

Set-1

17P/206/22

5003

Question Booklet No

(To be filled up by the candidate by blue/black ball-point pen)

Roll No.

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Roll No.

(Write the digits in words)

Serial No. of OMR Answer Sheet

Day and Date

(Signature of Invigilator)

INSTRUCTIONS TO CANDIDATES

(Use only blue/black ball-point pen in the space above and on both sides of the Answer Sheet)

1. Within 30 minutes of the issue of the Question Booklet, check the Question Booklet to ensure that it contains all the pages in correct sequence and that no page/question is missing. In case of faulty Question Booklet bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall except the Admit Card without its envelope.
3. A separate Answer Sheet is given. It should not be folded or mutilated. A second Answer Sheet shall not be provided. Only the Answer Sheet will be evaluated.
4. Write your Roll Number and Serial Number of the Answer Sheet by pen in the space provided above.
5. On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.
6. No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and also Roll No. and OMR sheet No. on the Question Booklet.
7. Any change in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfair means.
8. Each question in this Booklet is followed by four alternative answers. For each question, you are to record the correct option on the Answer Sheet by darkening the appropriate circle in the corresponding row of the Answer Sheet, by ball-point pen as mentioned in the guidelines given on the first page of the Answer Sheet.
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. Note that the answer once filled in ink cannot be changed. If you do not wish to attempt a question, leave all the circles in the corresponding row blank (such question will be awarded zero mark).
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit only the OMR Answer Sheet at the end of the Test.
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

[उपर्युक्त निर्देश हिन्दी में अन्तिम आवरण-पृष्ठ पर स्पष्ट रूप से हैं]

Total No. of Printed Pages : 34



ROUGH WORK

रफ़ कार्य

17P/206/22 (1)

No. of Questions/प्रश्नों की संख्या : 120

Time : 2 Hours]
समय : 2 घण्टे]

[Full Marks : 360
[पूर्णांक : 360

Note : (i) Attempt as many questions as you can. Each question carries 3 (Three) marks. **One mark will be deducted for each incorrect answer.** Zero mark will be awarded for each unattempted question.

अधिकाधिक प्रश्नों को हल करने का प्रयत्न करें। प्रत्येक प्रश्न 3 (तीन) अंक का है। प्रत्येक गलत उत्तर के लिए एक अंक काटा जायेगा। प्रत्येक अनुत्तरित प्रश्न का प्राप्तांक शून्य होगा।

(ii) If more than one alternative answers seem to be approximate to the correct answer, choose the closest one.

यदि एकाधिक वैकल्पिक उत्तर सही उत्तर के निकट प्रतीत हो, तो निकटतम सही उत्तर दें।

1. The (A) model regards lattice energy as determining stabilization-factor of chemical bonding in crystalline solid state. Here (A) is :
 - (1) Molecular orbital
 - (2) Valence bond
 - (3) Ionic
 - (4) Covalent
2. Using VSEPR theory, the molecular shapes of the XeF_4 , XeO_4 , XeF_2 and XeOF_2 respectively are :
 - (1) Tetrahedral, Square planar, Angular, Triangular
 - (2) Square planar, Tetrahedral, Linear, T-shaped
 - (3) Tetrahedral, Tetrahedral, Linear, Linear
 - (4) Square planar, Square planar, Angular, Linear

(1)

(Turn Over)



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3. Assuming strong field ligands, the difference in CFSE in the unit of Δ_0 between the complexes of d^6 (octahedral) and d^6 tetrahedral is :

(1) $-2.13 \Delta_0$

(2) $3.5 \Delta_0$

(3) $-1.5 \Delta_0$

(4) $-2.0 \Delta_0$

4. The defect in a crystal which arises due to a vacancy in an otherwise perfect lattice and in it an atom or ion is missing from its normal site of the lattice is termed as (A). It is a (B) type of defect.

Here (A) and (B) respectively are :

(1) Schottky, Extrinsic point

(2) Schottky, Intrinsic point

(3) Frenkel, Intrinsic point

(4) Frenkel, Extrinsic point.

5. The magnetic moment of an octahedral Co^{2+} (d^7) complex is 4.0 B.M. The crystal field due to ligands around the metal ion is (A) and the total number of electrons in d_{xy} and d_{z^2} are (B). Here (A) and (B) respectively are :

(1) Strong, Six

(2) Strong, Three

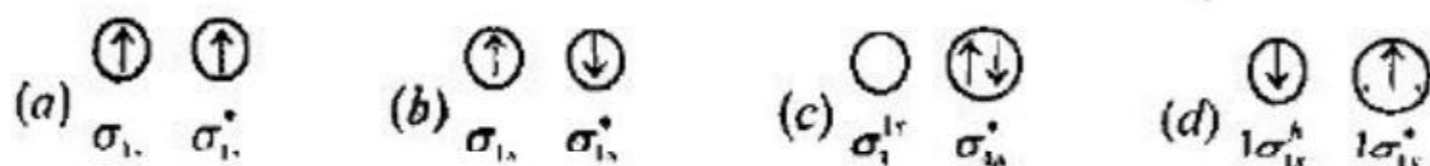
(3) Weak, Six

(4) Weak, Two

(2)

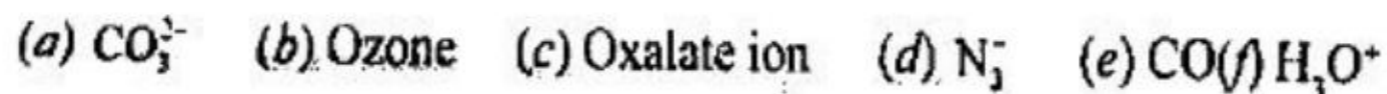
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6. Two hybrid orbitals of atom A are formed by linearly combining ($4s$ and $3d_{z^2}$) orbitals. These are allowed to form two bonds with hydrogen $1s$ orbitals interaction to form a AH_2 molecule. The shape of the AH_2 molecule will be :
- (1) Linear
 - (2) Angular
 - (3) Two AH bonds at 120° to each other
 - (4) Two AH bonds at 140° to each other
7. According to M.O. theory, the ground state of H_2 is σ_{1s}^2 . In addition to the ground state, there are following excited states of H_2 :



The highest and lowest energy states of H_2 will respectively be :

- (1) (b) and (a)
 - (2) (c) and (a)
 - (3) (a) and (b)
 - (4) (b) and (c)
8. Out of the following molecules/ions, the ones which are isoelectronic with N_2 and NH_3 , respectively are :



- (1) N_2 with O_3 and NH_3 with N_3^-
- (2) N_2 with CO and NH_3 with H_3O^+
- (3) N_2 with H_3O^+ and NH_3 with $C_2O_4^{2-}$
- (4) ~~N_2 with CO_3^{2-} and NH_3 with O_3~~

(3)

(Turn Over)



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9. The value of $\beta \left(\frac{B}{B_0} \right)$ of a ligand shows the extent of (A) in the M-L bond of the complex and also the extent of delocalization of ligand electrons. Its value is (B) for the electrons in (C) and (D) orbitals. Since the σ overlap of (D) is usually larger than the π -orbital overlap of (C), the cloud expansion is larger in the former case.

Here (A), (B), (C) and (D) respectively are :

(1) ionicity, higher, t_{2g} , e_g

(2) ionicity, lower, e_g , t_{2g}

(3) covalence, different, t_{2g} , e_g

(4) covalence, higher, e_g , t_{2g}

10. In CsCl ionic solid structure, the coordination number of Cs^+ and Cl^- ions respectively are :

(1) 6 and 8

(2) 8 and 8

(3) 4 and 6

(4) 6 and 4

11. Which one of the following molecules will show optical activity and is a chiral molecule ?

(a) $[\text{Cr}(\text{C}_2\text{O}_4)_3]^{3-}$ [octahedral]

(b) $\text{Cis}-[\text{PtCl}_2(\text{CN})_2]$ square planar

(c) $\text{Cis}-[\text{RhCl}_2(\text{NH}_3)_4]$ octahedral

(d) $[\text{Ru}(\text{bipy})_3]$ octahedral

(4)

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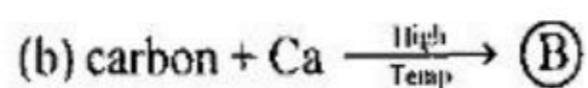
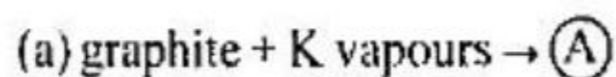
The correct alternative out of the following four alternatives is :

- (1) All the four molecules are chiral
 (2) (a) and (c) are chiral and (b) and (d) are achiral
 (3) (a) and (d) are chiral and (b) and (c) are achiral
 (4) (a), (b), (c) are chiral and (d) achiral
12. The metal ion is located in the specific regions of the membrane of the cell and has a highly specific roles to play there. One of the roles is to control the distribution of protons and electrons. The ion is :
- (1) Zn^{2+} (2) Mg^{2+} (3) Co^{2+} (4) $Fe^{+2/+3}$
13. The transition metal ions (viz, Mn, Fe, Co, Cu) are used in redox enzymes in preference of Zn^{2+} , Ga and Ca^{2+} . The reason is that :
- (1) These have spectral bands in the visible region
 (2) These have variables valence or oxidation states
 (3) These produce a specific magnetic field in the cell
 (4) The metal ions are coloured.
14. In transition metal tetrahedral complexes one has lower value of Δ (i.e. $\Delta_t < \Delta_o$). Further t_2 and C orbitals are (A) affected by Π -bonding. Although $\Delta_t < \Delta_o$, but the electronic parameter β is (B) affected and thus all tetrahedral complexes are (C) spin.
 Here (A), (B) and (C) respectively are :
- (1) equally, the same, high
 (2) more, same, high
 (3) less, lesser, low
 (4) less, more, high

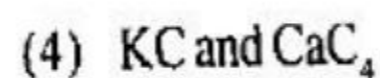
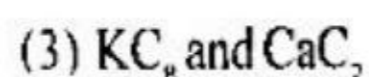
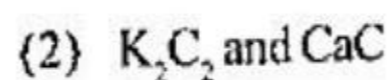
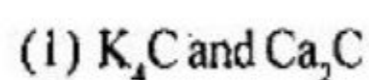
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15. In the reactions :



the products (A) and (B) respectively are :



16. In methyl lithium $[Li(CH_3)]_4$ molecule, the bond between Lithium and (CH_3) group is :

(1) Two center-two electron bond ($2c - 2e$)

(2) Three center-two electron bond ($3c - 2e$)

(3) Four center-two electron bond ($4c - 2e$)

(4) Five center-two electron bond ($5c - 2e$)

17. In the following list :

(a) $B(CH_3)_3$, (b) $B(OCH_3)_3$, (c) $SiCl_3(CH_3)$, (d) $[N(CH_3)_3]$, (e) $[NaCH_3COO]$

the molecules which cannot be classified as organometallics are :

(1) $B(OCH_3)_3$, $Si(Cl_3)(CH_3)$, $Na(CH_3COO)$

(2) $N(CH_3)_3$, $Na(CH_3COO)$

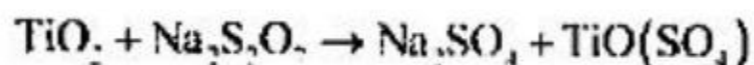
(3) $B(OCH_3)_3$, $[Na(CH_3COO)]$

(4) $[Na(CH_3COO)]$, $B(ClH_3)_3$

(6)

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18. The ores of Ti, Ta and Nb may be brought into solution near 800 °C using $\text{Na}_2\text{S}_2\text{O}_7$. A simplified reaction may be as follows :



The acid and base in the reaction are :

- (1) Ti^{4+} as base and Na in $\text{Na}_2\text{S}_2\text{O}_7$ as acid
 - (2) $\text{S}_2\text{O}_7^{2-}$ as base and O_2 as acid
 - (3) O_2^{4-} of TiO_2 (base) and SO_3 in S_2O_7 (acid)
 - (4) Ti^{4+} as acid and S^{6+} as acid
19. The m.p.s of group two chlorides (MCl_2) increase steadily down the group, viz. $\text{BeCl}_2 < \text{MgCl}_2 < \text{CaCl}_2 < \text{SrCl}_2 < \text{BaCl}_2$. This trend is in sharp contrast to alkali metal chlorides (MCl) viz. $\text{LiCl} < \text{NaCl} < \text{KCl} < \text{RbCl} > \text{CsCl}$. The following four reasons may be given. Some of them may be wrong. The reasons are :

- (a) The nature of bonding varies from covalent to ionic down the group.
- (b) The coordination number of metal ions increases and so the Madelung's constant (i.e. Lattice energy) increases from Be to Ba.
- (c) The radius of Cl^- ion is so large whereas that of M^{2+} ions is less. This causes Cl^- to Cl^- repulsion to decrease.
- (d) There is a decrease in the I.P. of the alkaline earth metal ions (i.e. $\text{M}_{(s)} \rightarrow \text{M}_{(g)}^{2+}$) while in alkali metal ions, there is an increase in I.P. from K to Cs.

Out of these alternatives, pick the wrong one.

- | | |
|-------------------|-------------------|
| (1) (a), (b), (c) | (2) (a), (b), (d) |
| (3) (d) only | (4) (b) and (d) |

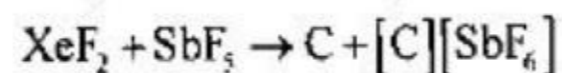
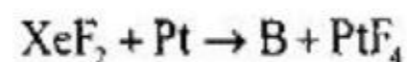
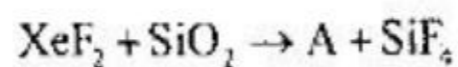
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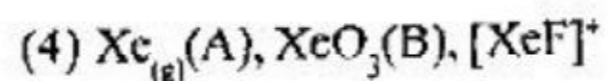
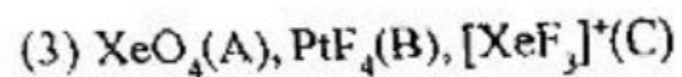
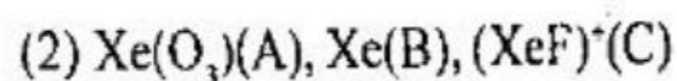
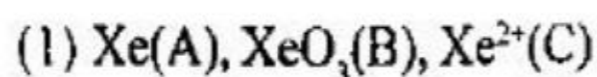


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20. The following reactions are given :



Here A, B and C respectively are :



21. Which ones of the following statements are wrong in satisfactory description of bonding in electron deficient boron hydrides ?

(a) It must show that each bond – both two and three centered-contains two electrons, (conservation of electron rule)

(b) It must show that in the bonding, each boron atom uses all its four orbitals and each H-atom, its 1s orbital (valence)

(c) The bonding one, thus, gets out of the 2-centered and 3-centered bonds should not be consistent with the structure of hydrides.

(1) (a), (b)

(2) (a), (c)

(3) (b), (c)

(4) (c) only

(8)

(Continued)



22. Graphite is a layered structure solid.

- (a) Within a layer of graphite, the type of bond (A) best describes the bonding
- (b) Between the different layers, the type of bonding is (B)
- (c) Graphite is relatively good electric conductor, (C) type of electrons are mobile and therefore, these are able to conduct the electric current.

Here (A), (B) and (C) respectively are :

- (1) (A) - ionic, (B) - covalent, (C) σ -type
- (2) (A) - covalent, (B) Van der Waal (C) Π -type
- (3) (A) - covalent, (B) Hydrogen (C) Π -type
- (4) (A) - ionic, (B) covalent, (C) σ -type
23. The reason for impossibility of separation and isolation of isomers, $\text{Cis-}[\text{Cu-Cl}_2(\text{NH}_3)_4]$ and $\text{trans-}[\text{Cu-Cl}_2(\text{NH}_3)_4]$ from their mixture in solution is :
- (1) Both are unstable in solution
- (2) Both are labile
- (3) $\text{Cis-}[\text{CuCl}_2(\text{NH}_3)_4]$ decomposes in solution
- (4) Both gets polymerised

(9)

(Turn Over)



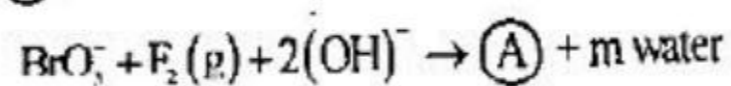
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24. The noble gas with the most extensive chemical properties is (A). Compounds with A-F, A-O and A-N bonds are known and the most important oxidation states are (C).

Here (A), (B) and (C) respectively are :

- (1) Argon, halogen, +2, +6
- (2) Neon, Nitrogen, +4, +6
- (3) Xe, Nitrogen(N), +2, +4, +6
- (4) Rn, Sulphur(S), +2, +4

25. The (A) and m in the following reaction respectively are :



- (1) $\text{Br}_2 + 8$
- (2) $[\text{BrO}_4]^- (\text{aq}), 2$
- (3) $[\text{HBrO}], 4$
- (4) $[\text{Br}_2\text{O}_7], 5$

26. For s and p valence orbitals, overlap decreases on (A) group of periodic table while (B) is true for the transition metals. That is why the heat of atomisation of the main group metals (C) with increasing atomic numbers while (B) trend is observed for transition metals.

Here (A), (B) and (C) respectively are :

- (1) ascending, opposite, increases
- (2) descending, opposite, falls
- (3) descending, the same, goes up
- (4) ascending, the same, falls

(10)

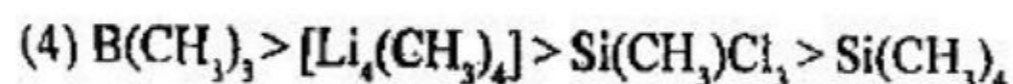
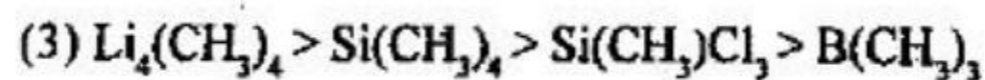
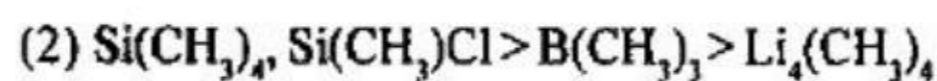
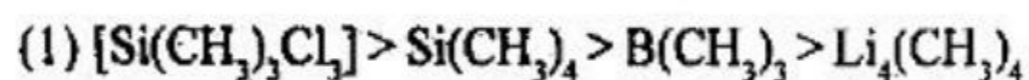
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27. Relative Lewis acidity in decreasing order of

$\text{Li}_4(\text{CH}_3)_4$, $\text{B}(\text{CH}_3)_3$, $\text{Si}(\text{CH}_3)_4$ and $[\text{Si}(\text{CH}_3)\text{Cl}_3]$ is :



28. The structures of boron and nitrogen compounds [viz. BN type] :

(1) similar to graphite only, but it is non-conducting

(2) similar to diamond only, it can be used as very hard material

(3) similar to both graphite and diamond types with the properties given in (1) and (2)

(4) similar to NaCl type where B is (+ve) and nitrogen is (-ve) species

29. The simple iron porphyrine cannot function as O_2 carrier. It is because, the complex is :

(1) unstable in solution

(2) polymerized

(3) forms Fe - O - O - Fe bridge

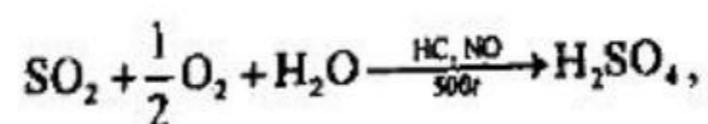
(4) forms Fe_2O_3

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30. Polynuclear carbonyls are coloured and their intensity increases with number of metal ions. Their colour arises from electronic transitions between orbitals that are largely localized on :

- (1) the ligands viz. CO
- (2) metal framework
- (3) oxygen atoms of CO group not involved in bonding
- (4) carbon atoms of CO, which are not involved in bonding

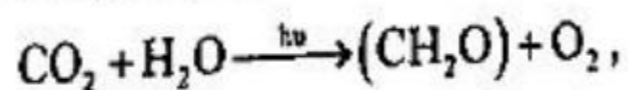
31. The role of the reaction,



in the environment is :

- (1) global warming
- (2) acid rain
- (3) SO₂ poisoning
- (4) Oxygen consumption

32. The importance of the reaction,



in the environment is :

- (1) sun radiation balance
- (2) green-house effect
- (3) photosynthesis
- (4) respiration

(12)

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33. 'Speciation' means :

- (1) segregation of chemical species
- (2) aggregation of chemical species
- (3) identification of chemical species
- (4) spuminess of chemical species

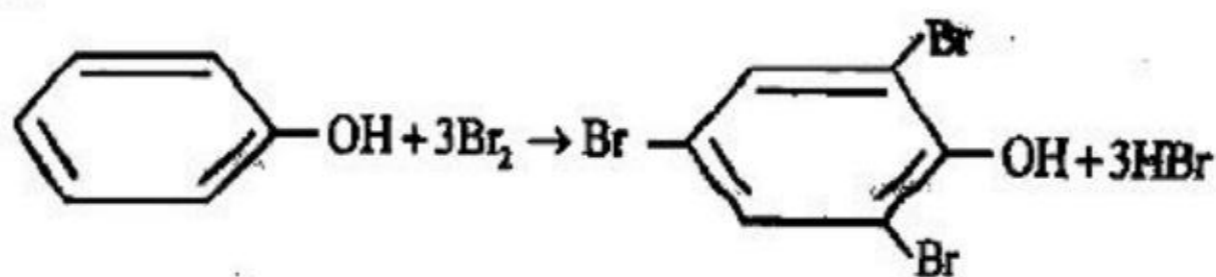
34. Which one is sink for CO₂ gas ?

- (1) Coal
- (2) Ocean
- (3) Wood
- (4) Fire

35. The region of unadsorbed radiation by atmospheric window is :

- (1) 800-1300 nm
- (2) 8000-13000 nm
- (3) 14000-25000 nm
- (4) 4000-8000 nm

36. Select the procedure which you consider most appropriate for the quantitative analysis of organic functional group of starting reactant in the following reaction :



- (1) Potassium bromate oxidation
- (2) Periodate oxidation
- (3) Precipitation
- (4) Karl-Fischer titration

(13)

(Turn Over)

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37. The methylated mercury in ecoaquatic system can be found due to :

- (1) the discharge of methylated mercury from the industry
- (2) the discharge of methylated mercury from the seed redressal
- (3) the discharge of methylated mercury from the chemical and clinical laboratories
- (4) the biological methylation of mercury

38. The concentration parts per billion (ppb) is :

- (1) g/L
- (2) mg/L
- (3) $\mu\text{g/L}$
- (4) mol/L

39. The percentage transmittance (T) can be related to the absorbance (A) as :

- (1) $\% T = 2 - \log A$
- (2) $A = 2 - \log \% T$
- (3) $A = \log \% T - 2$
- (4) $\% T = \log A - 2$

40. The results of an analysis are 36.97 g, compared with the accepted value of 37.06 g. The relative error in parts per thousand is :

- (1) -2.40
- (2) -24.0
- (3) -0.24
- (4) -0.024

(14)

(Continued)

41. The coefficient of variation is :

- (1) %RSD (2) RSD (3) SD (4) SD^2

42. The mean and the standard deviation of the following set of analytical results :
15.67 g, 15.69 g, 16.03 g are :

- (1) 15.80, 0.20 g (2) 15.80, 0.02 g
(3) 15.80, 2.00 g (4) 15.80, 0.002 g

43. The equation for a normal error curve has the form :

- (1) $Y = \frac{e^{-\{(x-\mu)^2/2\sigma^2\}}}{\sigma\sqrt{2\pi}}$ (2) $Y = \frac{\sigma\sqrt{2\pi}}{e^{-\{(x-\mu)^2/2\sigma^2\}}}$
(3) $Y = \frac{\sigma.2\pi}{e^{-\{(x-\mu)^2/2\sigma^2\}}}$ (4) $Y = \frac{2\pi\sigma^2}{e^{-\{(x-\mu)^2/2\sigma^2\}}}$

44. The relationship between distribution ratio (D) and distribution coefficient (K_D) for a weak acid can be represented as :

- (1) $D = \frac{1/K_D}{1+K_a/[H^+]}$
(2) $D = \frac{1+K_D}{1+K_a/[H^+]}$
(3) $D = \frac{K_D}{1+K_a/[H^+]}$
(4) $D = \frac{K_a}{1+K_D/[H^+]}$

(15)

(Turn Over)



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45. Twenty milliliters of an aqueous solution of 0.10 M butyric acid is shaken with 10 mL ether. After the layers are separated, it is determined by titration that 0.5 mmol butyric acid remains in the aqueous layer. The distribution ratio and the percent of acid extracted are :

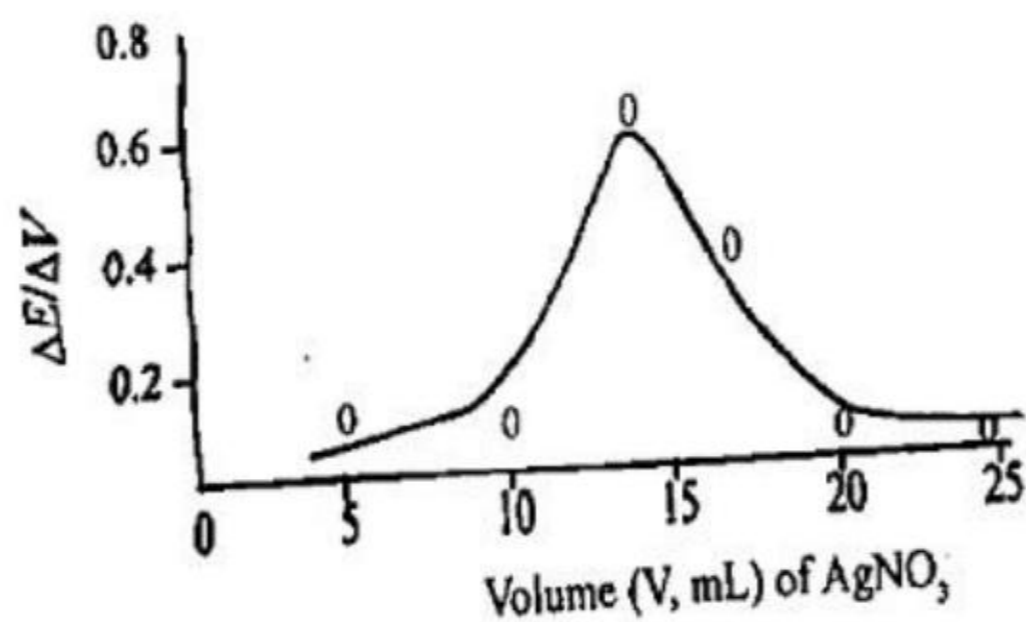
- (1) 60.0, 95% (2) 30.0, 47%
(3) 6.0, 75% (4) 12.0, 99%

46. Which one of the following Ce(IV) solutions is stable for a year even at more than room temperature ?

- (1) Basic solution (2) Acidic solution
(3) Neutral solution (4) Moderate basic solution

47. In the potentiometric titration of KCl with 0.1 M AgNO₃, the equivalence point can be obtained from the given plot as :

- (1) 10 mL (2) 20 mL (3) 25 mL (4) 15 mL



48. EDTA is a :

- (1) bidentate ligand (2) tridentate ligand
(3) quadridentate ligand (4) hexadentate ligand

(16)

(Continued)



49. Which one used for the preparation of EDTA aqueous solution ?

- (1) EDTA
- (2) monosodium salt of EDTA
- (3) disodium salt of EDTA
- (4) tetrasodium salt of EDTA

50. Which parameter has no unit ?

- (1) Transmittance
- (2) Path length
- (3) Absorptivity
- (4) Solute concentration

51. Which of the following statements are true ?

- (A) Cation-exchange resins have primary amine group.
- (B) Cation-exchange resins have sulphonic acid group.
- (C) Anion-exchange resins have tertiary amine group.
- (D) Anion-exchange resins have carboxylic acid group.

- (1) A and D
- (2) B and C
- (3) A and C
- (4) B and D



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52. Which two statements are totally false ?

- (A) Beer's law is obeyed when aqueous solution of chromate is diluted with water.
- (B) Beer's law is obeyed when aqueous solution of chromate is made strongly acidic.
- (C) Beer's law is obeyed when aqueous solution of chromate is made strongly alkaline.
- (D) Beer's law is obeyed when aqueous solution of chromate is made perfectly neutral.

(1) B and C

(2) A and B

(3) A and D

(4) C and D

53. Which two of following statements are totally true ?

- (A) In normal-phase chromatography, the stationary phase is polar.
- (B) In normal-phase chromatography, the stationary phase is non-polar.
- (C) In reverse-phase chromatography, the stationary phase is polar.
- (D) In reverse-phase chromatography, the stationary phase is non-polar.

(1) A and C

(2) A and D

(3) B and C

(4) B and D

(18)

(Continued)

54. Planar chromatography methods include :

(A) High performance liquid chromatography

(B) Thin-layer chromatography

(C) Paper chromatography

(D) Electro chromatography

(1) only A

(2) both A and B

(3) B, C and D

(4) A, B and C

55. Which one is 2-D chromatography ?

(1) Gas chromatography

(2) HPLC

(3) Paper chromatography

(4) Ion-exchange chromatography

56. The number of theoretical plates can be obtained from a chromatogram from the expression :

(1) $n = 16 \left(\frac{t_R}{w} \right)^2$

(2) $n = 16 \left(\frac{w}{t_R} \right)^2$

(3) $n = 16 \frac{(t_R)^2}{w}$

(4) $n = 16 \frac{t_R}{w^2}$

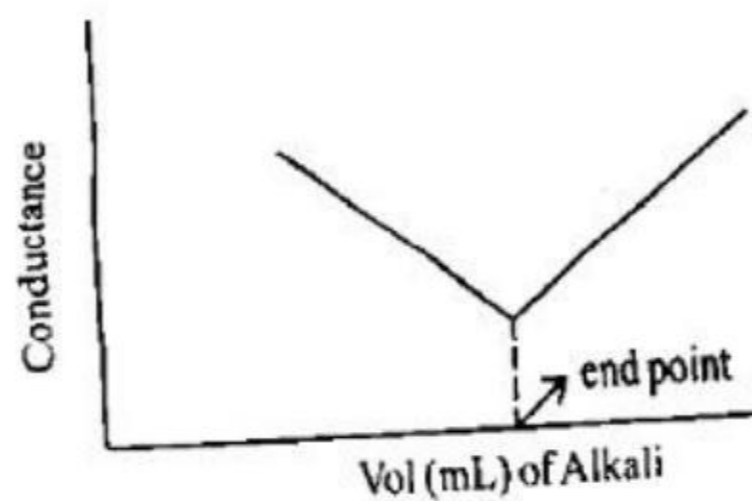
(19)

(Turn Over)



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57. In the conductometric titration between an acid and base, the graph :



represents a titration between :

- (1) Strong acid and strong base
- (2) Strong acid and weak base
- (3) Weak acid and strong base
- (4) Weak acid and weak base

58. The transition pH range of phenolphthalein is :

- (1) 1-4
- (2) 4-6
- (3) 8-10
- (4) 12-14

59. The optimum dissolved oxygen in natural water is :

- (1) 1-2 ppm
- (2) 2-4 ppm
- (3) 4-6 ppm
- (4) 6-8 ppm

60. Which region of the atmosphere contains ozone ?

- (1) Troposphere
- (2) Stratosphere
- (3) Mesosphere
- (4) Thermosphere

(20)

(Continued)



61. The half life of radium is 1600 years. After how much time will 1 gm radium reduced to 125 mgs.
- (1) 1800 years (2) 1600 years
(3) 3200 years (4) 4800 years.
62. The energy can be represented in terms of partition function by the following equation :
- (1) $E = kT (\partial \ln Q / \partial T)_v$ (2) $E = kT^2 (\partial \ln Q / \partial T)_v$
(3) $E = k/T (\partial \ln Q / \partial T)_v$ (4) $E = k/T^2 (\partial \ln Q / \partial T)_v$
63. The Variation theorem used to find the MO wave function ψ is a/an :
- (1) Exact method (2) Approximate method
(3) Magnetic method (4) Spectroscopic method
64. According to Bose-Einstein statistics the maximum probability distribution is :
- (1) $n_i/g = 1/e^{\alpha + \beta \epsilon_i}$ (2) $n_i/g = 1/e^{\alpha + \beta \epsilon_i} - 1$
(3) $n_i/g = 1/e^{\alpha + \beta \epsilon_i} + 1$ (4) None of these.
65. The concept of Excess Functions is applicable to :
- (1) Non-ideal solution (2) Ideal solutions
(3) Phase equilibrium (4) Exact differentials



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66. Canonical Ensembles are :

- (1) Isolated systems .
- (2) Closed isothermal systems
- (3) Open isothermal systems
- (4) Imaginary systems

67. Which of the following partition functions will be substantially larger than unity ?

- (1) Electronic
- (2) Vibrational
- (3) Rotational
- (4) Translational

68. In Fermi-Dirac statistics the particles are :

- (1) Indistinguishable
- (2) Distinguishable
- (3) Adsorbed
- (4) Absorbed

69. The entropy production for a system having two fluxes J_1 and J_2 is given by $\sigma = J_1 X_1 + J_2 X_2$, here X_1 and X_2 stand for _____ corresponding to J_1 and J_2 .

- (1) Mole fractions
- (2) Forces
- (3) Molar concentrations
- (4) Chemical potentials

(22)

(Continued)

70. The Ilkovic equation is :
- (1) $I_d = 607 n D^{1/2} m^{2/3} t^{1/2} c$ (2) $I_d = 706 n D^{3/2} m^{2/3} t^{1/2} c$
 (3) $I_d = 607 n D^{2/3} m^{1/2} t^{1/3} c$ (4) $I_d = 706 n D^{1/3} m^{2/3} t^{1/2} c$
71. In any crystal ratio of Weiss indices of the face is 2:4:3, then Miller indices would be :
- ~~(1) 634~~ (2) 346 (3) 436 (4) 643
72. The number of atoms per unit cell in simple cubic fcc and bcc are :
- (1) 4, 2, 1 (2) 1, 2, 4 (3) 1, 4, 2 (4) 2, 4, 1
73. If velocity constant of a reaction is $2.0 \times 10^{-4} \text{ sec}$ and rate of reaction is $8.0 \times 10^{-4} \text{ mole}^{-1} \text{ litre}^{-1} \text{ sec}^{-1}$, then concentration of reactant will be :
- (1) $8.0 \times 10^{-4} \text{ mole}^{-1} \text{ litre}^{-1}$ (2) $1.0 \text{ mole}^{-1} \text{ litre}^{-1}$
 (3) $4.0 \text{ mole}^{-1} \text{ litre}^{-1}$ (4) $8.0 \text{ mole}^{-1} \text{ litre}^{-1}$
74. On increasing the temperature the rate of reaction is doubled per 10°C . If the temperature is increased by 50°C , then the rate of reaction will increase :
- (1) 12 times (2) 16 times (3) 32 times (4) 50 times
75. If the entropy change $dS_{UV} > 0$ (where $U = \text{internal energy}$ and $V = \text{volume}$) then the process would be :
- (1) Spontaneous (2) Reversible
 (3) Exothermic (4) None of the above.

← 22 →

(Turn Over)



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76. The correct form of Clausius-Clapeyron equation is :

(1) $dP/dT = \Delta H/T \Delta V$

(2) $dV/dT = \Delta H/T \Delta V$

(3) $dT/dP = \Delta H/V \Delta T$

(4) $dP/dT = L/T(P_2 - P_1)$

77. On increasing the temperature the rate of reaction is doubled per 10 °C. If the temperature is increased by 50 °C, then the rate of reaction will increase :

(1) 12 times

(2) 16 times

(3) 32 times

(4) 50 times

78. Which of the following is true for an orthorhombic lattice ?

(1) $a = b = c, \alpha = \beta = \gamma = 90^\circ$

(2) $a \neq b \neq c, \alpha = \beta = \gamma = 90^\circ$

(3) $a \neq b \neq c, \alpha = \gamma = 90^\circ, \beta \neq 90^\circ$

(4) $a = b \neq c, \alpha = \beta = \gamma$

79. Which of the following is the correct order of surface area per molecule/Nm² for Langmuir-Blodgett films ?

(1) steric acid > tri-para cresyl phosphate > iso steric acid

(2) tri-para cresyl phosphate > iso steric acid > steric acid

(3) iso steric acid > tri-para cresyl phosphate > steric acid

(4) steric acid > iso steric acid > tri-para cresyl phosphate

(24)

(Continued)



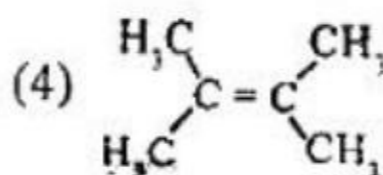
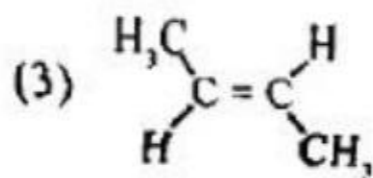
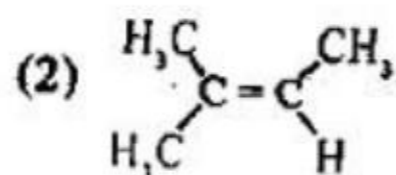
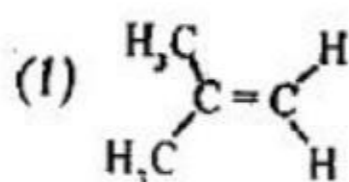
80. Cu-Ni alloy is an example of:

- (1) Substitutional solid solution (2) Interstitial solid solution
 (3) Mixture (4) None of these.

81. Which of the following refractive material has highest melting point?

- (1) Al_2O_3 (2) SrO (3) MgO (4) HfC

82. Which of the following alkenes would have the largest λ_{max} ?



83. The correct order of IR stretching frequencies for $C \equiv C$, $C=C$ and $C-C$ bond is:

- (1) $C-C > C=C > C \equiv C$ (2) $C \equiv C > C=C > C-C$
 (3) $C-C > C=C < C \equiv C$ (4) $C=C < C-C > C \equiv C$

84. Which is correct for Lambert's and Beer's law?

- (1) $\log I_0/I = -\epsilon Cl$ (2) $\log I_0/I = \epsilon Cl$
 (3) $\log I/I_0 = \epsilon Cl$ (4) None of these.

Where I = intensity of transmitted light, I_0 = intensity of incident light, C = concentration, l = path length and ϵ = molar absorptivity.



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85. The vibrational degrees of freedom for $\text{CH}_2 = \text{CHCH}_2\text{Br}$, CO_2 and SO_2 are :
(1) 22, 3, 4 (2) 21, 4, 3 (3) 22, 4, 3 (4) 21, 3, 4

86. The τ values of methyl protons in methyl halides are in the order :

- (1) $\text{CH}_3\text{F} > \text{CH}_3\text{Cl} > \text{CH}_3\text{Br} > \text{CH}_3\text{I}$
(2) $\text{CH}_3\text{Cl} > \text{CH}_3\text{F} > \text{CH}_3\text{Br} > \text{CH}_3\text{I}$
(3) $\text{CH}_3\text{I} > \text{CH}_3\text{Br} > \text{CH}_3\text{Cl} > \text{CH}_3\text{F}$
(4) $\text{CH}_3\text{I} < \text{CH}_3\text{Br} > \text{CH}_3\text{F} > \text{CH}_3\text{Cl}$

87. If mass of the particle = m and length of a one dimensional box = L , the energy of a particle is by :

- (1) $nh/8 mL^2$ (2) $n^2h^2/8 mL^2$
(3) $nh/8 \pi mL^2$ (4) $n^2h^2/8 mL$

88. A solution containing one mole for litre each of $\text{Cu}(\text{NO}_3)_2$, AgNO_3 , $\text{Hg}_2(\text{NO}_3)_2$ and $\text{Mg}(\text{NO}_3)_2$ is electrolyzed using inert electrodes.
Standard electrode potentials in volts (reduction potentials) are :

$$\text{Ag}^+ | \text{Ag} = 0.80$$

$$\text{Hg}_2^{2+} | \text{Hg} = 0.79$$

$$\text{Cu}^{2+} | \text{Cu} = 0.34$$

$$\text{Mg}^{2+} | \text{Mg} = -2.37$$

With increasing voltage, the sequence of deposition of metals on the cathode will be :

- (1) Ag, Hg, Cu, Mg (2) Mg, Cu, Hg, Ag
(3) Ag, Hg, Cu (4) Cu, Hg, Ag

(26)

(Continued)



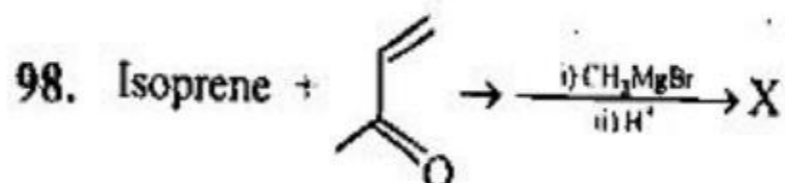
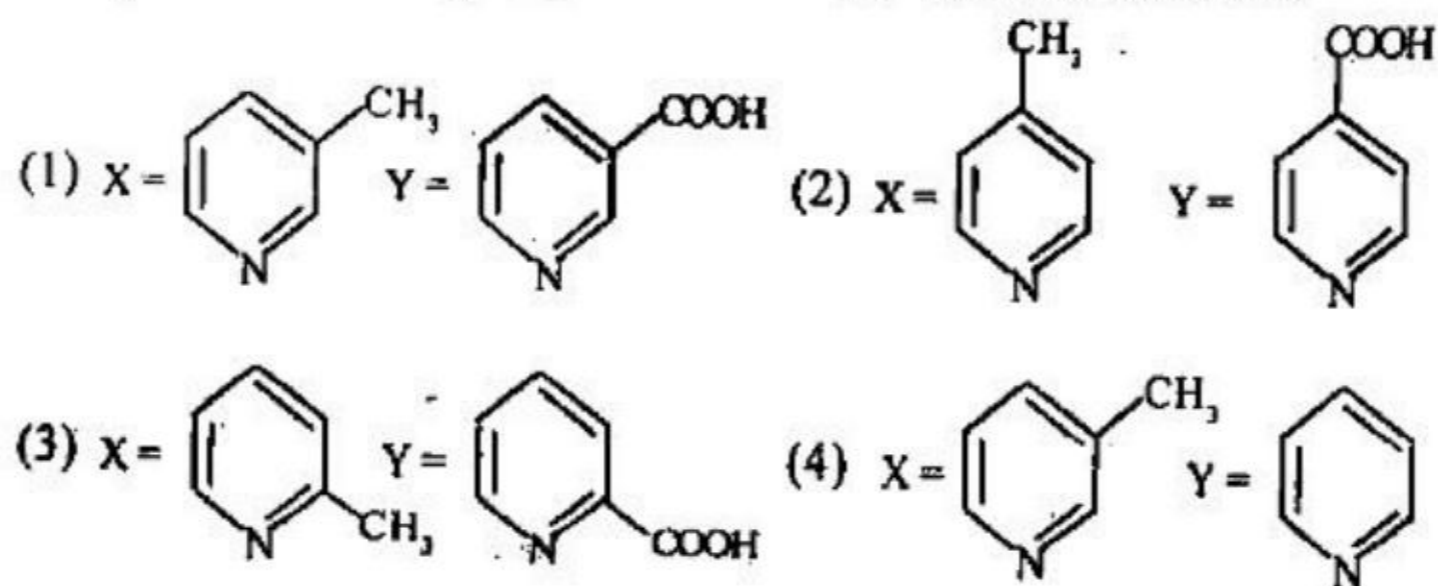
89. $E^\circ(\text{Cu}^{2+}/\text{Cu}) = +0.34 \text{ V}$. What is the value of E (at 298 K) for an aqueous solution in which $[\text{Cu}^{2+}] = 0.02 \text{ mol dm}^{-3}$?
- (1) 0.29 V (2) 0.32 V (3) 0.39 V (4) 0.36 V
90. Which of the following is NOT a property of a catalyst ?
- (1) It lowers the activation energy for both the forward and reverse processes.
(2) It increases the rate of both the forward and reverse processes.
(3) It may be recovered unchanged at the end of the reaction.
(4) It increases the equilibrium constant.
91. Which of the following alkene addition reactions occur(s) specifically in an *anti* fashion ?
- (1) hydroboration-oxidation
(2) addition of Br_2
(3) Addition of H_2
(4) Addition of H_2O in dilute acid
92. Which statement about cyclohexane is *incorrect* ?
- (1) Each C atom is sp^3 hybridized
(2) H atoms occupy equatorial or axial sites
(3) The cyclohexane ring can flip between chair and boat conformers
(4) Cyclohexane suffers ring strain



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93. Which one of the following sugar is non-reducing ?
- (1) Fructose (2) Sucrose (3) Lactose (4) Maltose
94. Epimerization of an aldose sugar involves the difference in stereochemistry at carbon :
- (1) C-1 only (2) C-2 only
(3) C-3 and C-4 only (4) C-2 or C-3 or C-4 only
95. Which one of the following form the same osazone on the treatment with excess of phenyl hydrazine ?
- (1) D(+)-Glucose and D(+)-Mannose
(2) D(+)-Glucose and D(-)-Galactose
(3) D(+)-Galactose and D(+)-Mannose
(4) D(+)-Glucose and D(-)-Ribose
96. Quinoline on reduction leads to the formation of decahydroquinoline using one of the following :
- (1) LiAlH_4 (2) Na-Liq. NH_3
(3) H_2/Ni (4) $\text{H}_2, \text{Pt in CH}_3\text{COOH}$

97. $2\text{CH}_2 = \text{CHCHO} + \text{NH}_3 \rightarrow \text{X} \xrightarrow{\text{K}_2\text{Cr}_2\text{O}_7, \text{H}_2\text{SO}_4} \text{Y}$ where X and Y are :



- (1) α -terpeniol (2) Geraniol
(3) Citral (4) α -pinene

99. Amino acids on treatment with aq. NaNO_2 and HCl in cold conditions generates effervescences due to :

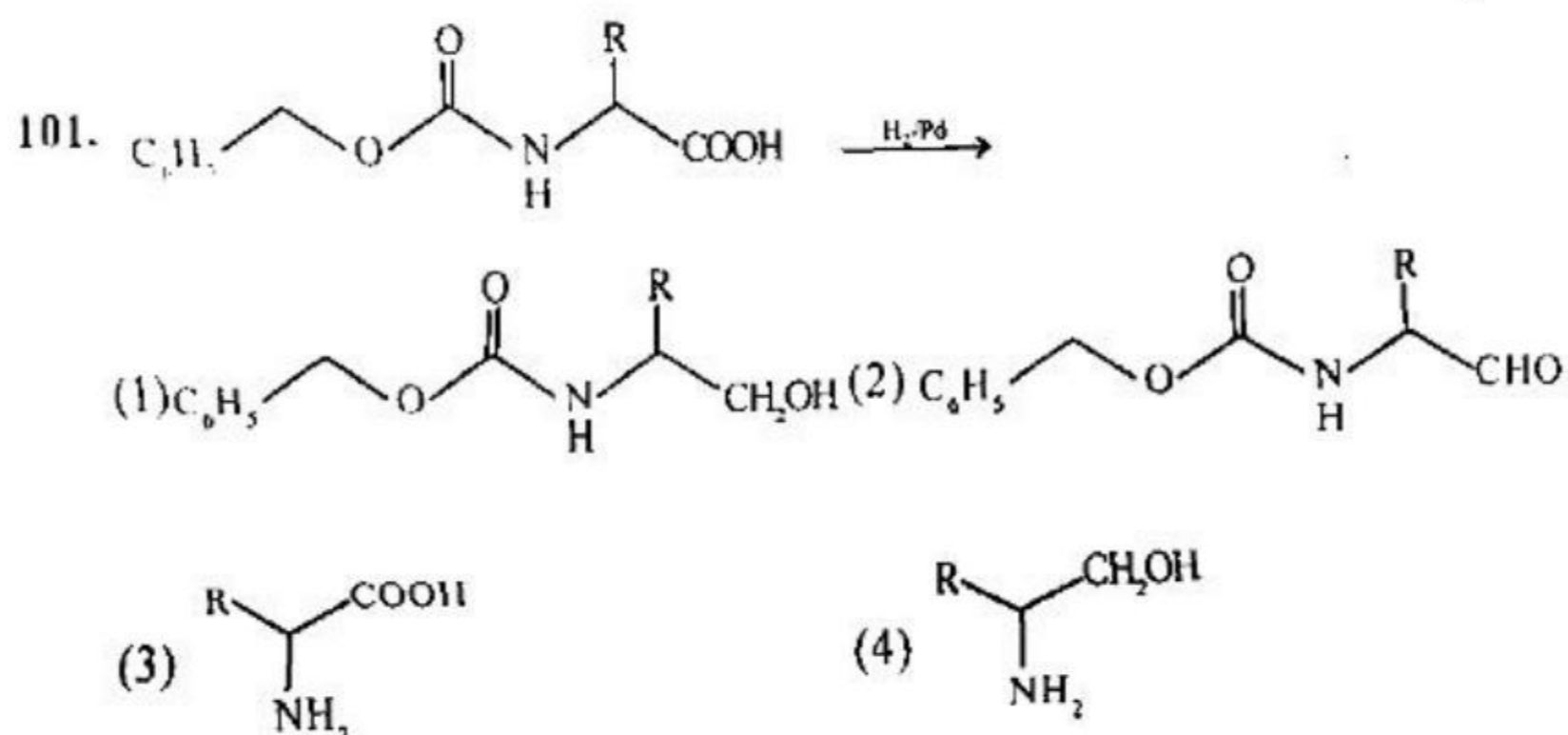
- (1) Formation of NH_3 (2) Formation of CO_2
(3) Formation of N_2 (4) Formation of Cl_2

100. Sulphur containing amino acid combination is :

- (1) Cysteine and Glutamine (2) Glutamine and Methionine
(3) Cysteine and Methionine (4) Tryptophan and methionine



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102. Ziegler-Natta catalyst used in polymerization of olefins is :

- (1) $\text{Al}(\text{CH}_3)_3$ and TiCl_3 (2) $\text{Al}(\text{C}_2\text{H}_5)_3$ and TiCl_3
(3) $\text{Al}(\text{C}_2\text{H}_5)_3$ and TiCl_4 (4) $\text{Al}(\text{CH}_3)_3$ and TiCl_4

103. Nylon 66 is condensation polymer of which type and what are its condensing units ?

- (1) Polyester, hexamethylene diamine – Adipic acid
(2) Polyamide, hexamethylene diamine – Adipic acid
(3) Polyester, hexamethylene diamine – Sebacic acid
(4) Polyamide, hexamethylene diamine – Sebacic acid

104. Polyurethanes are formed from the reaction of :

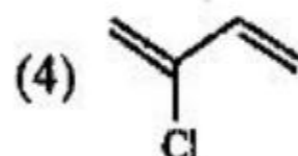
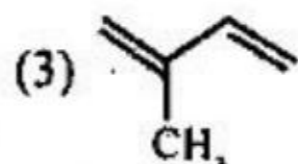
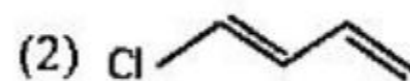
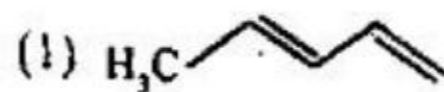
- (1) Urea and Formaldehyde (2) Isocyanate and alcohol
(3) Urea and alcohol (4) Isocyanate and Formaldehyde

(30)

(Continued)



105. Polymerization unit of Neoprene is :



106. Molecular system changes from colourless to coloured on increasing conjugation due to :

(1) Lower energy $\pi-\pi^*$ transition

(2) Lower energy $\sigma-\sigma^*$ transition

(3) Higher energy $\pi-\pi^*$ transition

(4) Higher energy $\sigma-\sigma^*$ transition

107. Phenolphthalein dye is synthesized by the reaction of phthalic anhydride with :

(1) Resorcinol

(2) *p*-Hydroxyphenol

(3) *p*-Nitrophenol

(4) Phenol

108. Geraniol belongs to which class of terpenoids and how many isoprene units are there in it ?

(1) Diterpene, two units

(2) Monoterpenes, one unit

(3) Diterpenes, one unit

(4) Monoterpenes, two units

109. Pick up the position of methyl and comment on stability.



(1) Equatorial, more stable

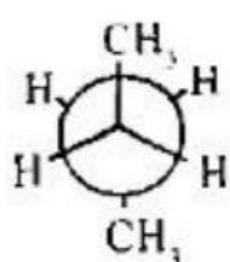
(2) Axial, more stable

(3) Equatorial, less stable

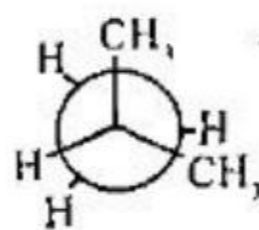
(4) Axial, less stable

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110. Which of the following is the best explanation for the relative stability of the conformations ?



(I)



(II)

- (1) (I) has more torsional strain (2) (II) has more torsional strain
(3) (I) has more steric strain (4) Both have more steric strain

111. In the boat confirmation of cyclohexane, the most destabilizing interaction is :

- (1) Eclipsing (2) 1, 3-diaxial
(3) 1, 3-diequatorial (4) flagpole-flagpole

112. Choose the correct order of stability of conformational isomeric forms of cyclohexane :

- (1) chair form > boat form > twist boat form
(2) chair form > twist boat form > boat form
(3) boat form > twist boat form > chair form
(4) twist boat form > boat form > chair form

113. The reactive intermediate involved in the reaction of benzene with diazomethane is :

- (1) Carbocation (2) Carbanion (3) Carbene (4) Free radical

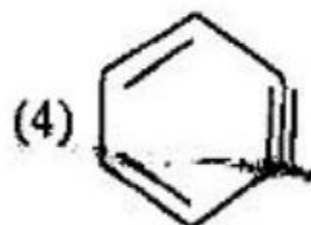
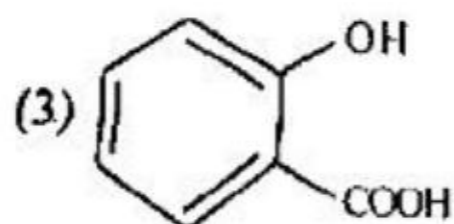
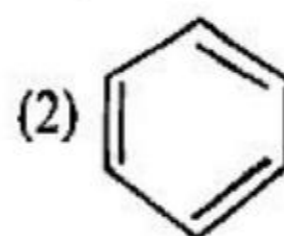
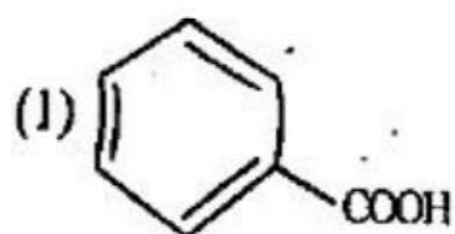
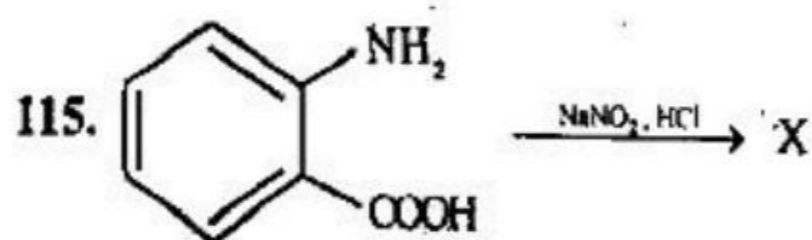
(32)

(Continued)



114. Carbene formed as an intermediate in :

- (1) Pinacol-pinacolone Rearrangement
- (2) Hoffmann Rearrangement
- (3) Beckmann Rearrangement
- (4) Wolf Rearrangement



116. Naphthalene on treatment with conc. H_2SO_4 at 160°C temp. or higher gives mainly :

- (1) α -Naphthalenesulphonic acid
- (2) β -Naphthalenesulphonic acid
- (3) Naphthalene-1,2-disulphonic acid
- (4) Phthalic acid

— (33) —

(Turn Over)



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117. Nicotine on oxidation followed by heating at 460 K gives rise to :

- (1) Pyridine-2-carboxylic acid (2) Piperidine-2-carboxylic acid
(3) Piperidine-3-carboxylic acid (4) Pyridine-3-carboxylic acid

118. *n*-Propylbromide on treatment with ethanolic KOH gives :

- (1) Propane (2) Propene (3) Propyne (4) Propanol

119. Aldol condensation between which of the following compounds followed by dehydration give methyl vinyl ketone :

- (1) Formaldehyde and Acetone (2) Formaldehyde
(3) Two molecules of acetaldehyde (4) Two molecules of Acetone

120. Hybridization of the singlet and triplet carbenes are :

- (1) sp and sp^2 (2) sp^2 and sp^2
(3) sp^2 and sp (4) sp and sp

ROUGH WORK

रफ़ कार्य

अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण-पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली या काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 30 मिनट के अन्दर ही देख लें कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष-निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर लें।
2. परीक्षा भवन में लिफाफा रहित प्रवेश-पत्र के अतिरिक्त, लिखा या सादा कोई भी खुला कागज साथ में न लायें।
3. उत्तर-पत्र अलग से दिया गया है। इसे न तो मोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा, केवल उत्तर-पत्र का ही मूल्यांकन किया जायेगा।
4. अपना अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन से निर्धारित स्थान पर लिखें।
5. उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें। जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।
6. ओ. एम. आर. पत्र पर अनुक्रमांक संख्या, प्रश्न-पुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्न-पुस्तिका पर अनुक्रमांक संख्या और ओ. एम. आर. पत्र संख्या की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।
7. उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।
8. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिये आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।
9. प्रत्येक प्रश्न के उत्तर के लिये केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।
10. ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का उत्तर नहीं देना चाहते हैं, तो सम्बन्धित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।
11. रफ कार्य के लिये प्रश्न-पुस्तिका के मुखपृष्ठ के अन्दर वाले पृष्ठ तथा अंतिम पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त केवल ओ. एम. आर. उत्तर-पत्र परीक्षा भवन में जमा कर दें।
13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।
14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की, भागी होगा/होगी।



111. Which one of the following is the oldest Department of Geography of the Country?

- (1) Geography Department, Banaras Hindu University
- (2) Geography Department, Allahabad University
- (3) Geography Department, Aligarh Muslim University
- (4) Geography Department, Calcutta University

निम्न में से कौन देश का सबसे पुराना भूगोल विभाग है?

- (1) भूगोल विभाग, काशी हिन्दू विश्वविद्यालय
- (2) भूगोल विभाग, इलाहाबाद विश्वविद्यालय
- (3) भूगोल विभाग, अलीगढ़ मुस्लिम विश्वविद्यालय
- (4) भूगोल विभाग, कलकत्ता विश्वविद्यालय

112. When the bottom of a number of faults occurring at a place remains in the same direction, this is termed as

- (1) step fault (2) reverse fault (3) thrust fault (4) normal fault

जब एक ही स्थान पर घटित कई भ्रंशों का तल एक ही दिशा में रहता है, तो उसे कहते हैं

- (1) सोपानी भ्रंश (2) व्युत्क्रम भ्रंश (3) उत्क्रमित भ्रंश (4) सामान्य भ्रंश

113. Ruhr Industrial Region is located in

- (1) France (2) Germany (3) Italy (4) Russia

रूर औद्योगिक क्षेत्र अवस्थित है

- (1) फ्रांस में (2) जर्मनी में (3) इटली में (4) रूस में

114. Who among the following constitute the largest tribal group of India?

- (1) Gonds (2) Todas (3) Santhals (4) Tharus

(31)

- निम्न में से कौन भारत का वृहत्तम जनजातीय वर्ग बनाता है?
(1) गोंड (2) टोडा (3) संथाल (4) थारू
115. Who asserted that 'man is product of Earth surface'?
(1) E. Huntington (2) G. Taylor
(3) Carl O. Sauer (4) E. C. Semple
- किसने दावे के साथ कहा कि 'मानव भू-पृष्ठ की उपज है'?
(1) ई० हंटिंगटन (2) जी० टेलर
(3) कार्ल ओ० सावर (4) ई० सी० सेम्पल
116. Which one of the following forces is associated with 'Ferrel's Law'?
(1) Frictional force (2) Centripetal force
(3) Coriolis force (4) Pressure gradient force
- निम्न शक्तियों में से कौन 'फेरेल नियम' से सम्बन्धित है?
(1) घर्षण बल (2) अभिकेन्द्र बल (3) कोरिओलिस बल (4) दाब प्रवणता बल
117. Given below are two statements. One labelled as Assertion (A) and other labelled as Reason (R). Select your answer from the codes given below :
- (A) Growth of urban population in India is not leading to increase in the level of urbanization.
(R) Rate of growth of urban population in India has not significantly declined.
- (1) Both (A) and (R) are true and (R) is the correct explanation of (A)
(2) Both (A) and (R) are true but (R) is not the correct explanation of (A)
(3) (A) is true (R) is false
(4) (A) is false (R) is true

दो कथन दिए गए हैं। एक को कथन (A) और दूसरे को कारण (R) के रूप में दिया गया है। नीचे दिए गए कूट से सही उत्तर चुनिए :

(A) भारत में नगरीय जनसंख्या में वृद्धि, नगरीकरण के स्तर में वृद्धि का कारक नहीं है।

(B) भारत में नगरीय जनसंख्या की वृद्धि में उल्लेखनीय हास नहीं हुआ है।

- (1) (A) और (R) दोनों सही हैं एवं (R), (A) की सही व्याख्या है
- (2) (A) और (R) दोनों सही हैं परन्तु (R), (A) की सही व्याख्या नहीं है
- (3) (A) सही है (R) गलत है
- (4) (A) गलत है (R) सही है

118. When did the world experience its first major energy crises?

- (1) 1968
- (2) 1973
- (3) 1978
- (4) 1983

विश्व ने कब प्रथम प्रमुख ऊर्जा संकट का अनुभव किया?

- (1) 1968 में
- (2) 1973 में
- (3) 1978 में
- (4) 1983 में

119. Mongolo-Dravidian races in India are found in which one of the following areas?

- (1) West Bengal and Coastal Odisha
- (2) Rajasthan and Kashmir Valley
- (3) Himalayan Region and Assam
- (4) Gujarat and South-West Madhya Pradesh

मंगोलो-द्राविडियन प्रजातियाँ भारत में निम्न में से किस क्षेत्र में पाई जाती हैं?

- (1) पश्चिम बंगाल एवं तटीय ओडिशा
- (2) राजस्थान एवं कश्मीर घाटी
- (3) हिमालयी क्षेत्र एवं असम
- (4) गुजरात एवं दक्षिण-पश्चिमी मध्यप्रदेश

120. Which one of the following pairs is not correctly matched?

States	Iron Ore Mines
(1) Kerala	Kozhikode
(2) Karnataka	Bellary-Chitradurga
(3) Odisha	Namagiri Hills
(4) Maharashtra	Ratnagiri

निम्न युग्मों में से कौन सुमेलित नहीं है?

राज्य	लौह अयस्क खदानें
(1) केरल	कोजीखोडा
(2) कर्नाटक	बेल्लारी-चित्रदुर्ग
(3) ओडिशा	नामगिरि हिल्स
(4) महाराष्ट्र	रत्नागिरि

अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण-पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली या काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 30 मिनट के अन्दर ही देख लें कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष-निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर लें।
2. परीक्षा भवन में लिफाफा रहित प्रवेश-पत्र के अतिरिक्त, लिखा या सादा कोई भी खुला कागज साथ में न लायें।
3. उत्तर-पत्र अलग से दिया गया है। इसे न तो मोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा, केवल उत्तर-पत्र का ही मूल्यांकन किया जायेगा।
4. अपना अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन से निर्धारित स्थान पर लिखें।
5. उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें। जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।
6. ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्न-पुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्न-पुस्तिका पर अनुक्रमांक सं० और ओ० एम० आर० पत्र सं० की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।
7. उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।
8. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिये आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।
9. प्रत्येक प्रश्न के उत्तर के लिये केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।
10. ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का उत्तर नहीं देना चाहते हैं, तो सम्बन्धित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।
11. रफ़ कार्य के लिये प्रश्न-पुस्तिका के मुखपृष्ठ के अन्दर वाले पृष्ठ तथा अंतिम पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त केवल ओ०एम०आर० उत्तर-पत्र परीक्षा भवन में जमा कर दें।
13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।
14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की, भागी होगा/होगी।