PREVIOUS YEAR PAPER

DSSSB PGT Chemistry 2021 — 18 July 2021, Shift 1

DSSSB PGT · 18 July 2021 · Shift 1

183 of the paper's 300 questions · +1 for a correct answer, −0.25 for a wrong one · 180 minutes

Left out of the original paper: 117 (any question that needs a figure, a symbol or formatting we cannot show, or whose text did not read back cleanly from the booklet).

Questions from the Delhi Subordinate Services Selection Board's paper of 18 July 2021, Shift 1. Each question is followed by its answer, and the answer key is repeated on the last page.

Take it as a timed practice test: exambharo.com/dsssb-pgt/previous-year-papers/dsssb-pgt-2021-chemistry-18-jul-shift-1/

Mental Ability

1. Find the missing term in the following letter series:
CFI, _____, UXA, DGJ, MPS

(a) JKR
(b) LOR
(c) LOQ
(d) JLN

Answer: (b)

2. Arrange the given words in the sequence in which they occur in the dictionary.
1. Jaggery
2. Jaguar
3. Jackal
4. Jackpot
5. Jangler

(a) 34125
(b) 31245
(c) 32145
(d) 12345

Answer: (a)

3. Out of the given options, three are similar in a certain manner. However, one option is NOT like the other three. Select the option which is different from the rest.

(a) Cabbage
(b) Guava
(c) Muskmelon
(d) Litchi

Answer: (a)

4. Out of the given options, three are similar in a certain manner. However, one option is NOT like the other three. Select the option which is different from the rest.

(a) Pen : Pencil

(b) Fork : Chopstick

(c) Scooty : Bike

(d) Bread : Butter

Answer: (d)

5. Select the option that is related to the third term on the same basis as the second term is related to the first term.
India : Peacock :: Russia : ?

(a) Ostrich

(b) Eagle

(c) Emu

(d) Pigeon

Answer: (b)

6. Select the pair that is related on the same basis to the pair given in the question.
Biryani : Rice :: ?

(a) Wood : Furniture

(b) Milk : Cheese

(c) Paper : Tree

(d) Mango : Pickle

Answer: (c)

7. In a certain code language, TELEGRAPH is [illegible]s ELETGHPAR, then what is the code for NOMINAL?

(a) MONILAN

(b) MONLIAN

(c) MONALIN

(d) NOMALIN

Answer: (a)

8. In a certain code language, if washing machine is called air conditioner, air conditioner is called room heater, room heater is called mobile, mobile is called tube light, and tube light is called geyser, then what is used to send a message?

(a) Heater

(b) Tube light

(c) Mobile

(d) Geyser

Answer: (b)

9. If A @ B means 'A is the mother of B';
'A $ B' means 'A is the husband of B';
'A # B' means 'A is the sister of B';
'A * B' means 'A is the son of B'.
Then which of the following indicates that M is the daughter of O?

(a) M @ G # H * O

(b) M @ G * H # O

(c) M # G * H $ O

(d) M # G @ H * O

Answer: (c)

10. Seven friends Ashish, Babita, Chandan, Dixit, Elizabeth, Faisal and Gagan sit on the top of a plateau facing east.
1. Chandan is on the immediate right of Dixit.
2. Babita is at one of the extreme ends and Elizabeth is her neighbour.
3. Gagan is between Elizabeth and Faizal.
4. Dixit is sitting third from the south end.
Which of the following pairs of people sit at the extreme ends?

(a) Ashish and Babita

(b) Ashish and Elizabeth

(c) Chandan and Babita

(d) Faisal and Babita

Answer: (a)

11. In this question, three statements have been giv[illegible]ollowed by two conclusions numbered I and II. Assuming that all information in the state[illegible]t is [illegible]e, analyse the two conclusions together and determine whether any of them logically and d[illegible]ly follow(s) from the information given in the statement.
Statement I: All tube lights are fans.
Statement II: All fans are bulbs.
Statement III: All bulbs are clocks.
Conclusion: I) All tube lights are clocks.
II) Some clocks are fans.

(a) Only I follows

(b) Only II follows

(c) Both I and II follows

(d) Neither I nor II follows

Answer: (c)

12. In this question, a statement has been followed by two assumptions numbered I and II. You have to decide which of the assumption is implicit.
Statement: Dixit's advice to Farhan-"Go to Kolkata via Jharkhand-the shortest route".
Assumptions:
I. Farhan wishes to go to Kolkata.
II. Dixit gives advice to everyone.

(a) Only I is implicit
(b) Only II is implicit
(c) Both I and II are implicit
(d) None is implicit

Answer: (a)

13. Find the missing number from the series:
48, 96, 24, _____, 12

(a) 16
(b) 18
(c) 48
(d) 28

Answer: (c)

14. Select the option that is related to the third term on the same basis as the second term is related to the first term.
54 : 729 :: 24 : ?

(a) 144
(b) 324
(c) 256
(d) 576

Answer: (a)

General Awareness

21. Hattari dance is one of the most famous folk dances in _____.

(a) Tamil Nadu
(b) Karnataka
(c) Kerala
(d) Maharashtra

Answer: (b)

22. Which among the following monuments was built by Maharaja Narinder Singh?

(a) Sheesh Mahal in Punjab
(b) Golconda Fort in Andhra Pradesh
(c) Konark Temple in Odisha
(d) Lodhi Fort in Punjab

Answer: (a)

23. Which among the following statements is incorrect in context to announcements made in Budget 2021?

(a) Custom Duty on copper scrap reduced from 5% to 2.5%.
(b) Custom Duty on solar lanterns increased from 5% to 10%.
(c) Custom Duty on solar invertors increased from 5% to 20%.
(d) Custom Duty on raw silk increased from 10% to 15%.

Answer: (b)

24. Mobile Money Identifier is a _____ digit code issued by banks to their customers.

(a) seven
(b) eight
(c) nine
(d) ten

Answer: (a)

25. The regular bacteria or eubacteria belongs to which of the following kingdoms?

(a) Monera
(b) Protista
(c) Fungi
(d) Plantae

Answer: (a)

26. _____ law states that the rates of diffusion of gases are inversely proportional to the square root of their densities under similar conditions of temperature and pressure.

(a) Charles'
(b) Graham's
(c) Pascal's
(d) Stefan's

Answer: (b)

27. Which among the following soils contributes the largest share of agricultural wealth?

(a) Laterite
(b) Red
(c) Black
(d) Alluvial

Answer: (d)

28. Cuttack is situated on the bank of which of the following rivers?

(a) Mahanadi
(b) Ganga
(c) Kaveri
(d) Gomti

Answer: (a)

29. Who among the following rulers adopted the title of Mahendraditya?
    (a) Chandragupta – I
    (b) Kumaragupta – I
    (c) Samudragupta
    (d) Skandagupta
    Answer: (b)

30. When was the Battle of Talikota fought?
    (a) 1576
    (b) 1611
    (c) 1565
    (d) 1582
    Answer: (c)

31. Who among the following was the youngest Governor General of India?
    (a) Lord Dalhousie
    (b) Lord Hastings
    (c) Lord Canning
    (d) Lord Wellesley
    Answer: (a)

32. Which among the following won the Oscars 2021 'Animated Feature Film'?
    (a) Soul
    (b) Onward
    (c) Over the Moon
    (d) Wolfwalkers
    Answer: (a)

33. Which among the following pairs of authors and books is incorrect?
    (a) A Thousand Splendid Suns - Khaled Hosseini
    (b) The Ibis Trilogy - Amitav Ghosh
    (c) The Diary of a Young Girl - Anne Frank
    (d) My Favourite Nature Stories - Salman Rushdie
    Answer: (d)

34. As announced in May 2021, the first private astronaut mission, known as the _____ mission, will be launched from NASA's Kennedy Space Center in Florida.
    (a) AX-1
    (b) BX-1
    (c) CX-1
    (d) DX-1
    Answer: (a)

35. Which among the following states launched a dedicated COVID-19 'Mukhyamantri Sewa Sanklap Helpline 1100' in May 2021?

(a) Andhra Pradesh

(b) Himachal Pradesh

(c) Odisha

(d) Maharashtra

Answer: (b)

36. _____ has launched 'Sanjeevani' to connect COVID-19 patients with potential plasma donors in May 2021.

(a) Flipkart

(b) Amazon

(c) Snapdeal

(d) Myntra

Answer: (c)

37. The feature of 'Joint Sitting of two houses of Parliament' in the Indian Constitution is borrowed from the constitution of _____.

(a) Canada

(b) United States of America

(c) Australia

(d) France

Answer: (c)

38. Which among the following amendment of the Indian Constitution led to formation of Nagaland with special status under Article 371A?

(a) 13th

(b) 29th

(c) 32nd

(d) 7th

Answer: (a)

39. Which among the following teams continued to hold its top spot on the ICC Test Team Rankings, which were released by the ICC on May 13, 2021?

(a) India

(b) New Zealand

(c) England

(d) Australia

Answer: (a)

40. The All India Chess Federation has launched the _____ Initiative to help the chess community affected by the pandemic in May 2021.

(a) Lose Covid

(b) Checkmate Covid

(c) Gambit Covid

(d) Check Covid

Answer: (b)

Arithmetic Ability

41. What is the other number if the HCF of a pair of numbers is 1 and the LCM is 20, where one number is 4?

(a) 5

(b) 4

(c) 6

(d) 2

Answer: (a)

42. The ratio of two whole numbers is 7 : 9 out of which one is 900. What is the LCM of the given two numbers?

(a) 100

(b) 6300

(c) 700

(d) 900

Answer: (b)

43. The average height of 12 students increases by 2 inches when 2 students leave this group. If the average height of these two students is one-third of the average height of the original 12, the average height, in inches, of the remaining students is _____.

(a) 17 inch

(b) 15 inch

(c) 13 inch

(d) 19 inch

Answer: (a)

44. A student has an exemplary skill using which he constantly scores 79 in every exam. He does so in the first exam. In the same exam another student scores 60. If in the next exam the second wants to get ahead of the first student in total across the two exams, at least how much more than the first student should the second person score in the second exam?

(a) 20

(b) 21

(c) 100

(d) 18

Answer: (a)

45. A person had enough money to buy 50 pens or 60 notebooks. If the price of pens increases such that the person can buy only 40 pens and he buys 20 pens, how many notebooks can the person buy at the old price?

(a) 30
(b) 25
(c) 35
(d) 40

Answer: (a)

46. The cost of wheat to a trader is Rs. 100 per kg. If the trader wants to earn a 30% profit (on his sales price) by selling wheat at cost price, how much less (in gm) should the trader supply for every kg he that he sells?

(a) 300 gm
(b) 400 gm
(c) 500 gm
(d) 250 gm

Answer: (a)

47. If the cost of a product is Rs 500 and the seller marks the product at Rs 800 but gives a 10% discount on the same, what is the profit percent to the seller?

(a) 44%
(b) 60%
(c) 34%
(d) 30%

Answer: (a)

48. Solution A has 20% water and Solution B has 60% water. Both are mixed in a certain proportion to get a solution which has 50% water. What is this ratio of solution B to A in the final solution?

(a) 1:3
(b) 3:1
(c) 4:1
(d) 1:4

Answer: (b)

49. If 3 consecutive numbers are in the ratio 1:2:3, what is the sum of these numbers?

(a) 12
(b) 18
(c) 6
(d) 24

Answer: (c)

50. What is the difference in the amount of interest earned by a person who invests Rs 5000 for two years under two alternate schemes. In scheme 1, he earns 15% interest on simple interest basis. In scheme 2 he earns 14% interest under compound interest.

(a) Rs 10

(b) Rs 2

(c) Rs 5

(d) Rs 8

Answer: (b)

51. A person invested Rs 10,000 in a bank deposit scheme for 1.5 years. The rate of interest is 20% per annum compounded semi annually. What is the amount of money that this individual would get at the end of 1.5 years?

(a) Rs 13310

(b) Rs 14400

(c) Rs 13210

(d) Rs 13000

Answer: (a)

52. Aman and Akash start travelling from Delhi to Kolkata which is 1500 km away from each other. Aman travels at 50 kmph and Akash travels at 100 kmph. Akash reaches Kolkata and then starts his journey back to Delhi and meets Aman on his way back. How far (in km) from Kolkata did they meet?

(a) 500 km

(b) 1000 km

(c) 750 km

(d) 900 km

Answer: (a)

53. If a car covers 600 meters in 5 minutes, what is the speed of the car in m/sec?

(a) 120 m/sec

(b) 2 m/sec

(c) 40 m/sec

(d) 4 m/sec

Answer: (b)

54. Two pipes are used to fill a tank. If one pipe can fill the tank at a speed of 1/5 of the tank in an hour and the other can fill the tank in 20 hours when working alone, in what time (in hours) will the two pipes working together fill the tank?

(a) 5 hours

(b) 4 hours

(c) 10 hours

(d) 20 hours

Answer: (b)

55. If one worker can do a work in 100 days and 2 workers are added every day, in 5 days what part of the work would have been done?

(a) 10%

(b) 15%

(c) 20%

(d) 25%

Answer: (d)

56. The diameter of a cone is 42 cm. The height of the cone is 2 times the radius. What is the volume of the cone?

(a) 19404 cu cm

(b) 1848 cu cm

(c) 3696 cu cm

(d) 462 cu cm

Answer: (a)

57. What is the absolute difference, in sq. cm, between the curved surface area of a cone and its total surface area if the radius is 7 cm and the height is 50 cm?

(a) 154 sq. cm

(b) 7 sq. cm

(c) 50 sq. cm

(d) 49 sq. cm

Answer: (a)

General English

61. The sentence below has been divided into three parts. Select the part of the sentence that has an error. If the sentence has no error, select the option 'No Error'.
Having descended the hill at a trot, he no longer/ saw neither our own or the enemy's fires but/ heard the shouting of the French more loudly and distinctly.

(a) Having descended the hill at a trot, he no longer

(b) saw neither our own or the enemy's fires but

(c) heard the shouting of the French more loudly and distinctly.

(d) No Error

Answer: (b)

62. The sentence below has been divided into three parts. Select the part of the sentence that has an error. If the sentence has no error, select the option 'No Error'.
I guessed vaguely from my mother's signs and from the/ hurrying to and fro in the house that something unusual were about to happen,/ so I went to the door and waited on the steps.

(a) I guessed vaguely from my mother's signs and from the

(b) hurrying to and fro in the house that something unusual were about to happen,

(c) so I went to the door and waited on the steps.

(d) No Error

Answer: (b)

63. Select the word segment that substitutes (replaces) the bracketed word segment correctly and completes the sentence meaningfully. Select the option 'no correction required' if the sentence is correct as given.
(The downright dumping of the stocks on the Wall Street have bought) the entire stock market to its knees.

(a) The downright dumping of stocks on the Wall Street have brought

(b) The downright dumping of stocks at the Wall Street has brought

(c) The downright dumping of stocks in Wall Street has brought

(d) No correction required

Answer: (c)

64. Select the word segment that substitutes (replaces) the bracketed word segment correctly and completes the sentence meaningfully. Select the option 'no correction required' if the sentence is correct as given.
The government of the world (I live in was not framed, like that of Great Britain,) in after-dinner conversations over the wine.

(a) I lived in was not framed, like that of the Great Britain,

(b) I had been living in was not framed, like that of the Great Britain,

(c) I live in was not framed, to be like that of the Great Britain,

(d) No correction required

Answer: (d)

65. Fill in the blank with the most appropriate choice
It is really a biennial, but grows itself so freely as to ' ome _____ in the garden.

(a) centennial

(b) colonial

(c) ungenial

(d) perennial

Answer: (d)

66. Fill in the blank with the most appropriate choice
In the overthrow of the Spanish _____ they had already received a great defeat; with the Peace of Westphalia the Catholic advance was baffled.

(a) Agenda

(b) Cicada

(c) Aficionada

(d) Armada

Answer: (d)

67. Some parts of a sentence have been jumbled up, and labelled P, Q, R and S. Select the option that gives the correct sequence in which these parts can be rearranged to form a meaningful and grammatically correct sentence.
The first French edition
P. appeared in 1609, and
Q. the story was known
R. in England before 1625,
S. when a parody
was produced.

(a) PRSQ
(b) PQRS
(c) PSQR
(d) PSRQ

Answer: (b)

68. Select the word that is similar in meaning (SYNONYM) to the word given below Intermittent

(a) Continuous
(b) Recurring
(c) Swift
(d) Steady

Answer: (b)

69. Select the word that is similar in meaning (SYNONYM) to the word given below Asinine

(a) Intelligent
(b) Preposterous
(c) Sway
(d) Collide

Answer: (b)

70. Four words are given, out of which only one word is spelt correctly. Choose the correctly spelt word.

(a) Obviate
(b) Oblivate
(c) Obevate
(d) Obivate

Answer: (a)

71. Four words are given, out of which only one word is spelt correctly. Choose the correctly spelt word.

(a) Perturbation
(b) Pertuberation
(c) Pertubation
(d) Pertuebation

Answer: (a)

72. Select the most appropriate meaning of the given idiom.
A leopard can't change his spots

(a) You cannot change who you are

(b) An unreliable person

(c) A very small part of something big or whole

(d) One who causes damage

Answer: (a)

73. Select the most appropriate meaning of the given idiom.
Above board

(a) A very mild punishment

(b) Very inexpensive, a bargain

(c) Ready to, just going to

(d) Fair and honest

Answer: (d)

74. Select the most appropriate 'one word ' for the expressions given below.
Eager to own and collect things

(a) Shod

(b) Tractable

(c) Acquisitive

(d) Retrospective

Answer: (c)

75. Select the most appropriate 'one word ' for the expressions given below.
Embarrassing social mistake

(a) Faux pas

(b) Spam

(c) Disband

(d) Roister

Answer: (a)

77. Why did Maginot argue to build the Maginot Wall?

(a) Because of the horrid conditions in the First World War

(b) Because he feared that Germans would attack France again and he wanted to have line of defences that would favour France in similar battle conditions

(c) Because Germany had an advantage and he wanted to build a line of defence

(d) Because it would save more lives on the battle field, if Germans ever were to attack France again

Answer: (b)

78. What did André Maginot serve as in the French Army?
(a) French Minister of War
(b) War Veteran
(c) French Rebel Leader
(d) German Spy
Answer: (a)

80. How long did it take to build the Maginot line?
(a) Around 13 years
(b) Around 12 years
(c) Around 15 years
(d) Around 10 years
Answer: (d)

Discipline1

101. The mass% of hydrogen in water is _____.
(a) 5.59%
(b) 11.18%
(c) 88.79%
(d) 16%
Answer: (b)

102. Sugar syrup and tea are examples of _____
(a) Compound
(b) Homogenous mixture
(c) Heterogeneous mixture
(d) Elements
Answer: (b)

103. Blood is an example of _____.
(a) Sol
(b) Colloidal solution
(c) Colloidal Suspension
(d) Emulsion
Answer: (c)

104. Glass belongs to which state of matter?
(a) Solid
(b) Liquid
(c) Solid but atomic structure of liquid
(d) Liquid but atomic Structure of solid
Answer: (c)

105. For the two statements given, analyse and answer:
I) Solids have a finite shear Modulus whereas liquids do not.
II) Atoms are always in thermal motion and do not have a fixed position

(a) Only I is true

(b) Only II is true

(c) Both I and II are true and II is the correct explanation of I

(d) Both I and II are true but II is not the correct explanation of I

Answer: (d)

106. An element with atomic number 103 has a nuclear charge of +103. So its charge would be balanced by _____.

(a) 103 electrons

(b) 103 protons

(c) 104 electrons

(d) 104 protons

Answer: (a)

107. An electron near the nucleus is strongly attracted by the nucleus and has _____.

(a) Low kinetic energy

(b) Low potential energy

(c) High kinetic energy

(d) High potential energy

Answer: (b)

108. How many emission spectrum for sod[illegible]ie ir[illegible]e range 588-590nm?

(a) 2

(b) 4

(c) 1

(d) 0

Answer: (a)

109. Which of these stands false for Bohr's Theory?

(a) An electron does not radiate energy if it stays in one orbit

(b) When an electron moves from one orbit to another it either radiates or absorbs energy

(c) For an electron to remain in its orbit, electrostatic attraction between electron and the nucleus which tends to pull the electron towards the nucleus must be equal to the gravitational force

(d) The energy of an electron in orbit i.e. its angular momentum, MVR must be equal to a whole number n of quanta

Answer: (c)

117. The rate determining step in any reaction is _____.

(a) The slowest step

(b) The fastest step

(c) Not determinable

(d) The first step

Answer: (a)

120. When two different concentrations of Hydrochloric acids are used as electrolytes in a system, it contributes as an additional source of potential difference at the interface. This is an example of _____.

(a) Salt bridge

(b) Reducing agent

(c) Oxidising agent

(d) Liquid junction potential

Answer: (d)

Discipline2

121. To prepare 1L of 5N solution of conc. HCl from 37% HCl one would need how much of HCl?

(a) 370 mL

(b) 493 mL

(c) 50 mL

(d) 256 mL

Answer: (b)

122. When solid solute is added to a solvent, s olute particles in solution collide with the solid solute particles and get separated out of solution. This process is known as _____.

(a) Dissolution

(b) Solubilisation

(c) Crystallisation

(d) Deionisation

Answer: (c)

123. A solution of Gallic acid in ethanol was made by dissolving 0.05 mg in 250 mL of ethanol(w/v). This solution in ppm would be _____.

(a) 0.05 ppm

(b) 1 ppm

(c) 0.2 ppm

(d) 0.5 ppm

Answer: (c)

132. An element has atomic number 25. This element belongs to _____.

(a) s-block

(b) p-block

(c) d-block

(d) f-block

Answer: (c)

133. The heat of atomization decreases in order _____.

(a) Cs>Rb>K>Na>Li

(b) Li>Na>K>Rb>Cs

(c) Na>Li>K>Cs>Rb

(d) Cs>Rb>Na>K>Li

Answer: (b)

138. Atomic hydrogen recombines to give molecular hydrogen and a large amount of heat in a very fast reaction and can also be used for welding metals. This is because _____.

(a) Hydrogen molecule is very unstable at room temperature

(b) Hydrogen does not react readily with other elements

(c) Dissociation of hydrogen molecule is highly exothermic

(d) Hydrogen only exists as ions for stability

Answer: (c)

139. An element X essentially used in fertilisers and [illegible]ρ is obtained by electrolysing at high temperatures along with sodium. Element X is _____.

(a) Lithium

(b) Sodium

(c) Potassium

(d) Rubidium

Answer: (c)

140. Electrolysis as a source of extraction of metals are only successful when _____.

(a) Aqueous solution of metals are used

(b) Fused halides are used

(c) Metal oxides are used

(d) Metal hydrides are used

Answer: (b)

Discipline3

143. A hydrocarbon used as a refrigerant and aerosol propellant is prepared using Wurtz reaction with bromoethane and sodium metal in dry ether. The final product is _____.

(a) Ethane
(b) n-Propane
(c) n-Butane
(d) Ethene

Answer: (c)

145. Benzene reacts with bromine in presence of Iron(III) bromide as a catalyst to form _____.

(a) Bromobenzene and HBr
(b) Only bromobenzene
(c) Only HBr
(d) No reaction at all

Answer: (a)

147. In general, the most stable resonance structure for a polycyclic aromatic hydrocarbon is _____.

(a) One with largest number of double bonds
(b) One with greatest number of rings
(c) One with rings, all of which corresponds to Kekule formulations
(d) One with largest number of substituents

Answer: (c)

149. For bromination of benzene, the major product med will be _____.

(a) Hydrogen bromide
(b) Bromobenzene
(c) Cyclobromobenzene
(d) Cyclobromopentane

Answer: (b)

151. In phenol, the partial double bond character from the carbon - oxygen bond is a result of _____.

(a) More number of resonance structures
(b) Electronegativity of Oxygen atom
(c) Conjugation of the unshared electron pair of oxygen with the aromatic ring
(d) Symmetric carbons in the structure

Answer: (c)

152. In elimination reaction of sec-Butyl trimethylammonium hydroxide, major product formed would be _____.

(a) 1-Butene
(b) 2-Butene
(c) Both 1-Butene and 2-Butene in equal amount
(d) No reaction occurs

Answer: (a)

153. Diethyl ether is _____.

(a) Symmetrical ether

(b) Unsymmetrical ether

(c) Mixed ether

(d) Heterocyclic compound

Answer: (a)

154. Acetaminophen is an example of _____.

(a) Antipyretic and analgesic

(b) Anti-inflammatory

(c) Antibiotic

(d) Anti-microbial

Answer: (a)

155. A powerful narcotic used for relief of pain and has high addictive property is _____.

(a) Quinidine

(b) Morphine

(c) Caffeine

(d) Aspirin

Answer: (b)

156. Acetylsalicylic acid, the most widely used mild ar gesic is commonly known as ____.

(a) Paracetamol

(b) Aspirin

(c) Quinoid

(d) Morphin

Answer: (b)

157. In Ion exchange method, study of which factor helps in determination of stability constant of complexes in solution?

(a) Solubility

(b) Heterogenous equilibrium

(c) Conductivity

(d) Polarizability

Answer: (b)

159. During photochemical reaction of alkenes having cis and trans isomer, photolysis causes generation of _____.

(a) Mixture richer in trans isomer

(b) Mixture richer is cis isomer

(c) Mixture containing only trans isomer

(d) Mixture containing only cis isomer

Answer: (b)

160. The cage like open framework structure made of aluminosilicates which has a very stable nature to resist all kind of environmental conditions are termed as _____.

(a) Mesh

(b) Carbene

(c) Zeolites

(d) Fullerenes

Answer: (c)

Discipline4

161. In Paterno-Buchi reaction, the major product formed is _____.

(a) cis adduct

(b) trans adduct

(c) Racemic mixture

(d) Adduct formed from a long lived diradical intermediate

Answer: (a)

162. When for any atom in a molecule, an identical atom exists diametrically opposite this centre at an equal distance then the molecule has _____.

(a) Plane of symmetry

(b) Identity

(c) Centre of symmetry

(d) Symmetry axis

Answer: (c)

163. When Electro-Magnetic radiation interacts a single atom and molecule, its behaviour depends on the amount of _____.

(a) Wavelength

(b) Wavenumber

(c) Electrons

(d) Energy per quanta (photons)

Answer: (d)

168. In Ostwald process, NO is formed from catalytic oxidation of NH to further produce nitric acid. The catalyst used in this process is _____.
3

(a) Pt/Rh catalyst

(b) Pt/Ni catalyst

(c) Pb/Pd catalyst

(d) Ni/Pd catalyst

Answer: (a)

170. A metalloprotein have Fe central metal and functions in electron transfer is _____.

(a) Haemoglobin

(b) Catalase

(c) Ferredoxin

(d) Cytochrome

Answer: (d)

175. Quantum confinement effect results in _____ in nanoparticle of gold, platinum etc.

(a) Electric discharge

(b) Magnetic dipole

(c) Increased kinetic energy

(d) Inactivity

Answer: (b)

176. Magnetic nanoparticle tends to behave as larger particle because of phenomena called _____.

(a) Suspension

(b) Dispersion

(c) Dissociation

(d) Agglomeration

Answer: (d)

177. Fragment ions with lower energy than normal appearing at m/z ratio dependent of its own mass and the mass of original ion gives rise to _____.

(a) Fragment peak

(b) Ion peak

(c) Base peak

(d) Metastable peak

Answer: (d)

Discipline5

183. An organometallic complex that is used as an anticancer drug that targets DNA to inhibit cell growth is called _____.

(a) Salvarsan

(b) Ferroquine

(c) cis-Platin

(d) Chloroquine

Answer: (c)

184. The closeness of obtained values to the true value is called _____.

(a) Accuracy

(b) Precision

(c) Error

(d) Ruggedness

Answer: (a)

185. In thin-layer chromatography, the stationary phase used is _____.

(a) Carbon

(b) Copper plate

(c) Silica packed aluminium plate

(d) Glass beads

Answer: (c)

186. Water and 95% ethanol are most used solvent in UV-spectroscopy because _____.

(a) They are highly polar compounds

(b) They dissolve non-polar compounds

(c) They are H-bonded solvents

(d) They are transparent in UV-spectrum

Answer: (d)

188. The minimum amount of fissionable material that can produce a self sustaining chain reaction is called _____.

(a) Flux

(b) Innoculum

(c) Critical mass

(d) Feed

Answer: (c)

190. The characteristic which is not usually regarde[illegible]or green chemical compounds is _____.

(a) Preparation from renewable resour[illegible]

(b) Low tendency to undergo sudden, violen[illegible]predictable reaction

(c) Readily biodegradable

(d) Extremely high stability

Answer: (d)

191. Release of chemicals to the environment in US is tracked by _____.

(a) Pollution prevention control board

(b) Toxics release inventory

(c) IUPAC

(d) International Chemical Laboratory

Answer: (b)

192. % yield of any reaction is given by _____.

(a) (Actual weight obtained/Theoretical weight) ×100

(b) (Theoretical weight obtained/actual weight obtained) × 100

(c) [(Actual weight-Theoretical weight)/Theoretical weight] × 100

(d) [(Theoretical weight- Actual weight)/Theoretical weight] × 100

Answer: (a)

194. Radical stabilization in free radicals is defined by _____.

(a) C-C bond enthalpy
(b) C-H bond enthalpy
(c) C-H bond dissociation energy
(d) C-C bond dissociation energy

Answer: (c)

196. In epoxidation of E-2-butene, major product formed will be _____.

(a) cis-2,3-dimethyloxirane
(b) trans-2,3-dimethyloxirane
(c) Racemic mixture of cis and trans-2,3-dimethyloxirane
(d) Not determinable

Answer: (b)

Discipline6

201. In nitration process, the reaction typically proceeds through a _____.

(a) Anionic intermediate
(b) Cationic intermediate
(c) Zwitterionic intermediate
(d) Free radical intermediate

Answer: (b)

204. Diel's- Alder reaction is an example of _____ with respect to both the alkene and the diene.

(a) Stereospecific syn
(b) Stereospecific anti
(c) Regioselective syn
(d) Regioselective anti

Answer: (a)

205. p-Aminobenzoic acid and Sulfanilamide, both molecules have similar steric and electronic properties but p-Aminobenzoic acid is demonstrated to have reversing effect on the antibacterial action of sulfanilamide. This is because of _____.

(a) Different physiochemical properties
(b) Different physiologic pH of action
(c) Different electronic properties
(d) Different functional groups

Answer: (d)

206. Preparation of initial extract typically implements _____.

(a) Non-polar solvents
(b) Polar solvents
(c) Supercritical fluids
(d) Mixture of polar and non-polar solvent

Answer: (b)

207. Benzoic acid and Glycine reacts in presence of Acyl synthetase to give _____.

(a) N-acetylprocainamide

(b) Acylic acid

(c) Hippuric acid

(d) Salicylic acid

Answer: (c)

208. Cholesterol lowering drugs are known as _____.

(a) Alkaloids

(b) Quinones

(c) Statins

(d) Anthraquinones

Answer: (c)

210. In polymerization process of Ethylene, it is heated at high pressure in presence of oxygen or a peroxide. This process is known as _____.

(a) Cationic polymerization

(b) Anionic polymerization

(c) Coordination polymerization

(d) Free radical polymerization

Answer: (d)

213. When an electron doner zinc porphyrin was co[illegible]ntly connected to Guanosine and an electron accepting Quinone was linked to the cytos[illegible] were irradiated with light at an appropriate wavelength, electron transfer occurred fro[illegible]inc [illegible]phyrin to Quinone. This demonstrated which property of supramolecule?

(a) Electrical connections can be achieved between molecular parts via non-covalent supramolecular interactions

(b) Dipole-Dipole moment is created between two metal centres

(c) Interconnected macromolecules in a supramolecule are weakly bonded

(d) Physical property of a supramolecule change with respect to the nature of bonds created in it

Answer: (a)

214. In DNA, Guanine selectively interacts with Cytosine because _____.

(a) Guanine does not form H-bond with Cytosine

(b) Guanine forms only one H-bond with Cytosine

(c) Guanine forms an ionic bond with Cytosine

(d) Guanine forms more stable triple hydrogen bond with Cytosine

Answer: (d)

216. Biosynthetic pathway leading to terpenes and steroids are _____.

(a) Acetate pathway

(b) Photosynthesis

(c) Amino acid pathway

(d) Mevalonate pathway and methyltrythritol phosphate pathway

Answer: (d)

217. An alkaloid containing an indole core and produced in living organism from the amino acid tryptophan is ____.

(a) Quinine

(b) Ephedrine

(c) Piperine

(d) Bufotenin

Answer: (d)

218. A terpenoid well known for its analgesic properties and responsible for the well known cooling sensation when eaten or applied to the skin, is produced by an asymmetric synthesis. The process begins by forming an allylic amine from myrcene which undergoes asymmetric isomerization in the presence of a Rhodium complex to give enantiomerically pure R-citronellal and finally cyclised by a carbonyl-ene-reaction initiated by ZnBr2 to isopulegol which is then hydrogenated to give the pure terpenoid. The terpenoid is _____.

(a) Camphor

(b) Menthol

(c) Citral

(d) Limonene

Answer: (b)

219. Structure isoelectronic with naphthalene is _____.

(a) Furan

(b) Pyrrole

(c) Imidazole

(d) Benzimidazole

Answer: (d)

220. Furan has _____Π e- plus an unshared pair of oxygen sp2 orbital.

(a) 2

(b) 4

(c) 6

(d) 8

Answer: (c)

Discipline7

221. For the two statements given below, analyse for the following:
a) Pyridine and Pyrrole both are weak bases, but pyridine is much more basic than pyrrole.
b) Lone pair associated with nitrogen in Pyridine is entirely with nitrogen and not delocalised into the aromatic Π system, whereas in Pyrrole unshared pair belonging to nitrogen must be added to the 4Π e- of 2 double bonds and thus is delocalised into the aromatic Π system.

(a) Only a) is true

(b) Only b) is true

(c) Both a) and b) are true and b) is the correct explanation of a)

(d) Both a) and b) are true but b) is not the correct explanation of a)

Answer: (c)

222. Maltose, which is obtained by hydrolysis of starch and cellobiose are _____.

(a) Monosaccharide

(b) Disaccharide

(c) Polysaccharide

(d) Sugar

Answer: (b)

224. Compound X is a thiol; its chain terminates in a (-SH) group. Acetylation of the sulfhydryl group of compound X gives acetyl coenzyme of Compound X.
Compound X is ___.

(a) Acetyl ester

(b) Coenzyme A

(c) Carbohydrate

(d) Fatty acid

Answer: (b)

225. Anion exchange chromatographic methods at high pH (>12) with sodium hydroxide or sodium hydroxide / sodium acetate solution as mobile phase is applied usually for _____.

(a) Anions

(b) Sugar

(c) Proteins

(d) Carbohydrates

Answer: (d)

227. In a separation technique, the choice of solvent for separation is n-hexane mixed with isopropanol running over silica packed column. This technique is _____.

(a) Column chromatography

(b) Normal phase liquid chromatography

(c) Reverse phase liquid chromatography

(d) Ion-exchange chromatography

Answer: (b)

235. When macromolecular crowding increases, the chemical potential of protein _____.

(a) Increases

(b) Decreases

(c) Remains unchanged

(d) Initially increases then decreases

Answer: (a)

237. TMS is a universally preferred NMR reference because _____.

(a) It contains silicon

(b) It is a non-polar structure

(c) The carbon is more asymmetric

(d) The protons are better shielded

Answer: (d)

238. XRD peaks are produced by _____ of a monochromatic beams of X-rays scattered at a specific angles from each set of lattice planes in a sample.

(a) Destructive interference

(b) Constructive interference

(c) Diffraction

(d) Absorption

Answer: (b)

Discipline8

241. Lewis number is the ratio of _____.

(a) Molecular diffusivity of momentum to m[illegible]lar diffusivity of heat

(b) Molecular diffusivity of momentum to molecular diffusivity of mass

(c) Molecular diffusivity of heat to molecular diffusivity of mass

(d) Molecular diffusivity of mass to molecular diffusivity of momentum

Answer: (c)

245. For the statements below, analyse the options given: a) Ab initio calculations are relatively slow. b) Ab initio calculations are based on Schrödinger equation.

(a) Both a) and b) are true and b) is the correct explanation of a)

(b) Both a) and b) are true but b) is not the correct explanation of a)

(c) Only a) is true

(d) Only b) is true

Answer: (b)

248. A particle in a box possesses an irremovable minimum energy called the _____.

(a) Transition-state energy

(b) Barrier energy

(c) Transmission energy

(d) Zero-point energy

Answer: (d)

253. A cubic unit cell has _____ pointing to the corners of a tetrahedron.

(a) 3 threefold axes

(b) 4 threefold axes

(c) 1 twofold axes

(d) 2 threefold axes

Answer: (b)

254. Separation of {123} and {246} planes of an orthorhombic unit cell with a = 0.82 nm, b = 0.94 nm and c = 0.75 nm are _____ and _____.

(a) 0.11 nm ; 0.21 nm respectively

(b) 0.21 nm ; 0.11 nm respectively

(c) 0.21 nm ; 0.21 nm respectively

(d) 0.11 nm ; 0.11 nm respectively

Answer: (b)

255. Which statement about Miller notation is/are true? a) Negative indices are written with a bar over the number. b) The notation (hkl) denotes parallel planes with identical spacing

(a) Only a) is true

(b) Only b) is true

(c) Both a) and b) are true

(d) Both a) and b) are false

Answer: (a)

256. A macromolecule chain with N = 100 and l = 15 pm is in three dimension. The probability that the ends will be found in 10.0 pm at 3.00 nm distance will be _____.

(a) 1.92 × 10 -4

(b) 1.92 × 10 -3

(c) 1.92

(d) 1.92 × 10 -5

Answer: (b)

258. A sample of mixture of molecules with various chain lengths and molar mases constitute _____.

(a) Polydisperse polymer

(b) Monodisperse polymer

(c) Peptide

(d) Protein

Answer: (a)

260. Compound used as intercalating agent is _____.

(a) SDS

(b) CsCl

(c) EDTA

(d) EtBr

Answer: (d)

Discipline9

264. The instrument that makes use of the current due to electrons that tunnel between the surface and the tip is called _____.

(a) Transmission electron microscopy

(b) Atomic force microscopy

(c) Scanning tunnelling microscopy

(d) Scanning electron microscopy

Answer: (c)

265. Which statement(s) stands true for Langmuir isotherm?
a) Adsorption can be monolayer or multilayer.
b) The probability of adsorption is independent of the occupation of neighbouring sites i.e. there is no interaction between adsorbed molecules.

(a) Both a) and b) are true

(b) Both a) and b) are false

(c) Only a) is true

(d) Only b) is true

Answer: (d)

266. X-ray diffraction utilises electrons of energy range _____.

(a) 200-2000 eV

(b) >2000 eV

(c) 10-200 eV

(d) <10 eV

Answer: (c)

268. Catalyst used for heterogenous electrolysis for water oxidation are _____.

(a) Nickel oxides

(b) Platinum (finely divide)

(c) Siloxanes

(d) Palladium complex

Answer: (a)

269. Shape selective catalysts are called _____.

(a) Silanols

(b) Enzymes

(c) Zeolites

(d) Colloids

Answer: (c)

270. Materials possessing both amorphous and polycrystalline behaviour with abrupt changes in crystal orientation across individual grain boundaries in the extended lattice are _____.

(a) Silicates
(b) Carbenes
(c) Glass
(d) Ceramics

Answer: (d)

272. A common method used to grow a single crytsal where the non-solvent is layered on the top of crystallisation solvent is called _____.

(a) Vapour diffusion
(b) Interfacial method
(c) Sublimation
(d) X-ray diffraction

Answer: (a)

275. Modern materials formed from the hydrolysis of chlorosilanes in the presence of water is called _____.

(a) HDPE
(b) LDPE
(c) Polydimethylsiloxanes
(d) Carbosilanes

Answer: (c)

276. The alkaloid found in Sarracenia flava [illegible] ve[illegible] pitcher plant is _____.

(a) Piperine
(b) Coniine
(c) Nicotine
(d) Quinine

Answer: (b)

277. A preliminary confirmatory test that can be done for identification of flavonoids is _____.

(a) Ferric chloride test
(b) Sodium hydroxide test
(c) Silver mirror test
(d) Conc. Sulphuric acid test

Answer: (b)

278. Ninhydrin is used as detecting agent for amino acid in chromatography because _____.

(a) It is unreactive towards amino acids
(b) It is visible in UV light only
(c) It form a purple color complex with amino acids which makes it easy to distinguish
(d) It is eluted at same time as that of amino acids and detected at same time

Answer: (c)

279. Ionic solids are only soluble in _____.

(a) Non-polar solvents
(b) Extremely Polar solvents
(c) Mix of non-polar and polar solvents
(d) Supercritical solvents

Answer: (b)

280. Conversion between polymorphs can be observed by _____.

(a) Gravimetric analysis
(b) Tensiometer
(c) Differential scanning calorimeter
(d) NMR

Answer: (c)

Teaching Methodology

281. Name the drive that results due to the hormones in both males (testosterone hormones) & females (estrogen hormones), in differing quantities of every species.

(a) Social drive
(b) Hunger Drive
(c) Thirst Drive
(d) Sex drive

Answer: (d)

282. In which type of attention we attend e[illegible] to [illegible] stimuli, without any effort?

(a) Explicit attention
(b) Implicit attention
(c) Spontaneous attention
(d) Voluntary attention

Answer: (c)

283. Name the external factor of attention with which the speaker modulates his voice suddenly to attract the attention of his audience.

(a) Movement
(b) Change
(c) Contrast
(d) Novelty

Answer: (b)

284. What can be further divided to idiolect?

(a) Sub-dialect
(b) Phonetics
(c) Syntax
(d) Schema

Answer: (a)

285. _____ is a tool which makes the teaching-learning process interactive.

(a) Dialect
(b) Debate
(c) Questioning
(d) Sub-dialect

Answer: (c)

286. Which language is essential for literacy learning, and successful use of language is critical for student's well being.

(a) Standard Language
(b) Oral Language
(c) Home Language
(d) Written Language

Answer: (b)

287. Which theory was built upon the three explanatory models -genetic-biological factors, shaping and reinforcement of sex-typed behaviour, and imitation of same- sex parents or social learning?

(a) Androcentric theory
(b) Standpoint theory
(c) Intersectional theory
(d) Functionalism

Answer: (a)

288. Name the type of feminism that aims for individuals to use their own abilities and the democratic process to help women and men to become equal in the eyes of the law and in society.

(a) Marxist feminism
(b) Socialist feminism
(c) Radical feminism
(d) Liberal feminism

Answer: (d)

289. _____ feminists view gender inequalities as intrinsic to the capitalist system, which makes vast profits off women's unpaid labour in the home and underpaid labour in the workforce.

(a) Radical
(b) Reforming
(c) Socialist
(d) Liberal

Answer: (c)

290. Read the following options and select the appropriate option regarding its truthfulness.
Statement I: A diagnostic assessment expands the findings of an assessment with analysis of abilities and potentials with a further dimension: the future development of the concerned person, as well as the necessary conditions, time frame and limits.
Statement II: Formative assessment provides feedback and information during the instructional process, while learning is taking place, and while learning is occurring.

(a) Both statements are false
(b) Only Statement II is true
(c) Only Statement I is true
(d) Both statements are true

Answer: (b)

291. A learner's own perceptions or explanations for success or failure that determines the amount of effort will expend on that activity in the future. What is this called?

(a) Self - regulation
(b) Self - assessment
(c) Self - efficacy
(d) Self-attribution

Answer: (d)

292. In which of the following method the same tool or instrument is administered to the same sample on two different occasions?

(a) Test-Retest method
(b) Equivalent-forms method
(c) Split-Half method
(d) Kuder-Richardson Method

Answer: (a)

293. Read the following options and select the appropriate option regarding its truthfulness.
Statement I: Three important aspects of Universalisation of Elementary Education are access, enrolment and retention of all children in 6-14 years of age.
Statement II: Sarva Shiksha Abhiyan provides up to Rs.1200/- per child for integration of disabled children, as per specific proposals, per year.

(a) Both statements are false
(b) Both statements are true
(c) Only Statement I is true
(d) Only Statement II is true

Answer: (b)

294. The key objective of Sarva Shiksha Abhiyan is UEE. What does UEE stands for?

(a) Unitary Elementary Education
(b) Universalisation of Easy Education
(c) Universalisation of Elementary Education
(d) Union of Elementary Education

Answer: (c)

295. In which year the Government launched the Integrated Education for Disabled Children (IEDC) scheme?

(a) 1978
(b) 1972
(c) 1984
(d) 1974

Answer: (d)

296. In which stage an infant appears to be experimenting with uttering articulate sounds but does not produce any recognisable words?

(a) Babbling
(b) Mutter
(c) Gabble
(d) Fluency

Answer: (a)

297. What involves change in physical proportions as well as in overall stature and weight?

(a) Development
(b) Growth
(c) Hereditary
(d) Maturation

Answer: (b)

298. Who's theory of development considers the impact of external factors, parents and society on personality development from childhood to adulthood?

(a) Burrhus Frederic Skinner
(b) Sigmund Freud
(c) Jean Piaget
(d) Eric Erikson

Answer: (d)

299. _____ is an imitation of the real world experience.

(a) Facilitation
(b) Role Play
(c) Simulation
(d) Mantle of the Expert

Answer: (c)

300. Which approach to drama is generally preferred by a teacher initiating drama into the classroom for the first time?

(a) Non-linear approach
(b) Holistic drama
(c) Close ended drama
(d) Linear approach

Answer: (d)

Answer key

Answer key from the Delhi Subordinate Services Selection Board's official answer key for this sitting. "—" means the key gave none.

Mental Ability

1	**(b)**	2	**(a)**	3	**(a)**	4	**(d)**	5	**(b)**	6	**(c)**	7	**(a)**	8	**(b)**
9	**(c)**	10	**(a)**	11	**(c)**	12	**(a)**	13	**(c)**	14	**(a)**				

General Awareness

21	**(b)**	22	**(a)**	23	**(b)**	24	**(a)**	25	**(a)**	26	**(b)**	27	**(d)**	28	**(a)**
29	**(b)**	30	**(c)**	31	**(a)**	32	**(a)**	33	**(d)**	34	**(a)**	35	**(b)**	36	**(c)**
37	**(c)**	38	**(a)**	39	**(a)**	40	**(b)**								

Arithmetic Ability

41	**(a)**	42	**(b)**	43	**(a)**	44	**(a)**	45	**(a)**	46	**(a)**	47	**(a)**	48	**(b)**
49	**(c)**	50	**(b)**	51	**(a)**	52	**(a)**	53	**(b)**	54	**(b)**	55	**(d)**	56	**(a)**
57	**(a)**														

General English

61	**(b)**	62	**(b)**	63	**(c)**	64	**(d)**	65	**(d)**	66	**(d)**	67	**(b)**	68	**(b)**
69	**(b)**	70	**(a)**	71	**(a)**	72	**(a)**	73	**(d)**	74	**(c)**	75	**(a)**	77	**(b)**
78	**(a)**	80	**(d)**												

Discipline1

101	**(b)**	102	**(b)**	103	**(c)**	104	**(c)**	105	**(d)**	106	**(a)**	107	**(b)**	108	**(a)**
109	**(c)**	117	**(a)**	120	**(d)**										

Discipline2

121	**(b)**	122	**(c)**	123	**(c)**	132	**(c)**	133	**(b)**	138	**(c)**	139	**(c)**	140	**(b)**

Discipline3

143	**(c)**	145	**(a)**	147	**(c)**	149	**(b)**	151	**(c)**	152	**(a)**	153	**(a)**	154	**(a)**
155	**(b)**	156	**(b)**	157	**(b)**	159	**(b)**	160	**(c)**						

Discipline4

161	**(a)**	162	**(c)**	163	**(d)**	168	**(a)**	170	**(d)**	175	**(b)**	176	**(d)**	177	**(d)**

Discipline5

183	**(c)**	184	**(a)**	185	**(c)**	186	**(d)**	188	**(c)**	190	**(d)**	191	**(b)**	192	**(a)**
194	**(c)**	196	**(b)**												

Discipline6

201	**(b)**	204	**(a)**	205	**(d)**	206	**(b)**	207	**(c)**	208	**(c)**
210	**(d)**	213	**(a)**	214	**(d)**	216	**(d)**	217	**(d)**	218	**(b)**
219	**(d)**	220	**(c)**								

Discipline7

221	**(c)**	222	**(b)**	224	**(b)**	225	**(d)**	227	**(b)**	235	**(a)**
237	**(d)**	238	**(b)**								

Discipline8

241	**(c)**	245	**(b)**	248	**(d)**	253	**(b)**	254	**(b)**	255	**(a)**
256	**(b)**	258	**(a)**	260	**(d)**						

Discipline9

264	**(c)**	265	**(d)**	266	**(c)**	268	**(a)**	269	**(c)**	270	**(d)**
272	**(a)**	275	**(c)**	276	**(b)**	277	**(b)**	278	**(c)**	279	**(b)**
280	**(c)**										

Teaching Methodology

281	**(d)**	282	**(c)**	283	**(b)**	284	**(a)**	285	**(c)**	286	**(b)**
287	**(a)**	288	**(d)**	289	**(c)**	290	**(b)**	291	**(d)**	292	**(a)**
293	**(b)**	294	**(c)**	295	**(d)**	296	**(a)**	297	**(b)**	298	**(d)**
299	**(c)**	300	**(d)**								