Programme-2018

Time: 120 Minutes

Max Marks: 100

Discipline: Chemical Sciences

Set: A

Test ID: 49

Name:

Father Name:

Roll Number: Date:/...../.....

Roll Number in words:

Signature of Candidate:

Signature of Invigilator:

INSTRUCTIONS FOR CANDIDATES

1. Do not open seal before start of Exam.
2. Carefully fill all your details in top portion of this question paper. Don't leave any column blank.
3. Use blue/black ball point pen to fill details on question paper. Write only in capital letters.
4. Carefully fill all your details in top portion of OMR answer sheet. Also put your signatures at bottom portion of OMR.
5. **Use only black ball point pen to fill details & darken circles on OMR sheet. Using pencil is strictly prohibited.**
6. **Carefully fill your Roll No, Test ID, Category, Paper Set and other required details on the OMR sheet.**
7. Question paper consists of two sections. Section-I is of Research Methodology and Section-II is Subject specific. Each section contains 50 multiple choice questions. Total 100 questions of one mark each.
8. **Maximum marks are 100.**
9. **Time allowed is 120 minutes.**
10. **Qualifying marks shall be 50% for General Category and 45% for Reserved Categories.**
11. All questions are compulsory. No negative marking for wrong answers.
12. There are four alternative answers for each question out of which only one is correct.
13. You have to darken the circle of right answer on OMR answer sheet.
14. Questions left blank or attempted with two or more options/answers will not be evaluated.
15. Also read carefully the instructions on OMR answer sheet before attempting the questions.
16. Use of calculator is not allowed.
17. Log tables may be provided for calculation work, if required.
18. OMR sheet should not be folded or crushed. Don't put any stray marks on the sheet.
19. Circles on **OMR sheet** should be darkened completely. Incomplete/half filled circles will not be evaluated.
20. Do not use marker or white fluid on the OMR sheet.
21. **The medium of the examination is English only.**
22. No extra sheet will be provided for the rough work. Use the space inside the question paper pages for rough work.
23. Carrying mobile phones, electronic gadgets, notes or extra papers in examination hall is strictly prohibited.
24. Indulging in any form of unfair means, canvassing, impersonation or misbehaviour with examination staff will result in disqualification of your candidature.

Section-I
Research Methodology

1. Who authored the book "Methods in Social Research"?
 - A) Wilkinson
 - B) C R Kothari
 - C) Kerlinger
 - D) Goode and Halt
2. Social Science deals with
 - A) Objects
 - B) Human beings
 - C) Living things
 - D) Non-living things
3. "The Romance of Research" is authored by
 - A) Redmen and Mory
 - B) P. V. Young
 - C) Robert C. Meir
 - D) Harold Dazier
4. Which of the following is an example of primary data?
 - A) Book
 - B) Journal
 - C) Newspaper
 - D) Census Report
5. ICSSR stands for
 - A) Indian Council for Survey and Research
 - B) Indian Council for Strategic Research
 - C) Indian Council for Social Science Research
 - D) Inter National Council for Social Science Research

6. JRF stands for
- A) Junior Research Functions
 - B) Junior Research Fellowship
 - C) Junior Fellowship
 - D) None of the above
7. In the formulation of problem, which of the following we need to give?
- A) Title
 - B) Index
 - C) Bibliography
 - D) Concepts
8. Analogies are sources of
- A) Data
 - B) Concept
 - C) Research
 - D) Hypothesis
9. When a hypothesis is stated negatively, it is called
- A) Relational Hypothesis
 - B) Situational Hypothesis
 - C) Null Hypothesis
 - D) Casual Hypothesis
10. In a survey, there is an enumerator and
- A) Guide
 - B) Respondent
 - C) Supervisor
 - D) Messenger
11. A short summary of Technical Paper is called
- A) Article
 - B) Research Abstract

- C) Publication
 - D) Guide
12. Ph.D. stands for
- A) Doctor of Philosophy
 - B) Degree in Philosophy
 - C) Doctor of Psychology
 - D) None of the above
13. Failure to acknowledge the borrowed material; is called (Take and use of others as one's own)
- A) Acknowledgement
 - B) Foot Notes
 - C) Index
 - D) Plagiarism
14. Data related to the Human beings are called
- A) Territorial data
 - B) Organisational data
 - C) Peripheral data
 - D) Demographic data
15. Schedule is filled by which of the following?
- A) Respondent
 - B) Enumerator
 - C) Everybody
 - D) None of the above
16. Questions in which only two alternatives are possible are called
- A) Multiple choice questions
 - B) Dichotomous Questions
 - C) Open ended questions
 - D) Structured questions

17. Assigning numerals or other symbols to the categories or response is called
- A) Editing
 - B) Coding
 - C) Transcription
 - D) Tabulation
18. Tippet table refers to
- A) Table of random digits
 - B) Table used in sampling methods
 - C) Table used in statistical investigations
 - D) All of the above
19. Research and development become the index of development of country. Which of the following reasons are true with regards to the statement?
- A) Because R&D reflect the true economic and social conditions prevailing in a country.
 - B) Because R&D targets the human development.
 - C) Because R&D can improve the standard of living of the people in a country.
 - D) All of the above.
20. The word "Anusandhan" implies
- A) Attaining an aim
 - B) Goal orientation
 - C) Following an aim
 - D) Praying to achieve an aim
21. A Researcher wants to study the relationship of family size to income. He classifies his population into different income slabs and then takes a random sample from each slab in order. Which technique of sampling is he working with?
- A) Cluster sampling
 - B) Random sampling

C) Stratified Random sampling

D) Systematic sampling

For Q. 22-23. The following table gives the sales of batteries manufactured by a company over the years.

Number of different batteries sold (in thousands)

Year	Types of Batteries					
	4AH	7AH	32AH	35AH	55AH	Total
1992	75	144	114	102	108	543
1993	90	126	102	84	126	528
1994	96	114	75	105	135	525
1995	105	90	150	90	75	510
1996	90	75	135	75	90	465
1997	105	60	165	45	120	495
1998	115	85	160	100	145	605

22. What was the approximate percentage increase in the sales of 55AH batteries in 1998 compared to that in 1992?

- A) 28%
- B) 31%
- C) 33%
- D) 34%

23. The percentage of 4AH batteries sold to the total number of batteries sold was maximum in the year?

- A) 1994
- B) 1995
- C) 1996

D) 1997

24. Look the series: 22, 21, 23, 22, 24, 23,

A) 22

B) 24

C) 25

D) 26

25. Which word does not belong to others?

A) Dodge

B) Flee

C) Duck

D) Avoid

26. Which of the following is not an essential element of report writing?

A) Research Methodology

B) Reference

C) Conclusion

D) None of the above

27. Which of the following is non-probability sampling?

A) Snowball

B) Random

C) Cluster

D) Stratified

28. In group interview, there are

A) One interviewer and one interviewee

B) More than one interviewer and one interviewee

C) One interviewer and more than one interviewee

D) More than one interviewer and more than one interviewee

29. Uniting various qualitative methods with quantitative methods can be called as

A) Coalesce

- B) Triangulation
 - C) Bipartite
 - D) Impassive
30. Books and records are the primary sources of data in:
- A) clinical research
 - B) historical research
 - C) laboratory research
 - D) participatory research
31. The important pre-requisites of a researcher in sciences, social sciences and humanities are
- A) laboratory skills, records, supervisor, topic
 - B) Supervisor, topic, critical analysis, patience
 - C) archives, supervisor, topic, flexibility in thinking
 - D) topic, supervisor, good temperament, pre-conceived notions
32. A college wants to give training in use of Statistical Package for Social Sciences (SPSS) to researchers. For this the college should organize
- A) Lecture
 - B) Seminar
 - C) Workshop
 - D) Conference
33. Which One of the following is not a quality of researcher?
- A) Keenness in enquiry
 - B) He must be of alert mind
 - C) His assertion to outstrip the evidence
 - D) Unison with that of which he is in search
34. Null means?
- A) One
 - B) Two

- C) Zero
- D) None of the above

35. The depth of any research can be judged by:

- A) title of the research
- B) duration of the research
- C) objectives of the research
- D) total expenditure on the research

36. Fundamental research reflects the ability to:

- A) Expound new principles
- B) Synthesize new ideals
- C) Evaluate the existing material concerning research
- D) Study the existing literature regarding various topics

37. A ratio represents the relation between

- A) Part and Part
- B) Part and Whole
- C) Whole and Whole
- D) All of the above

38. Circle graphs are used to show:

- A) How one part is related to other parts?
- B) How various sections share in the whole?
- C) How one whole is related to other whole?
- D) How various parts are related to the whole?

39. Field-work based research is classified as:

- A) Historical
- B) Empirical
- C) Biographical
- D) Experimental

40. Statistical measure based upon the entire population is called parameter while measure based upon a sample is known as:
- A) Inference
 - B) Statistics
 - C) Sample parameter
 - D) None of these
41. The importance of the correlation co-efficient lies in the fact that:
- A) It is one of the most valid measure of statistics.
 - B) It is a non-parametric method of statistical analysis.
 - C) There is a linear relationship between the correlated variables.
 - D) It allows one to determine the degree or strength of the association between two variables.
42. Which one of the following is the most comprehensive source of population data?
- A) Census
 - B) National Sample Surveys
 - C) Demographic Health Surveys
 - D) National Family Health Surveys
43. Which correlation co-efficient best explains the relationship between creativity and intelligence?
- A) 0.3
 - B) 0.5
 - C) 0.6
 - D) 1.0
44. Normal Probability Curve should be
- A) Zero skewed
 - B) Positively skewed
 - C) Negatively skewed
 - D) Leptokurtic skewed

45. A doctor studies the relative effectiveness of two drugs of dengue fever. His research would be classified as
- A) Case Study
 - B) Ethnography
 - C) Descriptive Survey
 - D) Experimental Research
46. Newton gave three basic laws of motion. This research is categorized as
- A) Sample Survey
 - B) Applied Research
 - C) Descriptive Research
 - D) Fundamental Research
47. When two or more successive footnotes refer to the same work which one of the following expressions is used?
- A) et.al
 - B) op.cit
 - C) loc.cit
 - D) ibid
48. Nine year olds are taller than seven year olds. This is an example of a reference drawn from
- A) Vertical study
 - B) Time series study
 - C) Experimental study
 - D) Cross-sectional study
49. Which one of the following belongs to the category of good 'research ethics'?
- A) Publishing the same paper in two research journals without telling the editors
 - B) Trimming outliers from a data set without discussing your reasons in a research paper

- C) Conducting a review of the literature that acknowledges the contributions of other people in the relevant field or relevant prior work
 - D) Including a colleague as an author on a research paper in return for a favor even though the colleague did not make a serious contribution to the paper
50. Which of the following are the basic rules of APA style of referencing format?
- A) Alphabetically index reference list
 - B) Invert authors' names (last name first)
 - C) Italicize titles of longer works such as books and journals
 - D) All of the above

Section-II Chemical Sciences

51. The ^{11}B NMR spectrum of $\text{Na}[\text{BH}_4]$ shows quintet. The pattern of signal integrals corresponds to:
- 1 : 4 : 6 : 4 : 1
 - 1 : 2 : 3 : 2 : 1
 - 1 : 3 : 6 : 3 : 1
 - 1 : 1 : 1 : 1 : 1
52. The pattern in the EPR spectrum is dominated by hyperfine coupling between the unpaired electron and the ^{51}V nucleus (99.75% abundant). The number lines in the EPR spectrum of $[\text{VO}(\text{acac})_2]$ is
- 8
 - 7
 - 5
 - 9
53. A combination of s , p_x , p_y , p_z and a d atomic orbitals gives a set of five sp^3d hybrid orbitals corresponding to trigonal bipyramidal or square-based pyramidal arrangement. Which d orbitals participate to give rise the square-based pyramidal geometry?
- $d_{x^2-y^2}$
 - d_{z^2}
 - d_{xy}
 - d_{yz}
54. Find out the wrongly paired molecules or ions and point groups.
- | <i>Molecule or ion</i> | <i>Point group</i> |
|-----------------------------|--------------------|
| a. $[\text{H}_3\text{O}]^+$ | C_{3v} |
| b. C_2H_4 | D_{2h} |
| c. CH_2Cl_2 | C_{2v} |
| d. SO_3 | C_{3v} |
55. In a simple cubic lattice, there is one sphere per unit cell, and approximately 52% of the volume of the unit cell is occupied. If r is the radius of each sphere, the volume of the unit cell occupied is:
- $4.19r^3$
 - $2.49r^3$
 - $9.14r^3$
 - $1.49r^3$
56. The radius ratio, r_+/r_- can be used to make a first prediction of the likely coordination number and geometry around the cation. For LiF , the radius ratio is 0.57. What geometry is expected for LiF ?
- Octahedral
 - Tetrahedral
 - Cubic
 - Linear

57. In aqueous solution, complexes formed between class a metal ions and ligands containing particular donor atoms is expected to follow the trend:
- $F > Cl > Br > I$
 - $Cl > Br > I > F$
 - $F < Cl < Br < I$
 - $Cl < Br < I > F$
58. Which one of the following is chiral?
- cis*-[Co(en)₂Cl₂]
 - trans*-[Co(en)₂Cl₂]
 - CBr₄
 - [Co(NH₃)₆]³⁺
59. Arrange the following in increase of their Δ_o values
- $[Fe(H_2O)_6]^{3+} > [Fe(H_2O)_6]^{2+} > [Fe(CN)_6]^{4-} > [Fe(CN)_6]^{3-}$
 - $[Fe(H_2O)_6]^{3+} > [Fe(H_2O)_6]^{2+} > [Fe(CN)_6]^{3-} > [Fe(CN)_6]^{4-}$
 - $[Fe(H_2O)_6]^{2+} > [Fe(H_2O)_6]^{3+} > [Fe(CN)_6]^{3-} > [Fe(CN)_6]^{4-}$
 - $[Fe(H_2O)_6]^{2+} < [Fe(H_2O)_6]^{3+} < [Fe(CN)_6]^{4-} < [Fe(CN)_6]^{3-}$
60. A square planar complex can be derived from an octahedral complex by the removal of two ligands from the z axis. The arrangement of the orbitals of a square planar is shown below. Which one of the following order is correct?
- $e_g, a_{1g}, b_{2g}, b_{1g}$
 - $a_{1g}, e_g, b_{2g}, b_{1g}$
 - $b_{1g}, a_{1g}, e_g, b_{2g}$
 - $b_{2g}, b_{1g}, e_g, a_{1g}$
61. In an octahedral complex, the group ligand orbitals that used for construction of molecular orbitals are:
- a_{1g}, e_g, t_{1u}
 - a_{1g}, e_g, t_{2g}
 - t_{2g}, e_g
 - t_{1u}, t_{2u}, a_{1g}
62. Approximate partial MO diagrams for metal–ligand π -bonding in an octahedral complex with π -donor ligands is in the order:
- $e_g < t_{2g} < t_{2g}^* < e_g^*$
 - $t_{2g} < e_g < e_g^* < t_{2g}^*$
 - $e_g^* < t_{2g}^* < t_{2g} < e_g$
 - $t_{2g} < t_{2g}^* < e_g < e_g^*$
63. The ³F terms split into:
- ³F₂ ³F₃ ³F₄
 - ³F₁ ³F₂ ³F₃
 - ³F₄ ³F₅ ³F₆
 - ³F₀ ³F₁ ³F₂

64. The relative energies of the terms for a p^2 configuration is:
- ${}^3P_0 < {}^3P_1 < {}^3P_2 < {}^1D_2 < {}^1S_0$
 - ${}^3P_0 > {}^3P_1 < {}^3P_2 < {}^1D_2 < {}^1S_0$
 - ${}^3P_0 > {}^3P_1 > {}^3P_2 > {}^1D_2 > {}^1S_0$
 - ${}^3P_0 > {}^3P_1 > {}^3P_2 > {}^1D_2 < {}^1S_0$
65. As per the Laporte selection rule, which transition is the forbidden?
- $s \rightarrow p$
 - $p \rightarrow d$
 - $d \rightarrow f$
 - $s \rightarrow d$
66. Assume that, there is an orbital contribution to the magnetic moment. Find the μ_{eff} for a metal ion with ground term ${}^2D_{3/2}$
- 1.73 BM
 - 2.82 BM
 - 3.89 BM
 - 3.01 BM
67. Considering the spin-orbit coupling, predict the following relation:
- $\mu_{eff} > \mu$ (spin-only) for d^6 and d^7 ions
 - $\mu_{eff} < \mu$ (spin-only) for d^6 and d^7 ions
 - $\mu_{eff} = \mu$ (spin-only) for d^6 and d^7 ions
 - $\mu_{eff} > \mu$ (spin-only) for d^5 ion
68. For octahedral Co^{2+} , what is the ground state term that arises from the $t_{2g}^5 e_g^2$ electronic configuration?
- ${}^4T_{1g}$
 - ${}^3T_{2g}$
 - ${}^4A_{1g}$
 - ${}^4E_{1g}$
69. Which of the following coordination compounds does not obey the 18-electron rule?
- $[(\eta^6-C_6H_6)Cr(CO)_3]$
 - $[(CO)_2Rh(\mu-Cl)_2Rh(CO)_2]$
 - $HMn(CO)_3(PPh_3)_2$
 - $[H_2Fe_2CO_3]^-$
70. The structures of many polynuclear organometallic species consider the total valence electron count, also called the Mingos cluster valence electron count. Count the valence electrons in the cluster Ru_3CO_{12}
- 48
 - 18
 - 60
 - 36
71. If an electric motor produced 15 kJ of energy each second as mechanical work and lost 2 kJ as heat to the surroundings, then the change in the internal energy of the motor each second is

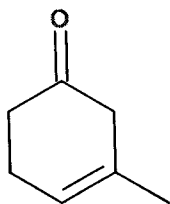
- a. -17 kJ
 b. 17 kJ
 c. -13 kJ
 d. 13 kJ
72. Calculate the final temperature, the work done, and the change of internal energy when ammonia is used in a reversible adiabatic expansion from 0.50 dm^3 to 2.00 dm^3 , the other initial conditions being the same.
 a. 195 K, -56 J, -56 J
 b. 203 K, -56 J, -28 J
 c. 188 K, -27 J, -56 J
 d. -273 K, 56 J, -56 J
73. Calculate the weight of the configuration in which 20 objects are distributed in the arrangement 0, 1, 5, 0, 8, 0, 3, 2, 0, 1.
 a. 4.19×10^{10}
 b. 4.19×10^{12}
 c. 4.19×10^{-10}
 d. 4.19×10^8
74. Calculate the standard potential of the Fe^{3+}/Fe couple from the values for the $\text{Fe}^{3+}/\text{Fe}^{2+}$ (+0.77 V) and Fe^{2+}/Fe (-0.44 V) couples.
 a. -0.037 V
 b. 0.33 V
 c. 1.21 V
 d. -0.33 V
75. The E° of $(\text{Zn}^{2+}, \text{Zn}) = -0.76 \text{ V}$ and E° of $(\text{Cu}^{2+}, \text{Cu}) = +0.34 \text{ V}$. From these value one can infer that:
 a. zinc has a thermodynamic tendency to reduce Cu^{2+} ions in aqueous solution.
 b. copper has a thermodynamic tendency to reduce Zn^{2+} ions in aqueous solution.
 c. copper has a thermodynamic tendency to reduce Cu^{2+} ions in aqueous solution.
 d. zinc has a thermodynamic tendency to reduce Zn^{2+} ions in aqueous solution.
76. Calculate the number of photons emitted by a 100 W yellow lamp in 1.0 s. Take the wavelength of yellow light as 560 nm and assume 100 per cent efficiency.
 a. 2.8×10^{20}
 b. 2.8×10^{-20}
 c. 6.3×10^{23}
 d. 1.4×10^{20}
77. Is the function $\cos ax$ an eigenfunction of (i) d/dx , (ii) d^2/dx^2 ?
 a. [(i) No, (ii) yes]
 a. [(i) No, (ii) no]
 a. [(i) Yes, (ii) yes]
 a. [(i) Yes, (ii) no]
78. Estimate the minimum uncertainty in the speed of an electron in a one-dimensional region of length $2a_0$.
 a. 500 km s^{-1}

- b. 100 km s^{-1}
- c. 200 km s^{-1}
- d. 250 km s^{-1}

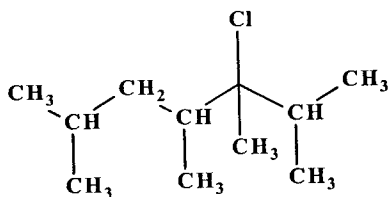
79. Find the terms that can arise from the configurations $f^1 d^1$
- a. H, G, F, D and P
 - b. G, F, D, P and S
 - c. I, 2H, 3G, 4F, 5D, 3P and S
 - d. G, F, D, P, S and H

80. Give the ground-state electron configurations of ClF
- a. $1\sigma^2 2\sigma^{*2} 3\sigma^2 1\pi^4 2\pi^{*4}$
 - b. $1\sigma^2 2\sigma^{*2} 1\pi^4 3\sigma^2$
 - c. $1\sigma^2 2\sigma^{*2} 3\sigma^2$
 - d. $1\sigma^2 2\sigma^{*2} 3\sigma^2 1\pi^4 2\pi^{*3}$

81. Give the IUPAC name of the following structure

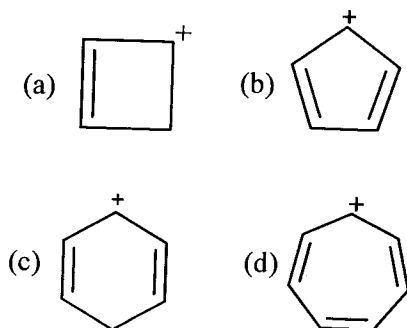


- (a) 5-methyl-cyclohex-4-en-1-one
 - (b) 3-methyl-cyclohex-3-en-1-one
 - (c) 1-methyl-cyclohex-1-en-5-one
 - (d) 2-methyl-cyclohex-1-en-4-one
82. How many stereoisomers are there for molecule drawn ?



- a. two
- b. four
- c. six
- d. eight

83. Which of the following carbocations would be the most stable ?



84. Which of the following ions will be most effective in an S_N2 displacement on methyl bromide ?

- (a) $C_2H_5O^-$
- (b) HO^-
- (c) $C_6H_5O^-$
- (d) CH_3COO^-

85. Ene reaction involves

- (a) 4π electrons electrocyclic reaction
- (b) 8π electrons electrocyclic reaction
- (c) 5π electrons electrocyclic reaction
- (d) 6π electrons electrocyclic reaction

86. Addition of BH_3 to a carbon-carbon double bond is

- (a) anti-Markownikoff *syn*-addition
- (b) anti-Markownikoff *anti*-addition
- (c) Markownikoff *syn*-addition
- (b) Markownikoff *anti*-addition

87. Racemic modification can be resolved by

- (a) the use of enzymes
- (b) fractional crystallization
- (c) fractional distillation
- (d) all of the above

88. Dieles-Alder reaction normally yields endo-adducts as major product. This is due to

- (a) Higher stability of the product
- (b) faster rate of formation of the endo product
- (c) steric hindrance
- (d) secondary orbital interactions between a diene and a dienophile

89. Which of the following transition is disallowed?

- (a) $\pi \rightarrow \pi^*$
- (b) $\sigma \rightarrow \sigma^*$
- (c) $n \rightarrow n^*$

(d) $\delta \rightarrow \delta^*$

90. Which of the following decay takes place in phosphorescence

(a) $S_1 \rightarrow S_0$

(b) $T_1 \rightarrow S_0$

(c) $T_2 \rightarrow T_1$

(d) $T_2 \rightarrow S_1$

91. Pyridine is less basic than aliphatic amine because the lone pair of electron on N-atom in pyridine resides in

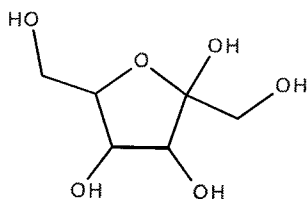
(a) sp^2 hybrid orbital

(b) sp hybrid orbital

(c) sp^3 hybrid orbital

(d) sp^2d hybrid orbital

92. Which description fits the following sugar best ?



(a) Ketone, furanose, α

(b) Ketose, furanose, β

(c) Aldose, pyranose, β

(d) Aldose, pyranose, α

93. Meroquinone on reduction with Zn and HI gives

(a) γ -picoline

(b) cincholoipon

(c) cincholoiponic acid

(d) loipoic acid

94. In the singlet and the triplet states of methylene radical, the unshared electrons are respectively

(a) unpaired, unpaired

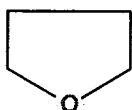
(b) paired, paired

(c) unpaired, paired

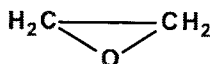
(d) paired, unpaired

95. Select the most easily cleaved by HBr

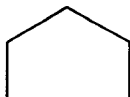
(a)



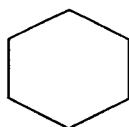
(b)



(c)



(d)



96. A crystal having unit cell dimensions $a \neq b \neq c$, $\alpha = \beta = \gamma = 90^\circ$ is
(a) tetragonal
(b) orthorhombic
(c) cubic
(d) hexagonal
97. The number of manganese ions in tetrahedral and octahedral sites, respectively in Mn_3O_4 are
(a) one Mn^{2+} and two Mn^{3+}
(b) one Mn^{3+} and two Mn^{2+}
(c) two Mn^{3+} and one Mn^{2+}
(d) two Mn^{2+} and one Mn^{3+}
98. A catalyst accelerates the rate of reaction by
(a) decreasing the energy of activation
(b) increasing Arrhenius constant
(c) increasing both
(d) decreasing both
99. $[\text{AgI}] \Gamma$ colloidal sol can be coagulated by the addition of a suitable cation. 1 mol of $[\text{AgI}] \Gamma$ requires mol of AgNO_3 , $\text{Pb}(\text{NO}_3)_2$ and $\text{Fe}(\text{NO}_3)_3$ as
(a) 1, 1, 1
(b) 1, 2, 3
(c) $1, \frac{1}{2}, \frac{1}{3}$
(d) 6, 3, 2
100. Let's assume that you got very drunk last night before. Your blood alcohol content (BAC) was 0.20%. Assuming that the rate constant for alcohol degradation $k = 0.015$ (units involving % and hours, depending on order of kinetics), how many hours would it take to be suitable for driving BAC < 0.80%) assuming
(a) 8 h
(b) 30 h
(c) 45 h
(d) 60 h