PREVIOUS YEAR PAPER

DSSSB Laboratory Attendant 2022 — 22 March 2022, Shift 2

DSSSB Other Posts · 22 March 2022 · Shift 2

141 of the paper's 220 questions · +1 for a correct answer, −0.25 for a wrong one · 120 minutes

Left out of the original paper: 79 (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 22 March 2022, Shift 2. 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-other-posts/previous-year-papers/dsssb-other-posts-2022-laboratory-attendant-22-mar-shift-2/

Mental Ability

1. Identify the INCORRECT term in the following series.
STU, TVX, VYB, XCG, CHM

(a) VYB
(b) CHM
(c) XCG
(d) STU

Answer: (c)

2. Select the combination of letters that when sequentially placed in the blanks of the given series will complete the series.
AB_ _DE_BBC_ _ _BBCD_

(a) BCADEAE
(b) BCEAEAD
(c) EDAEABC
(d) ADEAEBC

Answer: (a)

3. Four pairs of letter-clusters have been given, out of which three are alike in some manner and one is different. Select the pair that is different.

(a) ABING : HOJCB
(b) NILTA : BUMJO
(c) TULLK : LMMVU
(d) HBTRE : ESUCI

Answer: (d)

4. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.
RVZD : HLPT :: CGKO : ?

(a) STAE

(b) SVZD

(c) SWAE

(d) TXBF

Answer: (c)

5. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.
JSRBYT : TYBJSR :: KSLETD : ?

(a) DLSTEK

(b) CRSTEK

(c) DSRTEK

(d) DTEKSL

Answer: (d)

6. In a code language, 'BABBER' is written as 'YZYYVI'. How will 'ROARER' be written in that language?

(a) IILZIV

(b) ILZIVI

(c) IIILZV

(d) IVILZI

Answer: (b)

7. In a code language, 'BUBBLE' is written as 'BLUЬBE'. How will 'LOTAUS' be written in that language?

(a) TUOLAS

(b) TOULAS

(c) TUOLSA

(d) TOULSA

Answer: (a)

8. Six friends — Bholu, Gudiya, Kachnar, Bhorik, Lalita and Bhanu — are sitting on a straight line and are facing south. Bhorik is not at any end.
Gudiya is sitting to the immediate left of Lalita. Bholu is sitting second to the left of Kachnar. Gudiya is sitting between Lalita and Bhorik. Bhanu is not at the left end. Kachnar is sitting between Bhorik and Lalita. Who is sitting at the left end?

(a) Gudiya

(b) Bholu

(c) Lalita

(d) Kachnar

Answer: (b)

9. Six people travelling in a coach are related to each other. P is a female and is married to Q. T is S's son. S is Q's brother. V is a widower and is the father-in-law of P. U is S's sister. How is V related to T?

(a) Grandfather

(b) Grandmother

(c) Brother-in-law

(d) Brother

Answer: (a)

10. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.
Statements:
No boys are singers.
No singers are dancers.
Conclusions:
I.Some singers are boys.
II.No dancer can ever be boys.

(a) Only conclusion I follows

(b) Only conclusion II follows

(c) Both conclusions I and II follow

(d) Neither conclusion I nor II follows

Answer: (d)

11. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.
Statements:
All actors are jokers.
No joker is a woman.
Some women are flexible.
Conclusions:
I.Some flexible can be jokers.
II.Some women are actors.

(a) Only conclusion I follows

(b) Only conclusion II follows

(c) Both conclusions I and II follow

(d) Neither conclusion I nor II follows

Answer: (a)

12. Select the number from among the given options that can replace the question mark (?) in the following series.
7, 16, 34, 70, ?, 286, 574

(a) 142
(b) 241
(c) 138
(d) 168

Answer: (a)

13. Select the number from among the given options that can replace the question mark (?) in the following series.
6, 10, 18, 35, 68, 126, ?, 363

(a) 234
(b) 189
(c) 220
(d) 225

Answer: (c)

15. Aahat is driving her car to her grandmother's home. She starts from her home towards the east and covers 3 km. Then, she turns left and drives 9 km. She then turns left and drives 15 km to reach her grandmother's home. What is the shortest distance between her home and her grandmother's home?

(a) 17.5 km
(b) 22 km
(c) 15 km
(d) 12 km

Answer: (c)

16. Romila started from her home to school. She started towards the north and walked for 30 m. Then, she turned right and walked 45 m. She then turned right to walk 45 m. From there, she turned left and walked 5 m. At last, she turned left and walked 15 m to reach her school. In which direction is her school from her home?

(a) North
(b) South
(c) East
(d) West

Answer: (c)

General Awareness

21. Which of the following statements is INCORRECT?

(a) Mumps is caused by a virus.
(b) Viruses never replicate under any circumstances.
(c) Viruses cannot reproduce on their own.
(d) Polio is caused by a virus.

Answer: (b)

22. With reference to taxonomic categories, the term 'Amphibia' is a/an _____.
    (a) order
    (b) class
    (c) phylum
    (d) family
    Answer: (b)

23. A/An _____ converts electrical energy into mechanical energy.
    (a) solar cell
    (b) electric cell
    (c) electric motor
    (d) electric oven
    Answer: (c)

24. Sikkim is India's first state to _____.
    (a) table a paperless budget
    (b) introduce the panchayat system
    (c) declare itself as fully organic
    (d) implement GST
    Answer: (c)

25. Which of the following lakes lies between the Gre imalayas and the Pir Panjal Range?
    (a) Dal Lake
    (b) Pushkar Lake
    (c) Tsomgo (Tsongmo/Changu) Lake
    (d) Lonar Lake
    Answer: (a)

26. The word Jaina (Jain) comes from the term Jina, meaning _____.
    (a) conqueror
    (b) martyr
    (c) leader
    (d) preacher
    Answer: (a)

27. Gautamiputra Shri Satakarni was a ruler of the _____ dynasty.
    (a) Chola
    (b) Chera
    (c) Satavahana
    (d) Pandya
    Answer: (c)

28. A vivid description of _____, also known as jotedars, is given in Francis Buchanan's survey of the Dinajpur district in North Bengal.

(a) British administrative officers
(b) village headmen
(c) rich peasants
(d) farm labourers

Answer: (c)

29. Muhammad Bin Qasim who invaded India in the eighth century was a general of the _____ Caliphate.

(a) Umayyad
(b) Ottoman
(c) Rashidun
(d) Abbasid

Answer: (a)

30. David Julius and Ardem Patapoutian were jointly awarded the Nobel Prize 2021 in _____.

(a) Physics
(b) Chemistry
(c) Literature
(d) Medicine

Answer: (d)

31. Mumbai ranks _____ on the Safe City Index is d by the Economist Intelligence Unit in August 2021.

(a) 50th
(b) 48th
(c) 45th
(d) 42nd

Answer: (a)

32. Article _____ of the Constitution of India deals with composition of the Council of States (Rajya Sabha).

(a) 78
(b) 79
(c) 80
(d) 81

Answer: (c)

33. Whom among the following can be appointed as the Chairperson of Lokpal as per the Lokpal and Lokayuktas Act 2013?

(a) A member of the Legislature of any State or Union territory

(b) A Judge of the Supreme Court

(c) A member of any Panchayat or Municipality

(d) A member of Parliament

Answer: (b)

34. 'Tamasha', a folkdance, belongs to which state?

(a) Madhya Pradesh

(b) Maharashtra

(c) Uttar Pradesh

(d) Chhattisgarh

Answer: (b)

35. The Kamakhya Goddess Temple is situated in _____.

(a) Uttar Pradesh

(b) Assam

(c) Bihar

(d) West Bengal

Answer: (b)

36. Which policy of the government helps it to adjus' spending levels and tax rates to influence the economy?

(a) Economic Policy

(b) Fiscal Policy

(c) Monetary Policy

(d) Trade Policy

Answer: (b)

37. NBFC stands for:

(a) Non-Banking Functional Code

(b) Non-Banking Functional Company

(c) Non-Banking Financial Company

(d) Non-Banking Financial Code

Answer: (c)

38. Naomi Osaka is associated with

(a) Badminton

(b) Tennis

(c) Shot Put

(d) Swimming

Answer: (b)

39. Name the biggest (in terms of seating capacity) international cricket stadium in world.

(a) Melbourne Cricket Ground

(b) Eden Park

(c) Lord's Cricket Ground

(d) Narendra Modi Stadium

Answer: (d)

40. Who won the gold medal of women's 200m individual Medley in the 73rd Glenmark Senior National Aquatic Championship 2019 held at Bhopal?

(a) Kenisha Gupta

(b) Apeksha Fernandes

(c) Richa Mishra

(d) Manna Patel

Answer: (c)

General English

61. Select the option that is appropriate for the blank.
Some people have very _____ teeth. They cannot eat or drink anything that is cold.

(a) nervous

(b) sensible

(c) careful

(d) sensitive

Answer: (d)

62. Choose the correct antonym of the word 'i. ce' from the following:

(a) Happiness

(b) botheration

(c) irritant

(d) offense

Answer: (a)

65. Choose the correct homonym pair to be filled in the following sentence:
The doctor tried in _____to stop the blood oozing out of the cut ___.

(a) vein, vain

(b) vane, vein

(c) vain, vein

(d) vein, vane

Answer: (c)

66. Identify the segment in the sentence, which contains the grammatical error.
My grandmother/ learnt/ to knit/ at six years old.

(a) My grandmother
(b) learnt
(c) to knit
(d) at six years old.

Answer: (d)

67. Identify the segment in the sentence, which contains the grammatical error.
The child ran/ among the road/ unmindful of/ the heavy traffic.

(a) The child ran
(b) among the road
(c) unmindful of
(d) the heavy traffic

Answer: (c)

68. Choose the most appropriate option to fill in the blanks.
My sister has been working very hard _____ because she has her exams next month.

(a) shortly
(b) lately
(c) lastly
(d) largely

Answer: (b)

69. Select the misspelt word.

(a) Tally
(b) Torchure
(c) Tangy
(d) Tutor

Answer: (b)

70. Select the correctly spelt word of the following:

(a) Reliev
(b) Releive
(c) Releve
(d) Relieve

Answer: (d)

71. Select one word for the following group of words:
Assemblage of animals of a region.

(a) Fauna
(b) Group
(c) Herd
(d) Pride

Answer: (a)

72. Select the most appropriate meaning of the idiom or phrase given.
Be on cloud nine

(a) Be extremely happy

(b) Have a special dream

(c) Float in the clouds dreaming

(d) Travel at a very altitude in an aircraft

Answer: (a)

73. Select the most appropriate meaning of the idiom:
Neck of the woods

(a) the middle of a dense forest

(b) a narrow ravine

(c) the area or neighborhood where one lives

(d) A secret bunker managed by the local government a secret place in a jungle

Answer: (c)

74. Parts of a sentence are given in jumbled order. Arrange the parts in the right order to form a meaningful sentence.
P. that every particle of atmosphere should be conserved
Q. we all depend on soil, water and air,
R. to reduce the natural calamities
S. so it is of vital importance

(a) QRSP

(b) RPQS

(c) SQRP

(d) QSPR

Answer: (d)

75. Parts of a sentence are given in jumbled order. Arrange the parts in the right order to form a meaningful sentence.
P. and so all these factors are read by psychologists in depth
Q. and attitude, which definitely effects our later life;
R. even the friends and society play vital role in our life
S. the role of family in upbringing is very crucial in shaping our adult behavior

(a) RPQS

(b) SQRP

(c) SPRQ

(d) RSPQ

Answer: (b)

77. Complete the following sentence:
The author capitulated and joined the emoji-using herd because apart from time and tide, _____ waits for no man.

(a) Bankruptcy
(b) Privilege
(c) Technology
(d) Selfishness

Answer: (c)

78. Select the most appropriate meaning of the idiom:
Driving me up the wall

(a) To make someone extremely angry
(b) To chase someone up a steep hill
(c) To bicker with someone and destroy the atmosphere
(d) To drive on the ramparts of a medieval fort.

Answer: (a)

79. Which option is closest in meaning to the following word?
Squiggle

(a) Wriggle
(b) Squirm
(c) Scrawl
(d) Brawl

Answer: (c)

Physics 1

101. Two point charges A and B are separated by a distance r in vacuum. The force exerted on charge B by charge A is proportional to r n where n is:

(a) +0.5
(b) −0.5
(c) +2
(d) −2

Answer: (d)

102. The electric field due to uniformly charged infinite plane sheet at a point at distance r from the sheet is:

(a) independent of r
(b) proportional to (r) −1/2
(c) proportional to (r) – 1
(d) proportional to (r) – 2

Answer: (a)

103. A parallel plate capacitor stores a charge of 4.0 C at 10 V. How much energy is stored in the capacitor?

(a) 20 J

(b) 40 J

(c) 200 J

(d) 400 J

Answer: (a)

104. Which of the following properties is exhibited by Nichrome, an alloy of nickel, iron and chromium?

(a) A strong dependence of resistivity with temperature

(b) A very weak dependence of resistivity with temperature

(c) A negative dependence of resistivity with temperature

(d) No dependence of resistivity with temperature

Answer: (b)

105. A current of 2 A is maintained in a conductor. What is the amount of charge that flows across a cross-section of the conductor in one minute?

(a) 1 C

(b) 2 C

(c) 60 C

(d) 120 C

Answer: (d)

106. Two batteries, one with EMF of 12 V a[illegible]n in[illegible]al resistance of 1 Ω and the other with an EMF of 12 V and internal resistance of 2 Ω, are co[illegible] in parallel. This combination is then connected across a 6 Ω resistor. What is the current in the 6 Ω resistor?

(a) 1.4 A

(b) 1.6 A

(c) 1.8 A

(d) 2.2 A

Answer: (c)

108. A loop carrying current I and consisting of N turns, each of area A, is placed in a uniform magnetic field B such that the plane of the loop makes an angle θ with B. What is the magnitude of the torque acting on the loop?

(a) (1/2) N IAB

(b) NIAB sinθ

(c) NIAB

(d) NIAB cosθ

Answer: (b)

110. Consider a tightly bound 100 turns circular coil of radius 4 cm carrying a current of 2.5 A. The magnitude of magnetic field at a point on the axis of the coil 3.0 cm from the coil's centre is close to:

(a) 5.0 × 10 −4 T

(b) 1.0 × 10 −3 T

(c) 2.0 × 10 −3 T

(d) 5.0 × 10 −3 T

Answer: (c)

112. A square coil of side 3.0 cm is wrapped with 2000 turns of wire. It is placed with its plane perpendicular to a magnetic field which increases from 0 to 0.20 T during an interval of 1 sec. What is the value of the EMF induced in the coil?

(a) 0.036 V

(b) 0.36 V

(c) 0.18 V

(d) 3.6 V

Answer: (b)

113. Which of the following is used in a CT scan?

(a) Infrared waves

(b) X-rays

(c) Ultraviolet rays

(d) Gamma rays

Answer: (b)

114. A gamma ray has a wavelength of 1.0 × 10 −4 m. What will be its frequency?

(a) 3.0 × 10 21 Hz

(b) 3.0 × 10 20 Hz

(c) 3.0 × 10 19 Hz

(d) 3.0 × 10 18 Hz

Answer: (a)

116. In a Young's double slit experiment, a bright fringe occurs at a point on the screen whenever waves from two slits differ in distance travelled by mλ, where m is:

(a) ¼

(b) ½

(c) ¾

(d) 1

Answer: (d)

117. Consider the diffraction due to a single slit of width a, illuminated with light of wavelength λ. Let L and N be the points on the two edges of the slit and P, a point on the screen. A first minimum will be formed at P if the path difference (NP —LP) is:

(a) λ/4

(b) λ/2

(c) 3λ/4

(d) λ

Answer: (d)

118. In a Young's double slit experiment, the slits are separated by 0.04 mm and the screen is placed 1.2 m away. The distance between the central bright fringe and the fourth bright fringe is measured to be 7.2 cm. What is the wavelength of light used in the experiment?

(a) 460 nm

(b) 520 nm

(c) 580 nm

(d) 600 nm

Answer: (d)

119. In an alpha decay, the mass number of the product nucleus (daughter nucleus) is _____ less than that of the decaying nucleus (parent nucleus).

(a) one

(b) two

(c) three

(d) four

Answer: (d)

Physics 2

121. What is the energy equivalent of 10 g of a substance?

(a) 3 × 10 5 J

(b) 3 × 10 6 J

(c) 3 × 10 14 J

(d) 9 × 10 14 J

Answer: (d)

122. When we dope Si with _____, we get an n-type semiconductor.

(a) In

(b) B

(c) Sb

(d) Al

Answer: (c)

123. What is the energy gap between the valence and conduction bands of silicon, at room temperature?

(a) About 0.72 eV

(b) About 1.1 eV

(c) About 5.9 eV

(d) About 7.7 eV

Answer: (b)

124. In a full-wave rectifier circuit, p-sides of two diodes are connected to the ends of the _____ transformer. The n-sides of the diodes are connected together and the output is taken between this common point of diodes and the midpoint of the _____ of the transformer.

(a) primary, primary

(b) secondary, secondary

(c) secondary, primary

(d) primary, secondary

Answer: (b)

127. A charge Q of 1.0 nC is placed at point (3 cm, 0) and another charge Q of 2.0 nC is placed at point (0, −4 cm). Let i and j be the unit vectors in 1 2
x- and y- directions, respectively. The force exerted by Q on Q is:
1 2

(a) —(2.16 μN) i — (2.88 μN) j

(b) —(4.32 μN) i — (5.76 μN) j

(c) (2.16 μN) i + (2.88 μN) j

(d) (4.32 μN) i + (5.76 μN) j

Answer: (b)

128. Consider a conductor of length L and uniform area of cross section A, made of a material of resistivity ρ. Let a current density of magnitude j be maintained in the conductor and let E be the magnitude of the electric field. Then:

(a) ρ = E/j

(b) ρ = Ej

(c) ρ = j/E

(d) ρ = 1/(E j)

Answer: (a)

129. Which of the following substances is diamagnetic?

(a) Copper

(b) Sodium

(c) Aluminium

(d) Calcium

Answer: (a)

130. A current of 0.40 A is maintained in positive y-direction in a 25 cm long conductor lying along y-axis. A magnetic field B = (1.0 mT) i + (2.0 mT) k exists in the region. i, j and k are unit vectors along x-axis, y-axis and z-axis, respectively. The force acting on the conductor is:

(a) —(0.20 mN) i + (0.10 mN) k

(b) (0.20 mN) i — (0.10 mN) k

(c) —(0.10 mN) i + (0.20 mN) k

(d) (0.10 mN) i + (0.20 mN) k

Answer: (b)

131. Two coils A and B are arranged parallel to each other. When the current in coil A increases at the rate of 10 A/s and current in coil B is zero, the induced emf in coil B is 40 mV. The mutual inductance of the two coils is:

(a) 0.25 mH

(b) 0.50 mH

(c) 4.0 mH

(d) 0.4 H

Answer: (c)

132. A microwave has a frequency of 6.0 × 10 10 Hz. Its wavelength is:

(a) 0.5 mm

(b) 5.0 mm

(c) 5.0 cm

(d) 50 cm

Answer: (b)

133. An object is placed on the axis of a conc ror at a point beyond C. The image formed is:

(a) real and enlarged

(b) virtual and enlarged

(c) real and diminished

(d) virtual and diminished

Answer: (c)

135. When we dope Ge with a pentavalent element, four of its electrons bond with the four Ge neighbours while the fifth electron remains weakly bound to its parent atom. The energy required to set this electron free is about:

(a) 0.01 eV

(b) 0.05 eV

(c) 0.10 eV

(d) 0.50 eV

Answer: (a)

136. A charge Q of 10 μC is placed at point (16 cm, 0) and another charge Q of 20 μC is placed at point (0, 12 cm). Let i and j be the unit vectors in 1 2
x- and y- directions. The force exerted by Q on Q is:
2 1

(a) (36 N) i — (27 N) j

(b) (36 N) i + (27 N) j

(c) (72 N) i —(54 N) j

(d) (72 N) i + (54 N) j

Answer: (a)

137. Consider two cells of emf ε and ε with internal resistances r and r , respectively. The two cells are connected in parallel by connecting their 1 2 1 2
positive terminals together and connecting their negative terminals together. The combination is equivalent to a single cell with emf given by:

(a) (ε r + ε r)/(r + r) 1 1 2 2 1 2

(b) (ε r + ε r)/(r + r) 1 2 2 1 1 2

(c) (ε + ε)/(r + r) 1 2 1 2

(d) (ε + ε)/(r r) 1 2 1 2

Answer: (b)

138. A current of 0.80 A is maintained in positive y-direction in a 30 cm long conductor lying along y-axis. A magnetic field B = (1.0 mT) i + (5.0 mT) k exists in the region. i, j and k are unit vectors along x-axis, y-axis and z-axis, respectively. The force acting on the conductor is:

(a) (1.2 mN) i + (0.24mN) k

(b) (1.2 mN) i — (0.24 mN) k

(c) (0.24 mN) i — (1.2 mN) k

(d) (0.24 mN) i + (1.2 mN) k

Answer: (b)

139. An infrared wave has a wavelength of 0.04 mm. Its frequency is:

(a) 7.5 × 10 10 Hz

(b) 7.5 × 10 11 Hz

(c) 7.5 × 10 12 Hz

(d) 7.5 × 10 13 Hz

Answer: (c)

140. An object is placed on the axis of a concave mirror at C. The image is formed _____ and is _____.

(a) between F and C; erect

(b) at C; inverted

(c) beyond C; inverted

(d) behind the mirror; erect

Answer: (b)

Chemistry 1

141. Which of the following occupy the lattice points in a crystal of HI?

(a) H atoms and I atoms

(b) HI molecules

(c) H + ions and I – ions

(d) H molecules and I molecules 2 2

Answer: (b)

142. What is the total number of voids in an FCC unit cell?

(a) 4

(b) 6

(c) 8

(d) 12

Answer: (d)

143. A blood cell will shrink when it is kept in:

(a) a hypotonic solution

(b) a hypertonic solution

(c) an isotonic solution

(d) pure water

Answer: (b)

144. On adding acetone to methanol, some of the hydrogen bonds between methanol molecules break. Which of the following is true for a specific composition of the acetone-methanol mixture?

(a) It will form a minimum boiling azeotrope and show positive deviation from Raoult's law.

(b) It will form a maximum boiling azeotrope and show positive deviation from Raoult's law.

(c) It will form a minimum boiling azeotrope and show negative deviation from Raoult's law.

(d) It will form a maximum boiling azeotrope and show negative deviation from Raoult's law.

Answer: (a)

145. In which of the following situations will an electrochemical cell behave like an electrolytic cell?

(a) E = 0 cell

(b) E > E cell ext

(c) E > E ext cell

(d) E = E cell ext

Answer: (c)

146. What are the products formed at the two electrodes when an aqueous solution of NaCl is electrolysed using Pt electrodes?

(a) Sodium metal at cathode and chlorine gas at anode

(b) Hydrogen gas at cathode and chlorine gas at anode

(c) Sodium metal at cathode and oxygen gas at anode

(d) Hydrogen gas at cathode and oxygen gas at anode

Answer: (b)

147. The rate constant for a first-order reaction is 60 s −1 . How much time will it take for the initial concentration of the reactant to be reduced to 1/20 t *h* of its value?

(a) 0.012 s

(b) 5.5 s

(c) 33.89 s

(d) 0.049 s

Answer: (d)

148. Consider the following reaction:
2A + B → C + D
The rate of this reaction becomes 18 times the original value when the concentration of A is doubled and the concentration of B is increased three times. Which of the following is most likely the differential rate equation for this reaction?

(a) −d[R]/dt = k [A] 2 [B]

(b) −d[R]/dt = k [A][B]

(c) −d[R]/dt = k [A] 3 [B]

(d) −d[R]/dt = k [A][B] 2

Answer: (d)

149. The formation of micelles takes place only under certain conditions of temperature and concentration. Which of the following are the correct conditions for micelle formation?

(a) Above Kraft temperature and below critical mic e concentration

(b) Below Kraft temperature and above critical mi e concentration

(c) Below Kraft temperature and below critical m lle concentration

(d) Above Kraft temperature and above tical celle concentration

Answer: (d)

150. The colloidal system in which phase and dispersion medium are both liquids is known as-

(a) a gel

(b) an emulsion

(c) a sol

(d) a foam

Answer: (b)

151. A silver iodide sol is prepared by adding a dilute solution of AgNO to a diluted solution of KI. Which of the following is true about the 3
Helmholtz layer formed in this sol?

(a) Ag + ions form the fixed layer and I − ions form the diffused layer.

(b) I − ions form the fixed layer and K + ions form the diffused layer.

(c) I − ions form the fixed layer and Ag + ions form the diffused layer.

(d) K + ions form the fixed layer and I − ions form the diffused layer.

Answer: (b)

152. Which of the following statements is true about elements of group 13 of the Modern Periodic Table?

(a) Compounds of these elements in their trivalent state act as Lewis bases.

(b) Compounds of these elements in their trivalent state act as Lewis acids due to the presence of vacant d-orbitals.

(c) The tendency of compounds of these elements in their trivalent state to behave as Lewis acid decreases down the group.

(d) Compounds of these elements in +3 oxidation state are more ionic than their compounds in +1 oxidation state.

Answer: (c)

153. Which of the following is the correct reason for electrical conductivity shown by graphite?

(a) Presence of delocalised π – electrons over the entire layer

(b) Presence of one unpaired electron on each carbon atom

(c) Presence of weak forces between successive layers

(d) Presence of dangling bonds in its structure

Answer: (a)

154. Which of the following forces are NOT involved in the stabilisation of 2 0 and 3 0 structures of proteins?

(a) Hydrogen bonding

(b) Peptide bonds

(c) Disulphide bonds

(d) Electrostatic forces of attraction

Answer: (b)

155. Phosphodiester bonds are present between wnich carbon atoms of pentose sugars in nucleotides?

(a) 5′ and 3′

(b) 1′ and 5′

(c) 5′ and 5′

(d) 1′ and 3′

Answer: (a)

156. Which of the following statements is NOT true about the characteristic properties of f-block elements?

(a) Zr and Hf have almost the same atomic radii as a consequence of Lanthanoid contraction.

(b) Eu 2+ is a strong oxidant whereas Tb 4+ is a strong reductant.

(c) Actinoid contraction is greater from element to element than Lanthanoid contraction.

(d) Actinoids show a greater range of oxidation states than Lanthanoids.

Answer: (b)

157. Which of the following ions are diamagnetic in nature?
(i) Sc +
(ii) Cu +
(iii) Ti 2+
(iv) Zn 2+

(a) (i) , (iii) and (iv)
(b) (i) , (ii) and (iii)
(c) (iii) and (iv)
(d) (ii) and (iv)

Answer: (d)

159. Which of the following coordination compounds has the maximum value of magnetic moment?

(a) [Fe(H O)] 3+ 2 6
(b) [NiCl] 2− 4
(c) [Co(H O)] 3+ 2 6
(d) [Fe(NH)] 2+ 3 6

Answer: (a)

160. To which class of alcohols does 2-methylcyclohex-2-en-1-ol belong?

(a) 2 o , allylic
(b) 1 o , vinylic
(c) 2 o , alkylic
(d) 3 o , allylic

Answer: (a)

Chemistry 2

161. Which of the following methods can be used to prepare 4-methoxyacetophenone?

(a) Friedel-Crafts methylation of 4-hydroxyacetophenone
(b) Friedel-Crafts acetylation of cresol
(c) Friedel-Crafts acetylation of anisole
(d) Friedel-Crafts methylation of cresol

Answer: (c)

162. Which of the following is formed when an aldehyde reacts with two equivalents of a monohydric alcohol in the presence of dry HCl?

(a) An oxime
(b) A semicarbazone
(c) An acetal
(d) A hydrazone

Answer: (c)

163. Which of the following tests can be used to distinguish between pentan-2-one and pentan-3-one?

(a) Lucas test
(b) Iodoform test
(c) Fehling's test
(d) 2,4-DNP test

Answer: (b)

164. Which of the following compounds will have the highest boiling point?

(a) Propan-1-amine
(b) N-methylethanamine
(c) N,N-dimethylmethanamine
(d) Isopropyl amine

Answer: (a)

165. An organic compound 'A' having molecular formula C H N on reaction with NaNO and HCl, followed by hydrolysis, gives another organic 4 11 2
compound 'B' which forms a pleasant smelling compound on reaction with acetic acid in the presence of sulphuric acid. What is the IUPAC name of 'A'?

(a) N-methylpropan-1-amine
(b) N-methylpropan-2-amine
(c) N,N-dimethylethanamine
(d) 2-methylpropan-1-amine

Answer: (d)

166. The coordination number of 2-D hexago[illegible]ed packing (HCP) is:

(a) 2
(b) 4
(c) 6
(d) 8

Answer: (c)

167. A solution containing one gram of non-volatile solute 'X' dissolved in 100 g of benzene freezes at 5.1°C. The molar mass of solute 'X' in g is _____. (Cryoscopic constant for benzene is 5.1 K kg/mol and freezing point of benzene is 5.5°C.)

(a) 248
(b) 128
(c) 54
(d) 100

Answer: (b)

168. A solution of copper sulphate is electrolysed for 5 minutes with a current of 3 amperes. The mass of copper deposited at the cathode is _____.
(Molar mass of Cu is 63 u.)

(a) 2.94 g

(b) 6.30 g

(c) 3.15 g

(d) 0.294 g

Answer: (d)

169. What will be the concentration of reactant in zero order reaction after half an hour, if its initial concentration is 0.15 M and rate constant is 0.2 M hr -1 ?

(a) 0.05 M

(b) 0.10 M

(c) 0.005 M

(d) 0.15 M

Answer: (a)

170. Which of the following will form micelles?

(a) Sulphur and gold sol

(b) Proteins and enzymes

(c) Starch and cellulose

(d) Soaps and detergents

Answer: (d)

171. The correct order of electronegativity [illegible]arbo[illegible]amily is:

(a) C > Si < Pb

(b) C < Si < Pb

(c) C < Pb > Si

(d) Si > C > Pb

Answer: (a)

172. Which of the following is an oxidising agent?

(a) Yb 2+

(b) Eu 2+

(c) Ce 4+

(d) Sm 4+

Answer: (c)

173. Which of the following about the bonding in metal carbonyls is INCORRECT?

(a) M-C bond in metal carbonyls exhibit σ and π characters.

(b) σ-orbital is formed by donating loan pair of electrons of carbonyl carbon in vacant orbital of metal.

(c) Π-orbital is formed by donating loan pair of electrons from metal to carbonyl.

(d) In [Co (CO)] each Co exhibits 4 bonds four carbons of carbonyl groups. 2 8

Answer: (d)

174. Which of the following carbonyl compounds does NOT undergo aldol condensation?

(a) Ethanal

(b) Butanal

(c) Benzaldehyde

(d) Acetone

Answer: (c)

175. Which of the following hydroxy groups containing amino acid is obtained from cheese?

(a) Proline

(b) Tyrosine

(c) Serine

(d) Lysine

Answer: (b)

176. 2 g of non-volatile solute is dissolved in 106 g of benzene. The lowered freezing point of benzene 0.40 K. What is the molar mass of solute in g/mol? (Cryoscopic constant for benzene is 5.12 K kg/mol.)

(a) 158

(b) 256

(c) 78

(d) 153

Answer: (a)

177. Which of the following ions has highest floccul g power for coagulation of positive sol?

(a) Phosphate ion

(b) Ferro cyanide ion

(c) Sulphate ion

(d) Chloride ion

Answer: (b)

178. Which of the following about f-block elements is NOT true?

(a) All actinides are radioactive.

(b) La 3+ and Lu 3+ ions are colourless.

(c) The Yb 2+ and Lu 3+ are diamagnetic.

(d) La 3+ and Ce 4+ are paramagnetic.

Answer: (d)

179. The correct order of ionization enthalpies of B, Al and Ga is:

(a) B > Al > Ga

(b) B > Ga > Al

(c) Ga > B > Al

(d) Al > B > Ga

Answer: (b)

180. In a first order reaction A→B the time required for completion of 90% reaction is 1 hour. The time required for completion of 99.9% reaction is _____.

(a) 2 hours
(b) 3 hours
(c) 10 hours
(d) 4 hours

Answer: (b)

Optional Subject(Attempt one of two)

201. Under the epithelium of the human ovary tissue, which two broad regions are found?

(a) Stroma and follicles
(b) Cortex and medulla
(c) Spongy tissue and vascular tissue
(d) Follicular tissue and connective tissue

Answer: (b)

202. What gives the signal for rupture of a Graafian follicle in the human ovary?

(a) Peak levels of LH
(b) High levels of FSH and LH
(c) Falling levels of oestrogen
(d) Rising levels of progesterone

Answer: (a)

203. Which method of contraception is NC[illegible]ital[illegible]or a young woman who is preparing for her first sexual relation?

(a) Coitus interruptus
(b) Lactational amenorrhea
(c) Intrauterine device
(d) Implant of a hormone-releasing skin patch

Answer: (b)

204. All vegetative propagules in plants are _____.

(a) modified leaves or stems
(b) modified stems
(c) modified stems or modified roots
(d) modified roots, leaves or stems

Answer: (d)

205. What is another name for Thymine?

(a) 2-hydroxy uracil
(b) Vitamin B1
(c) 5-methyl uracil
(d) Vitamin B6

Answer: (c)

207. Which of the following is a sex-linked recessive disorder?

(a) Sickle-cell anaemia

(b) Haemophilia

(c) Thalassemia

(d) Phenylketonuria

Answer: (b)

208. For biological control of malaria, we must:

(a) get vaccinated

(b) use mosquito nets

(c) grow larvivorous fish in ponds

(d) apply mosquito-repellent creams

Answer: (c)

209. What is the difference between benign and malignant tumours?

(a) Benign tumours remain small in size (only a few mm in diameter).

(b) Benign tumours do not contain abnormal transformed cells.

(c) Benign tumours start at only one location in the body.

(d) Benign tumours are caused by oncogenic viruses.

Answer: (b)

210. One practice to stop the spread of HIV AIDS is to keep the blood in blood banks free of HIV. What is the best way to achieve this?

(a) By pasteurizing the collected blood to inactivate all viruses

(b) To add anti-retroviral drugs to the blood banks to kill the virus

(c) To make each donor undergo an HIV-ELISA test before they can donate blood

(d) To test each donated unit for anti-HIV antibodies and discard +ve samples

Answer: (d)

211. _____ is the primary operation in the primary treatment of sewage.

(a) Filtration

(b) Fermentation

(c) Decantation

(d) Decomposition

Answer: (a)

212. Antibiotics are made by microbes. Antibiotics kill microbes. How does the antibiotic-producing microbe, for example, Penicillium notatum, escape death by the antibiotic– penicillin– that it produces?

(a) Penicillium is not really a microbe; the mycelia are visible to the naked eye.

(b) Penicillin is made in an inactive form in the fungus; it is activated in the lab.

(c) Penicillin acts on prokaryotes while Penicillium is a eukaryote.

(d) Antibiotics act only on pathogenic microbes and Penicillium is not a pathogen.

Answer: (c)

213. _____ are enzymes that are also known as molecular scissors.

(a) Klenow fragments

(b) DNA ligases

(c) Terminal transferases

(d) Restriction endonucleases

Answer: (d)

214. How many six-base palindromes are present in the following sequence? (Hint: Write the complementary sequence. Some palindromes may be overlapping.)5′-TGAATTCCCGGGTATACGG-3′

(a) None

(b) One

(c) Two

(d) Three

Answer: (d)

215. What happens in a continuous cell culture system?

(a) There is a constant inflow of nutrients that is matched by the removal of the cells and the culture medium.

(b) There is continuous monitoring of temperature and pH of the culture medium.

(c) The culture medium is continually stirred using paddles to keep the culture well-mixed.

(d) The cells are made to divide continuously at the maximum possible rate of cell division.

Answer: (a)

216. What part of the cotton plant does the larva of otton bollworm attack, which causes a big loss to farmers?

(a) Roots

(b) Stem

(c) Leaves

(d) Fruit

Answer: (d)

217. Identify the FALSE statement.

(a) We cannot know the genetic diversity of any species, as new varieties are being created by humans and natural factors.

(b) The exact value of species diversity is not known, as there might be many undiscovered species of a given organism.

(c) It is hard to estimate genus diversity, as there might be many related genera of any living being under study.

(d) The value of ecological diversity is greater in complex and heterogeneous ecosystems compared to monoculture.

Answer: (c)

218. Which pair of factors increases population density as the values of the factors rise?

(a) Emigration and mortality

(b) Mortality and natality

(c) Immigration and natality

(d) Natality and emigration

Answer: (c)

219. In which ecosystem can you find the highest degree of stratification?

(a) A wheat field

(b) A tropical forest

(c) The Sahara Desert

(d) The River Ganga

Answer: (b)

220. Which of the following processes is NOT a component of an ecosystem?

(a) Decomposition

(b) Nutrient utilization and release

(c) Gross and net productivity

(d) Energy cycling

Answer: (c)

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	**(c)**	2	**(a)**	3	**(d)**	4	**(c)**	5	**(d)**	6	**(b)**	7	**(a)**	8	**(b)**		
9	**(a)**	10	**(d)**	11	**(a)**	12	**(a)**	13	**(c)**	15	**(c)**	16	**(c)**				

General Awareness

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

General English

61	**(d)**	62	**(a)**	65	**(c)**	66	**(d)**	67	**(c)**	68	**(b)**	69	**(b)**	70	**(d)**		
71	**(a)**	72	**(a)**	73	**(c)**	74	**(d)**	75	**(b)**	77	**(c)**	78	**(a)**	79	**(c)**		

Physics 1

101	**(d)**	102	**(a)**	103	**(a)**	104	**(b)**	105	**(d)**	106	**(c)**	108	**(b)**	110	**(c)**		
112	**(b)**	113	**(b)**	114	**(a)**	116	**(d)**	117	**(d)**	118	**(d)**	119	**(d)**				

Physics 2

121	**(d)**	122	**(c)**	123	**(b)**	124	**(b)**		**(b)**	128	**(a)**	129	**(a)**	130	**(b)**		
131	**(c)**	132	**(b)**	133	**(c)**	135		6	**(a)**	137	**(b)**	138	**(b)**	139	**(c)**		
140	**(b)**																

Chemistry 1

141	**(b)**	142	**(d)**	143	**(b)**	144	**(a)**	145	**(c)**	146	**(b)**	147	**(d)**	148	**(d)**		
149	**(d)**	150	**(b)**	151	**(b)**	152	**(c)**	153	**(a)**	154	**(b)**	155	**(a)**	156	**(b)**		
157	**(d)**	159	**(a)**	160	**(a)**												

Chemistry 2

161	**(c)**	162	**(c)**	163	**(b)**	164	**(a)**	165	**(d)**	166	**(c)**	167	**(b)**	168	**(d)**		
169	**(a)**	170	**(d)**	171	**(a)**	172	**(c)**	173	**(d)**	174	**(c)**	175	**(b)**	176	**(a)**		
177	**(b)**	178	**(d)**	179	**(b)**	180	**(b)**										

Optional Subject(Attempt one of two)

201	**(b)**	202	**(a)**	203	**(b)**	204	**(d)**	205	**(c)**	207	**(b)**	208	**(c)**	209	**(b)**		
210	**(d)**	211	**(a)**	212	**(c)**	213	**(d)**	214	**(d)**	215	**(a)**	216	**(d)**	217	**(c)**		
218	**(c)**	219	**(b)**	220	**(c)**												