



त्रिभुवन विश्वविद्यालय,  
विज्ञान तथा प्रविधि अध्ययन संस्थान,  
डीनको कार्यालय,  
परीक्षा शाखा, बल्खु ।



## स्नातकोत्तर (M.Sc.) तह २०८२ को नयाँ विद्यार्थी भर्नाका लागि प्रवेश परीक्षा सम्बन्धी सूचना

त्रि.वि., विज्ञान तथा प्रविधि अध्ययन संस्थान अन्तर्गतका केन्द्रीय विभाग, आंगिक क्याम्पस तथा सम्बन्धन प्राप्त कलेजहरूमा सेमेष्टर परीक्षा प्रणाली अन्तर्गत Grading System अनुसार पठन पाठन हुने विज्ञान तर्फ स्नातकोत्तर (M.Sc.) तह १) भौतिक शास्त्र २) रसायन शास्त्र ३) वनस्पति शास्त्र ४) प्राणी शास्त्र ५) माइक्रोवायोलोजी ६) वातावरण विज्ञान ७) भूगर्भ शास्त्र ८) जल तथा मौसम विज्ञान ९) जैविकप्रविधि १०) Biodiversity and Environmental Management (BEM) ११) Environmental Health in Disaster (EHD) १२) Engineering Geology १३) खाद्य प्रविधि १४) तथ्यांक शास्त्र १५) गणित १६) कम्प्यूटर विज्ञान तथा सूचना प्रविधि १७) Mountain and Mountaineering Science (M.Sc.MMS) १८) Master in Data Science (MDS) १९) Master in Information Technology (MIT) विषयमा भर्ना हुन इच्छुक विद्यार्थीहरूका निमित्त २०८२ को लागि निम्नानुसारको प्रवेश परीक्षा तथा नयाँ भर्ना सम्बन्धी कार्यक्रम प्रकाशित गरिएको छ ।

### १. प्रवेश परीक्षाको लागि न्यूनतम योग्यता:

(क) माथी उल्लेखित हरेक विषयहरूको पाठ्यक्रमले तोकेको आवश्यक न्यूनतम योग्यता पुरा गरेका विद्यार्थीहरूले मात्र आवेदन दिन सक्ने छन् । आ-आफ्नो विषयको केन्द्रीय विभागहरूबाट आवश्यक न्यूनतम योग्यता थाहा पाउन सकिने छ ।

केन्द्रीय विभागहरू /स्कूलका website निम्नानुसार रहेका छन् :

SN	Program	Home Page	e-mail/Contact Number
1	भौतिक शास्त्र (Physics)	<a href="https://cdp.tu.edu.np/">https://cdp.tu.edu.np/</a>	head@cdp.tu.edu.np/01-4331054
2	रसायन शास्त्र (Chemistry)	<a href="https://cdc.tu.edu.np/">https://cdc.tu.edu.np/</a>	info@cdc.tu.edu.np/01-4332034
3	वनस्पति शास्त्र (Botany)	<a href="https://cdb.tu.edu.np/">https://cdb.tu.edu.np/</a>	info@cdb.tu.edu.np/01-4331322
4	प्राणी शास्त्र (Zoology)	<a href="https://cdz.tu.edu.np/">https://cdz.tu.edu.np/</a>	info@cdz.tu.edu.np/01-4331896
5	माइक्रोवायोलोजी (Microbiology)	<a href="https://cdmi.tu.edu.np/">https://cdmi.tu.edu.np/</a>	info@cdmi.tu.edu.np/01-4331869
6	वातावरण विज्ञान (Environmental Science)	<a href="https://cdes.tu.edu.np/">https://cdes.tu.edu.np/</a>	info@cdes.tu.edu.np/01-4332147
7	भूगर्भ शास्त्र (Geology)	<a href="https://cdgl.tu.edu.np/">https://cdgl.tu.edu.np/</a>	head@cdgl.tu.edu.np/01-4332449
8	जल तथा मौसम विज्ञान (Hydrology and Meteorology)	<a href="https://cdhm.tu.edu.np/">https://cdhm.tu.edu.np/</a>	info@cdhm.tu.edu.np/01-4331418
9	जैविकप्रविधि (Biotechnology)	<a href="https://cdbt.tu.edu.np/">https://cdbt.tu.edu.np/</a>	head@cdbt.tu.edu.np/01-4336221
10	Biodiversity and Environmental Management (BEM)	<a href="https://cdb.tu.edu.np/">https://cdb.tu.edu.np/</a>	info@cdb.tu.edu.np/01-4331322
11	Environmental Health in Disaster (EHD)	<a href="https://cdes.tu.edu.np/">https://cdes.tu.edu.np/</a>	info@cdes.tu.edu.np/01-4332147
12	Engineering Geology (EGE)	<a href="https://cdgl.tu.edu.np/">https://cdgl.tu.edu.np/</a>	head@cdgl.tu.edu.np/01-4332449
13	खाद्य प्रविधि (Food Technology)	<a href="https://cdf.tu.edu.np/">https://cdf.tu.edu.np/</a>	head@cdf.tu.edu.np/25576726
14	तथ्यांक शास्त्र (Statistics)	<a href="https://tucds.edu.np/">https://tucds.edu.np/</a>	head@cds.tu.edu.np/01-4331710
15	गणित (Mathematics)	<a href="https://cdmath.tu.edu.np/">https://cdmath.tu.edu.np/</a>	head@cdmath.tu.edu.np/01-4331977
16	कम्प्यूटर विज्ञान तथा सूचना प्रविधि (CSIT)	<a href="https://cdcsit.tu.edu.np/">https://cdcsit.tu.edu.np/</a>	info@cdcsit.tu.edu.np/01-4333010
17	Mountain and Mountaineering Science (M.Sc.MMS)	www.nma.gov.np	tanka.paudel@nepalmountain.edu.np/01-5244266
18	Master in Data Science (MDS)	<a href="https://sms.tu.edu.np/">https://sms.tu.edu.np/</a>	info@sms.tu.edu.np/01-5314073
19	Master in Information Technology (MIT)	<a href="https://cdcsit.tu.edu.np/">https://cdcsit.tu.edu.np/</a>	info@cdcsit.tu.edu.np/01-4333010

(ख) आवश्यक न्यूनतम योग्यता पुरा नगरेका विद्यार्थीहरूले अनलाईन फाराम भरेको वा प्रवेश परीक्षा दिईएको पाईएमा आवेदन रद्द गरिनेछ ।

(ग) विदेशी शैक्षिक संस्था वा अन्य विश्वविद्यालयहरूबाट प्राप्त गरेको शैक्षिक योग्यताको हकमा समकक्षता (Equivalence) प्राप्त गरेको कागजात पेश गर्नु पर्नेछ ।

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## २. आवेदन प्रक्रिया :

- (क) विज्ञान तथा प्रविधि अध्ययन संस्थानको website [iost.tu.edu.np](http://iost.tu.edu.np) मा राखिएको M.Sc. प्रवेश परीक्षाको आवेदन फारामको Link आवेदक स्वयम्ले भरी Online बाटै सोही website मार्फत Submit गर्नुपर्ने छ ।
- (ख) आवेदन फाराम Internet सुविधा भएको कुनै पनि स्थानबाट तोकिएको अवधी भित्र कुनै पनि समयमा भर्न सकिने छ । तोकिएको समय पश्चात Online फाराम स्वतः बन्द हुनेछ ।
- (ग) प्रवेश परीक्षा शुल्क वापतको रकम रु. २,२००।- (अक्षरूपी दुई हजार दुई सय मात्र) Online पोर्टलमा रहेको app तथा link प्रयोग गरेर Online माध्यमबाट शुल्क जम्मा गर्न सकिने छ । साथै नेपाल भित्रको ग्लोबल आई.एम.ई.बैंक लि.को कुनै पनि शाखाबाट विज्ञान तथा प्रविधि अध्ययन संस्थान प्रवेश परीक्षाको लागि सो बैंकबाट तयार गरिएको विशेष भौचर भरी यस डीनको कार्यालयको ग्लोबल आई.एम. ई.बैंक लि., कीर्तिपुर शाखामा रहेको खातामा पनि जम्मा गर्न सकिनेछ । प्रवेश परीक्षा शुल्क वापत बुझाएको रकम फिर्ता हुने छैन ।
- (घ) आवेदकले फाराम भर्दा Online पोर्टलमा उपलब्ध निर्देशनलाई अनिवार्य रूपले पालना गर्दै जानकारीहरु तथा Upload गर्नु पर्ने सामग्रीहरु सहित Submit गर्नु पर्नेछ । आवेदनको न्युनतम योग्यता प्रमाणित गर्न ट्रान्सक्रिप्ट, मार्कसिटहरु, समानस्तर प्रमाणपत्र, आवेदकको हस्ताक्षर (कालो मसी प्रयोग गरेको) तथा MRP Standard फोटो लगायतका सामग्रीहरु तयार गरेपछि मात्र Online फाराम भर्न सूचित गरिन्छ । धमिलो पढ्न नसकिने डकुमेन्ट प्राप्त भएमा आवेदन स्वीकृत हुने छैन ।
- (ङ) स्नातक तहको ट्रान्सक्रिप्ट नभएको अवस्थामा सबै वर्षको सबै मार्कसिटहरुको सिङ्गल PDF फाईल बनाई अपलोड गर्नु पर्नेछ ।
- (च) विद्यार्थीले उपलब्ध परीक्षा केन्द्रहरु मध्ये आफूले परीक्षा दिन चाहेको केन्द्र तोक्न सक्नेछन् ।
- (छ) आवेदन पश्चात Acknowledgement Page डाउनलोड गरी राख्नु पर्नेछ । जसमा भएको जानकारीहरु र बैंकबाट प्राप्त भौचर कोड प्रयोग गरी आ-आफ्नो आवेदनको अवस्था र तोकिएको समय पश्चात Admit Card प्राप्त गर्न सकिने छ । Admit Card (प्रवेश पत्र) आवेदकले आफै Color Print गरी आफूले तोकेको परीक्षा केन्द्रमा गई प्रवेश परीक्षा दिनु पर्नेछ । प्रवेश परीक्षा दिन जाँदा प्रवेशपत्रको साथै आफ्नो परिचय खुलाउने फोटो सहितको ID (जस्तै नागरिकता प्रमाणपत्र वा सवारी चालक प्रमाणपत्र वा राष्ट्रिय परिचय पत्र वा राहदानी वा पछिल्लो शैक्षिक तहको प्रवेशपत्र मध्ये कुनै एक) पनि ल्याउनु पर्नेछ ।

## ३. प्रवेश परीक्षाको किसिम :

- (क) प्रवेश परीक्षाको अंकभार १०० पूर्णाङ्कको र अवधी २ घण्टाको हुनेछ । जसमा B.Sc वा सो सरहको सम्बन्धित विषय समितिले तोकेको पाठ्यक्रम अनुसारको हुनेछ ।
- (ख) प्रश्नहरु Objective वा Multiple Choice Questions अनुसारको हुनेछ । हरेक प्रश्नको भार १ (एक) हुनेछ ।
- (ग) प्रवेश परीक्षा उत्तीर्ण हुन पूर्णाङ्कको ३५% अंक प्राप्त गर्नु पर्ने छ ।
- (घ) प्रवेश परीक्षाको नमूना प्रश्नपत्र सम्बन्धित केन्द्रीय विभागको website बाट हेर्न सकिने छ ।

## ४. प्रवेश परीक्षा कार्यक्रम :

आवेदन मिति : २०८२।०८।११ गते विहान १०:०० बजे देखि मिति २०८२।०९।११ गते सम्म ।

प्रवेश परीक्षा मिति, समय र केन्द्र : पछि प्रकाशित गरिने छ ।

## ५. अन्य

- (क) केन्द्रीय विभाग/क्याम्पस/कलेज/स्कूलमा निर्धारित भर्ना कोटा मध्ये २०% विद्यार्थी समावेशीको आधारमा र ८०% खुल्ला प्रतिस्पर्धाबाट भर्ना लिईने छ । समावेशी फारम भर्नाको सूचनासंगै उपलब्ध गराईनेछ ।
- (ख) यस सूचनामा उल्लेख हुन छुट भएका बुँदाहरु "त्रि.वि.सेमेष्टर प्रणाली संचालन विनियम २०७४" बमोजिम हुने छ ।

मिति : २०८२।०८।१०



२५/८/२०  
सहायक डीन

### **Eligibility for MSc in Chemistry**

The candidate who have passed B. Sc. Degree with major in chemistry from Tribhuvan University or have received equivalent degree with chemistry as major from another university recognized by Tribhuvan University shall be considered eligible to apply for admission to M. Sc. Chemistry.

Name:----- CHE-Ent/081 A1

Admit Card no.-----

Tribhuvan University  
Institute of Science and Technology  
**Central Department of Chemistry**  
*M.Sc. Entrance Examination 2081*  
**CHEMISTRY**

Full Marks: 100

Pass Marks: 35

Time: 2 hours

*Attempt all questions. Each question carries one mark.*

*Please blacken the correct answer on the answer sheet.*

1. The number of electrons present in anti-bonding orbital of  $O_2^-$  molecular ion is
  - a. Seven
  - b. Six
  - c. Five
  - d. Four
2. What is the shape of  $BF_3$  molecule based on VSEPR theory?
  - a. Trigonal pyramidal
  - b. Trigonal bipyramidal
  - c. Trigonal planar
  - d. Square planar
3. The defect produced by missing one cation and one anion from their lattice site is known as
  - a. Frenkel defect
  - b. Schottky defect
  - c. Metal excess defect
  - d. Metal deficiency defect
4. Which of the following element has the highest electronegativity?
  - a. Sodium
  - b. Potassium
  - b. Chlorine
  - d. Oxygen
5. The most stable compound based on HSAB principle is
  - a.  $AgF_2^-$
  - b.  $AgCl_2^-$
  - c.  $AgI_2^-$
  - d. None of the above
6. Which of the following molecules would you expect to have permanent dipole moment?
  - a. ICl
  - b.  $GeH_4$
  - c.  $CO_2$
  - d.  $SiF_4$
7. The structure of  $MnO_4^-$  ion
  - a. Square planar
  - b. Tetrahedral
  - c. Trigonal bipyramidal
  - d. Octahedral
8. The number of electron present in 3d orbital of vanadium is
  - a. 2
  - b. 5
  - c. 3
  - d. 1
9. Which metal is extracted by Mond's process?
  - a. Nickel
  - b. Iron
  - c. Copper
  - d. Zinc
10. In IUPAC system of periodic table, the noble gases are placed in group
  - a. 18
  - b. 16
  - c. 15
  - d. 17

11. Which of the following element shows highest inert pair effect?
- |       |       |
|-------|-------|
| a. B  | b. Tl |
| c. Al | d. Ga |
12. An example of thermochromic compound is
- |             |                 |
|-------------|-----------------|
| a. $B_2H_6$ | b. $S_4N_4$     |
| c. $SOCl_2$ | d. $Na_2S_2O_3$ |
13.  $B_2H_6$  is an example of
- |                          |                                |
|--------------------------|--------------------------------|
| a. Covalent hydrides     | b. Electron deficient compound |
| c. Interstitial hydrides | d. Both (a) and (b)            |
14. A silicate containing  $(Si_2O_7)^{6-}$  unit is
- |                  |                          |
|------------------|--------------------------|
| a. Orthosilicate | b. Cyclic silicate       |
| c. Pyrosilicate  | d. Double chain silicate |
15. In  $IF_7$ , the central I atom is
- |                         |                         |
|-------------------------|-------------------------|
| a. $sp^3d^3$ hybridized | b. $sp^3d^2$ hybridized |
| c. $sp^3d$ hybridized   | d. $dsp^2$ hybridized   |
16. The number of lone pairs present in the structure of  $XeF_2$  is
- |      |      |
|------|------|
| a. 2 | b. 3 |
| c. 4 | d. 1 |
17. Which of the following compound is also called inorganic graphite?
- |              |                  |
|--------------|------------------|
| a. Pyroxenes | b. Diborane      |
| c. Borazole  | d. Boron nitride |
18. Triple superphosphate is made by treating phosphate rock with
- |                     |                       |
|---------------------|-----------------------|
| a. Sulphuric acid   | b. Phosphoric acid    |
| c. Sodium hydroxide | d. Sodium bicarbonate |
19. Which oxidant is normally used in COD determination of water sample?
- |             |                 |
|-------------|-----------------|
| a. $KBrO_3$ | b. $K_2Cr_2O_7$ |
| c. $KMnO_4$ | d. $Ce(SO_4)_2$ |
20. Which titrimetric method is used to determine chloride content in a water sample?
- |                            |                             |
|----------------------------|-----------------------------|
| a. Argentometric titration | b. Iodometric titration     |
| c. Redox titration         | d. Complexometric titration |
21. Silicones belong to
- |                               |                          |
|-------------------------------|--------------------------|
| a. Substituted heteropolymers | b. Homopolymers          |
| c. Substituted homopolymers   | d. Hybrid heteropolymers |
22.  $[PNC_2]_n$  is known as
- |                      |                       |
|----------------------|-----------------------|
| a. Inorganic benzene | b. Inorganic graphite |
| c. Inorganic rubber  | d. Polythiazyls       |
23. The formula of Zeise salt is
- |                     |                        |
|---------------------|------------------------|
| a. $[RhCl(PH_3)_3]$ | b. $[RhCl(PPh_3)_3]$   |
| c. $C_5H_5MgCl$     | d. $K[PtCl_3(C_2H_4)]$ |
24. A non-heme copper containing protein is
- |               |                |
|---------------|----------------|
| a. Hemoglobin | b. Myoglobin   |
| c. Hemocyanin | d. Hemerythrin |
25. The number of electrons present in 4f orbital of Gadolinium is
- |         |             |
|---------|-------------|
| a. Five | b. Fourteen |
| c. Six  | d. Seven    |

26. An example of a catalytic reaction that occurs in the heterogenous condition is
- Haber's synthesis
  - Olefin hydrogenation
  - Hydroformylation
  - Wacker oxidation of alkene
27. Which of the following belongs to stereo-isomerism?
- Optical isomerism
  - Coordination isomerism
  - Linkage isomerism
  - Ionization isomerism
28. Which hybridization gives square planar structure?
- $sp^3d^2$
  - $sp^2$
  - $dsp^2$
  - $d^2sp^3$
29. Which of the following complexes shows paramagnetic behavior?
- $[\text{Fe}(\text{CN})_6]^{4-}$
  - $[\text{Co}(\text{CN})_6]^{3-}$
  - $[\text{NiCl}_4]^{2-}$
  - $[\text{Ni}(\text{CN})_4]^{2-}$
30. Which of the following complexes does not obey EAN rule?
- $[\text{Fe}_3(\text{CO})_{12}]$
  - $[\text{V}(\text{CO})_6]$
  - $[\text{Co}_2(\text{CO})_8]$
  - $[\text{Mn}_2(\text{CO})_{10}]$
31. Which of the following ligand shows the highest trans-directing effect?
- $\text{NO}_2^-$
  - $\text{CO}$
  - $\text{NH}_3$
  - $\text{H}_2\text{O}$
32. Which technique is used to identify the crystal structure of complexes?
- NMR
  - FTIR
  - UV
  - XRD
33. How many electrons are present in the  $t_{2g}$  orbital of  $d^5$  high-spin octahedral system?
- 4
  - 5
  - 2
  - 3
34. Chemical reaction is at equilibrium when the rate of forward and backward reaction are
- Unequal
  - Constant
  - Equal
  - Increased
35. Which of the following is the characteristics of a reversible reaction?
- Number of moles of reactants & products are equal
  - It can be influenced by a catalyst
  - It can never proceed to completion
  - None of the above
36. A precipitate is formed when
- The solution becomes saturated
  - The ionic product is less than the solubility product
  - The ionic product is nearly equal to the solubility product
  - The ionic product exceeds the solubility product
37. Hess's law of heat of summation includes
- Initial reactants only
  - Intermediate only
  - Initial reactants & final products
  - Final products only
38. An element that is usually found in explosive is
- Sulfur
  - Nitrogen
  - Aluminium
  - Carbon
39. Which of the following is correct for an adiabatic process?
- $P\Delta V = 0$
  - $q = +W$
  - $\Delta E = q$
  - $q = 0$

40. Internal energy does not include
- Vibrational energy
  - Rotational energy
  - Energy arising by gravitational pull
  - Nuclear energy
41. The molecular velocity of any gas is
- Proportional to the absolute temperature
  - Proportional to the square of the absolute temperature
  - Proportional to the square root of the absolute temperature
  - Independent of absolute temperature
42. With increasing molecular weight of a liquid, the viscosity
- Decreases
  - Increases
  - No effect
  - None of the above
43. How many chloride ions are there around sodium ions in sodium chloride crystal?
- Three
  - Four
  - Six
  - Eight
44. Bravais lattices are
- Seven
  - Ten
  - Twelve
  - Fourteen
45. The coordination number of hexagonal closest packed hcp structure is
- Twelve
  - Ten
  - Eight
  - Six
46. The pH value of N/10 NaOH solution is
- Ten
  - Eleven
  - Twelve
  - Thirteen
47. The approximate voltage of a dry cell is
- 3.0 V
  - 2.0 V
  - 1.5 V
  - 1.2V
48. Rusting occurs on
- Zinc
  - Silver
  - Iron
  - All of the above
49. As a lead storage battery is charged
- Lead dioxide dissolves
  - Sulphuric acid is regenerated
  - The lead electrode becomes coated with lead sulphate
  - The amount of sulphuric acid decreases
50. A corrosion cell is an electrochemical cell which
- Produces energy
  - Produces substance
  - Produces neither energy nor substances
  - All of the above
51. Which of the following cells can convert chemical energy of  $H_2$  and  $O_2$  directly into electrical energy?
- Fuel cell
  - Mercury cell
  - Daniel cell
  - Lead storage cell
52. The half-life of a first-order reaction depends on the
- Time
  - Concentration of reactant
  - Temperature
  - None of the above

53. When an electrochemical cell attains equilibrium, the emf of the cell is
- Positive
  - Negative
  - Not definite
  - Zero
54. If the rate of a reaction is equal to the rate constant, the order of the reaction is
- One
  - Two
  - Zero
  - Three
55. If 75% of a first-order reaction is completed in 32 minutes, then 50% of the reaction would be completed in
- 10 minutes
  - 16 minutes
  - 20 minutes
  - 24 minutes
56. The reaction is spontaneous if the cell potential is
- Positive
  - Negative
  - Zero
  - Infinite
57. "It is only the absorbed light radiations that are effective in producing a chemical reaction". This is the statement of
- Lambert law
  - Beer-Lambert law
  - Einstein-Stark law
  - Grotthus-Draper law
58. The relative lowering of vapor pressure is equal to the mole fraction of the solute. This law was given by
- Raoult
  - Ostwald
  - Van't Hoff
  - Lewis
59. The ionic strength of 0.1 M solution of  $\text{KNO}_3$  is
- Less than 0.1
  - Greater than 0.1
  - 0.1
  - None of the above
60. Gibb's phase rule can be expressed as
- $F - P = C + 2$
  - $F + P = C + 2$
  - $F - C = P + 2$
  - $P + C = F + 2$
61. Phenol-water system is
- A one phase system
  - A two phase system
  - A three phase system
  - None of the above
62. The gold number is minimum in case of
- Gelatin
  - Egg albumin
  - Gum arabic
  - Starch
63. How many layers are adsorbed in chemical adsorption?
- One
  - Two
  - Several
  - Zero
64. The effect of a catalyst in a chemical reaction is to change the
- Activation energy
  - Equilibrium concentration
  - Heat of reaction
  - Final products
65. In the hydrogenated of oils, the catalyst used is
- Iron
  - Platinum
  - Nickel
  - Molybdenum
66. The vibrational degree of freedom for  $\text{CO}_2$  is
- Three
  - Four
  - Six
  - Eight

67. Which one of the following defects in the crystal lowers its density?
- Schottky defect
  - Frenkel defect
  - Interstitial defect
  - F-center
68. Which of the following alkane is considered as octane number 100?
- 1-Methyl octane
  - Isooctane
  - Octane
  - 1,2,3-Trimethyloctane
69. The results of reaction between an alkyl halide and a nucleophile in  $S_N2$  reaction is
- Inversion of configuration
  - Racemic mixture
  - Both inversion and retention
  - Retention of configuration
70. Meso-tartaric acid is optically inactive due to
- Presence of one asymmetric carbon atom
  - Internal compensation
  - External compensation
  - Presence of one chiral carbon
71. The reaction between acetylene and Na in liq. ammonia gives
- Cis-alkene
  - Cis- and trans-alkene
  - Trans-alkene
  - Alkane
72. Alkene reacts with Baeyer's reagent gives
- 1,2-Diol
  - Monohydroxy alcohol
  - Trihydroxy alcohol
  - Dicarboxylic acid
73. The dipole moment of the diethyl ether is
- 1.18 D
  - Zero
  - 2.1 D
  - 0.1 D
74. The complete combustion of an alkane gives
- CO and water
  - Carbon
  - Carbon and hydrogen
  - $CO_2$  and water
75. The correct name for norbornane is
- Bicyclo[2,2,2]heptane
  - Bicyclo[1,1,1]heptane
  - Bicyclo[2,2,1]heptane
  - Bicyclo[2,1,1]heptane
76. The most unstable conformation of cyclohexane due to flagpole hydrogen is
- Chair
  - Boat
  - Half chair
  - Twist boat
77. The Friedel-Crafts acylation is an example of
- Electrophilic substitution reaction
  - Elimination reaction
  - Aromatic nucleophilic substitution
  - Addition reaction
78. Treatment of the salt of a phenol with carbon dioxide to give salicylic acid is known as
- Fries rearrangement
  - Kolbe reaction
  - Reimer-Tiemann reaction
  - Friedel-Crafts carboxylation
79. The incorrect statement for Tollen's reagent
- Contains ammonical  $AgNO_3$  & NaOH
  - Oxidizes aldehydes
  - Reduces aldehydes
  - Contains silver ammonia ion
80. Alpha halogenation of aliphatic acid in the presence of phosphorus is known as
- Addition reaction
  - Markovnikov's reaction
  - Hell-Volhard-Zelinsky reaction
  - Aliphatic nucleophilic addition
81. The aromatic carboxylic acids become more acidic when the ring contains
- $-NO_2$  group
  - $-NH_2$  group
  - Electron donating group
  - $-OH$  group

82.  $\text{-NH}_2$  group attached to the benzene ring is
- Deactivate the ring and meta director
  - Only meta director
  - Ring activator and ortho-para director
  - Deactivate the ring
83. 3-Pyridine carboxylic acid is
- Poison
  - Vitamin
  - Protein
  - Drug
84. Isotopic labeling used in the organic chemistry for the
- Determination of isotope number
  - Increase the rate of reaction
  - Determination of reaction mechanism
  - Decrease the rate of reaction
85. The best method to distinguish between singlet and triplet carbene is
- IR spectroscopy
  - X-ray diffraction
  - Electron resonance spectroscopy
  - Mass spectrometry
86. The coupling constant (J) value for trans-proton in alkene is
- Larger than cis proton
  - Less than cis proton
  - Equal to cis proton
  - Half of the cis proton
87. The reference compound used in NMR spectroscopy is
- $\text{CDCl}_3$
  - TMS
  - $\text{CD}_3\text{OD}$
  - $\text{CHCl}_3$
88. Which is not aromatic?
- Cyclopropenyl anion
  - Cyclopropenyl cation
  - Naphthalene
  - Cyclopentadienyl anion
89. An organic compound in IR spectroscopy gives absorption peaks at around 1725 and 3200  $\text{cm}^{-1}$ . The most probable functional group present in the compound is
- Alcohol
  - Aldehyde
  - Carboxylic acid
  - Ketone
90. An American organic chemist won the Nobel Prize in Chemistry in 1990 "for his development of the theory and methodology of organic synthesis", specifically retrosynthetic analysis is
- Victor Grignard
  - E. J. Corey
  - August Kekule
  - Poul Anastas
91. Which of the following is not used to determine the quality of the oil?
- Iodine number
  - Saponification value
  - Base value
  - Acid value
92. Which of the following name reaction is used to conversion of carbonyl compounds into alkane
- Clemmensen reduction
  - Rosenmund reduction
  - Luche reduction
  - Birch reduction
93. Which of the following is most sweetest carbohydrates?
- Sucrose
  - Glucose
  - Lactose
  - Fructose
94. In the stereochemistry, the letters D and L are used to assign the
- Dextrorotatory and levorotatory
  - Optical rotation
  - Configuration
  - Conformation
95. The nicotinamide adenine dinucleotide (NAD) is an example of
- Apoenzyme
  - Coenzyme
  - Hydrating agent
  - Dehydrating enzyme
96. Isoelectric point is related to
- Carbohydrates
  - Amino acids
  - Fatty acid
  - Lipids

97. In the B. Sc. third year, students prepare osazone derivative for the identification of carbohydrates in the laboratory. In this experiment, which of the following factor is most important for the identification of carbohydrates?
- a. Time of formation of osazone
  - b. Color of osazone
  - c. Melting point of carbohydrate
  - d. Color of carbohydrate
98. Which of the following is not the application of cation binding host compound?
- a. Phase transfer catalyst
  - b. Anion activator
  - c. Solvent for inorganic salt
  - d. Drugs
99. Which of the following drugs is used as a neurotransmitter?
- a. Serotonin
  - b. Histamine
  - c. Aspirin
  - d. Pentazocine
100. Which of the following compounds is not used in Cannizarro's reaction?
- a. Formaldehyde
  - b. Acetaldehyde
  - c. Benzaldehyde
  - d. NaOH

THE END