Roll No. .....

Question Booklet Number

O. M. R. Serial No.

M. Sc. (Fourth Semester)

(NEP) EXAMINATION, 2025-26

CHEMISTRY

(Chemistry of Natural Products)

Paper Code							
B	0	2	1	0	0	3	T

Questions Booklet Series
B

Time : 1:30 Hours] [*Maximum Marks : 75*

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.

2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.

3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।

2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।

3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page) **(शेष निर्देश अन्तिम पृष्ठ पर)**

(Only for Rough Work)

1. Infrared (IR) spectroscopy is mainly used to identify :

(A) Molecular weight

(B) Functional groups

(C) Carbon skeleton

(D) Isotopes

2. Steroids contain how many fused rings ?

(A) Three

(B) Four

(C) Five

(D) Six

3. Rubber is a :

(A) Carbohydrate

(B) Protein

(C) Fiber

(D) Fat

4. $-OCH_3$ is detected in terpenoid by :

(A) Zeizel's method

(B) Hoffmann method

(C) Herzig method

(D) None of the above

5. Citral on ..... give laevulinic acid.

(A) Reduction

(B) Ozonolysis

(C) Br_2 water

(D) Oxidation

6. Quinine is mainly used for the treatment of :

(A) Tuberculosis

(B) Malaria

(C) Diabetes

(D) Hypertension

7. Steroids are biosynthesized from :

(A) Glucose

(B) Acetate

(C) Amino acids

(D) Fatty acids

8. How many isoprene unit are present in camphor ?

(A) 1

(B) 2

(C) 3

(D) 4

9. Geraniol does not contain :

(A) Unsaturation

(B) Primary alcoholic group

(C) Aldehydic group

(D) None of the above

10. Flavonoids belong to which class of compounds ?

(A) Alkaloids

(B) Polyphenols

(C) Steroids

(D) Terpenoids

11. Vitexin is a/an :

(A) Flavone glycoside

(B) Steroid glycoside

(C) Alkaloid glycoside

(D) Terpene glycoside

12. Linear aldehyde terpene with two double bonds :

$CH_3–C(CH_3)=CH–CH_2–CH$
$=C(CH_3)–CHO$

(A) Geraniol

(B) Citral

(C) Myrcene

(D) Farnesol

13. Bicyclic monoterpene with a bridgehead double bond :

(A) α-Pinene

(B) Linalool

(C) Citral

(D) Geraniol

14. Structure consists of two isoprene units joined head-to-tail :

(A) Hemiterpene

(B) Monoterpene

(C) Sesquiterpene

(D) Diterpene

15. Nicotine contains both a pyridine ring and a pyrrolidine ring. Which of the following statements best explains its behavior in acid-base reactions ?

(A) The pyrrolidine nitrogen is more basic because its lone pair is more available

(B) The pyridine nitrogen is more basic due to resonance stabilization

(C) Both nitrogen atoms are equally basic and get protonated simultaneously

(D) Neither nitrogen shows basic character due to electron delocalization

16. Which alkaloid contains the indole nucleus fused with a complex polycyclic system ?

(A) Reserpine

(B) Atropine

(C) Coniine

(D) Nicotine

17. Which of the following structure corresponds to alkaloid in which Pyridine ring is attached to pyrrolidine ring

(A) Coniine

(B) Nicotine

(C) Morphine

(D) Papaverine

18. Which compound possesses the following phenanthrene nucleus with tertiary amine ?

(A) Morphine

(B) Nicotine

(C) Atropine

(D) Quinine

19. Which of the following structure corresponds to alkaloid in which Purine ring with three methyl groups at N-1, N-3, N-7 ?

(A) Theobromine

(B) Xanthine

(C) Caffeine

(D) Adenine

20. Identity the compound Cyclohexene ring with isopropenyl group at C-1 and methyl group at C-4 :

(A) Limonene

(B) Pinene

(C) Camphor

(D) Terpineol

21. Wagner's reagent is :

(A) Potassium mercuric iodide

(B) lodine dissolved in potassium iodide

(C) Potassium bismith iodide

(D) Potassium sulphur iodide

22. Atropic acid on oxidation with $KMnO_4$ gives :

(A) Benzoic acid

(B) Formic acid

(C) Tropinic acid

(D) Tropic acid

23. Geraniol on cyclisation with dil. H_2SO_4 gives :

(A) p-cymené

(B) -terpineol

(C) Isoprene

(D) α-pinene

24. On hydrolysis atropine gives :

(A) Atropic acid

(B) Tropic acid + Tropine

(C) Phenyl acetic acid + HCHO

(D) Tropic acid + HCHO

25. The prostaglandins PGE2 and PGF2 are involved in :

(A) Inflammation

(B) Intoxication

(C) Excitation

(D) Neurotoxicity

26. Molecular formula of Morphine is :

(A) $C_{16}H_{19}O_3N$

(B) $C_{17}H_{19}O_3N$

(C) $C_{17}H_{20}O_3N$

(D) $C_{18}H_{20}O_3N$

27. Which alkaloid is used extensively in opthalmic practice ?

(A) Atropine

(B) Quinine

(C) Nicotine

(D) Morphine

28. Cis-isomer of citeral is known as :

(A) Geranial

(B) Nerol

(C) ± menthol

(D) *p*-cymene

29. Which of the following is most stable type of Prostaglandins ?

(A) A

(B) O

(C) D

(D) F

30. Alkaloids with Mayer's test gives :

(A) green colour

(B) red colour

(C) cream and pale yellow

(D) violet colour

31. The oxidation state of iron in methemoglobin is :

(A) 3

(B) 2

(C) 4

(D) Zero

32. Citral is chemically a/an :

(A) Ketone

(B) Aldehyde

(C) Alcohol

(D) Ester

33. Which one of the following is *not* considered as an alkaloid ?

(A) Nicotine

(B) Ephedrine

(C) Zinziberene

(D) Quinine

34. Carotenoids are mainly responsible for :

(A) Green color of plants

(B) Yellow and orange pigments

(C) Blue pigments

(D) White pigments

35. Ephedrine belongs to which class of alkaloids ?

(A) True alkaloids

(B) Protoalkaloids

(C) Pseudoalkaloids

(D) Indole alkaloids

36. The rule that explains the formation of terpenoids from isoprene units is called :

(A) Huckel rule

(B) Markovnikov rule

(C) Isoprene rule

(D) Saytzeff rule

37. When Zingiberene is ozonolysed, it yields the products :

(A) Acetone + Cadalene + Succinic acid

(B) Acetone + Laevulic acid + Succinic acid

(C) Acetone + Succinic acid

(D) Acetone + Laevulic acid + Palmitic acid

38. Zingiberene is present in :

(A) Terpentine oil

(B) Ginger oil

(C) Rose oil

(D) Geranium oil

39. The highest level of protein structure seen in myoglobin is :

(A) Primary

(B) Secondary

(C) Tertiary

(D) Quaternary

40. Quinine is mainly used for the treatment of :

(A) Tuberculosis

(B) Malaria

(C) Diabetes

(D) Hypertension

41. Which enzyme is produced by liver ?

(A) Alkaline phosphate

(B) Alanine transminase

(C) Asparate transminase

(D) All of the above

42. Bile acids are derived from :

(A) Cholesterol

(B) Glucose

(C) Protein

(D) Fatty acids

43. Atropine when moistened with fuming HNO_3 followed by evaporation to dryness, develops stain whose colour is :

(A) White

(B) Black

(C) Yellow

(D) Blue

44. Which one of the following terpenes is a cyclic terpene ?

(A) Mycrene

(B) Limonene

(C) Natural rubber

(D) Squalene

45. Hormones :

(A) act as coenzyme

(B) act as enzyme

(C) influence synthesis of enzymes

(D) belong to B-complex

46. Which alkaloid contains two benzene rings and an isoquinoline nucleus ?

(A) Papaverine

(B) Nicotine

(C) Caffeine

(D) Quinine

47. The antimalaria drug is :

(A) Nicotine

(B) Cocaine

(C) Meroquinene

(D) Quinine

48. Which of the following form of iron is present in heme ?

(A) Ferrous form

(B) Ferric form

(C) Sodium

(D) Potassium

49. A characteristic structural feature of pyrethroids is the presence of :

(A) Cyclopropane ring

(B) Benzene ring only

(C) Pyridine ring

(D) Pyrrole ring

50. Rotenone acts by inhibiting :

(A) Photosynthesis

(B) Cellular respiration

(C) Protein synthesis

(D) DNA replication

51. The molecular formula of isoprene is :

(A) C_4H_8

(B) C_5H_8

(C) C_6H_6

(D) C_3H_6

52. Sesquiterpenes contain :

(A) 10 carbons

(B) 15 carbons

(C) 20 carbons

(D) 30 carbons

53. β- Carotene belongs to :

(A) Monoterpenes

(B) Diterpenes

(C) Tetraterpenes

(D) Sesquiterpenes

54. Citral is chemically a/an :

(A) Ketone

(B) Aldehyde

(C) Alcohol

(D) Ester

55. The biosynthetic precursor of terpenoids is :

(A) Glucose

(B) IPP

(C) Pyruvate

(D) Acetate

56. Menthol is obtained from :

(A) Peppermint oil

(B) Lemon oil

(C) Rose oil

(D) Ginger oil

57. Zingiberene is present in :

(A) Ginger oil

(B) Rose oil

(C) Pine oil

(D) Mint oil

58. β- Carotene contains :

(A) 30 carbon atoms

(B) 40 carbon atoms

(C) 20 carbon atoms

(D) 15 carbon atoms

59. The term alkaloid was introduced by :

(A) Meissner

(B) Robinson

(C) Fischer

(D) Kekule

60. Morphine is obtained from :

(A) Opium poppy

(B) Tobacco plant

(C) Tea plant

(D) Coffee plant

61. Quinine is used for the treatment of :

(A) Cancer

(B) Malaria

(C) Diabetes

(D) Hypertension

62. Alkaloids usually have :

(A) Bitter taste

(B) Sweet taste

(C) Sour taste

(D) Salty taste

63. The steroid nucleus is called :

(A) Cyclopentanoperhydrophen-anthrene

(B) Benzene nucleus

(C) Naphthalene nucleus

(D) Anthracene nucleus

64. Estrone is a :

(A) Female hormone

(B) Male hormone

(C) Vitamin

(D) Enzyme

65. Aldosterone regulates :

(A) Respiration

(B) Digestion

(C) Vision

(D) Salt and water balance

66. Nicotine contains :

(A) Pyridine ring

(B) Benzene ring

(C) Cyclopropane ring

(D) Steroid ring

67. Bile acids are derived from :

(A) Cholesterol

(B) Glucose

(C) Protein

(D) Fatty acids

68. Apigenin belongs to :

(A) Flavone

(B) Flavonol

(C) Anthocyanin

(D) Chalcone

69. Quercetin belongs to :

(A) Flavones

(B) Flavonols

(C) Steroids

(D) Alkaloids

70. Quercetin-3-glucoside is a/an :

(A) Steroid

(B) Alkaloid

(C) Glycoside

(D) Terpenoid

71. Cyanidin pigments belong to :

(A) Alkaloids

(B) Flavones

(C) Anthocyanins

(D) Steroids

72. Flavonoids are biosynthesized by :

(A) Acetate pathway

(B) Shikimic acid pathway

(C) Both (A) and (B)

(D) Glycolysis

73. Myricetin belongs to :

(A) Flavonol

(B) Flavones

(C) Steroids

(D) Alkaloids

74. Porphyrins contain :

(A) Four pyrrole rings

(B) Two pyrrole rings

(C) Three pyrrole rings

(D) Five pyrrole rings

75. Prostaglandins are derived from :

(A) Arachidonic acid

(B) Acetic acid

(C) Lactic acid

(D) Stearic acid

76. PGE_2 contains :

(A) Ketone group

(B) Aldehyde group

(C) Ester group

(D) Amide group

77. Prostaglandins are involved in :

(A) Inflammation

(B) Blood pressure regulation

(C) Smooth muscle contraction

(D) All of the above

78. Prostaglandins act as :

(A) Local hormones

(B) Vitamins

(C) Enzymes

(D) Pigments

79. Pyrethroids are used as :

(A) Insecticides

(B) Antibiotics

(C) Vitamins

(D) Hormones

80. Pyrethroids affect insect :

(A) Digestive system

(B) Nervous system

(C) Respiratory system

(D) Circulatory system

81. Rotenone belongs to :

(A) Terpenoids

(B) Alkaloids

(C) Steroids

(D) Flavonoids

82. Rotenone acts by inhibiting :

(A) Cellular respiration

(B) Photosynthesis

(C) Digestion

(D) DNA synthesis

83. IR spectroscopy identifies :

(A) Color

(B) Molecular weight

(C) Functional groups

(D) Density

84. Anthocyanins give :

(A) Red/blue colors

(B) Green color

(C) Yellow color

(D) White color

85. Flavonoids protect plants from :

(A) UV radiation

(B) Cold

(C) Heat

(D) Gravity

86. Natural products are obtained from :

(A) Plants

(B) Animals

(C) Microorganisms

(D) All of the above

87. Natural insecticides include :

(A) Pyrethrins

(B) Rotenone

(C) Nicotine

(D) All of the above

88. Steroid hormones are synthesized from :

(A) Cholesterol

(B) Glucose

(C) Protein

(D) DNA

89. Rotenone inhibits :

(A) Glycolysis

(B) DNA replication

(C) Protein synthesis

(D) Electron transport chain

90. Pyrethroids degrade rapidly in :

(A) Darkness

(B) Sunlight

(C) Water

(D) Ice

91. Alkaloids are generally extracted from plant materials using :

(A) Dilute acid

(B) Dilute base

(C) Alcohol

(D) Ether only

92. Which of the following is the primary function of haemoglobin the human body ?

(A) Transport of oxygen

(B) Transport of glucose

(C) Production of hormones

(D) Storage of fats

93. Steroids are derived from the basic skeleton known as :

(A) Cholane

(B) Cyclopentanoperhydrophen-anthrene

(C) Benzene

(D) Naphthalene

94. Prostaglandins belong to the group of :

(A) Steroids

(B) Eicosanoids

(C) Terpenoids

(D) Alkaloids

95. The "E" in PGE_2 indicates :

(A) Ester group

(B) Ketone group in the cyclopentane ring

(C) Ether group

(D) Amide group

96. Cholesterol is a precursor for the synthesis of :

(A) Steroid hormones

(B) Carbohydrates

(C) Proteins

(D) Vitamins

97. Progesterone mainly regulates :

(A) Blood pressure

(B) Pregnancy and menstrual cycle

(C) Digestion

(D) Oxygen transport

98. Chlorophyll contains which central metal ion ?

(A) Iron

(B) Copper

(C) Magnesium

(D) Zinc

99. Prostaglandins are mainly synthesized in :

(A) Kidney only

(B) Liver only

(C) Almost all body tissues

(D) Brain only

100. Natural pyrethrins are obtained from :

(A) Chrysanthemum flowers

(B) Tobacco leaves

(C) Cinchona bark

(D) Neem flowers

(Only for Rough Work)

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the correct answer and mark the same in the OMR Answer-Sheet as per the direction :

Example :

Question :

Q. 1 (A) ● (C) (D)
Q. 2 (A) (B) ● (D)
Q. 3 (A) ● (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.
8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.
9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. : On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर—A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से सही उत्तर छाँटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ● (C) (D)
प्रश्न 2 (A) (B) ● (D)
प्रश्न 3 (A) ● (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निगेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण : प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।