

Booklet Serial No. **20441****DO NOT BREAK THE SEAL OF THE BOOKLET UNTIL YOU ARE TOLD TO DO SO****SERIES : I****QUESTION BOOKLET****Subjects : English, General Knowledge, Mathematics and Science****Full Marks : 300****Time Allowed : 2½ Hours***Read the following instructions carefully before you begin to answer the questions.***INSTRUCTIONS TO CANDIDATES**

1. This Booklet contains **150 questions** to be answered in a separate OMR Answer Sheet using Black Ballpoint Pen in the following four Parts :

Part—A : English	: 25 questions
Part—B : General Knowledge	: 25 questions
Part—C : Mathematics	: 50 questions
Part—D : Science	: 50 questions

2. All questions are compulsory.
3. You will be supplied the Answer Sheet separately by the Invigilator. You must complete the details of particulars asked for.
4. Answer must be shown by completely blackening the corresponding circle in the Answer Sheet against the relevant question number by Black Ballpoint Pen. OMR Answer Sheet without marking Series shall not be evaluated.

Example :

Suppose the following question is asked :

The Capital of Meghalaya is

- (A) Guwahati
(B) Kohima
(C) Shillong
(D) Delhi

You will have four alternatives in the Answer Sheet for your response corresponding to each question of the Question Booklet as below :

(A) (B) (C) (D)

In the above illustration, if your chosen response is alternative (C), i.e., Shillong, then the same should be marked on the Answer Sheet by blackening the relevant circle with a Black Ballpoint Pen only as below :

(A) (B) (C) (D)

The example shown above is the only correct method of answering.

5. Answer the questions as quickly and as carefully as you can. Some questions may be difficult and others easy. Do not spend too much time on any one question.
6. There will NOT be any negative marking for wrong answers.
7. The Answer Sheet must be handed over to the Invigilator before you leave the Examination Hall.
8. No Rough Work is to be done on the Answer Sheet. Space for Rough Work has been provided in the Question Booklet.

SEAL

PART—A : ENGLISH

(Marks : 50)

Each question carries **2** marks

Directions (Q. Nos. 1–6) :

In the following questions, out of the four alternatives given, choose the one word that is spelt 'INCORRECTLY'.

1. (A) Maintain
(B) Maiden
(C) Incomfortable
(D) Unhappy
2. (A) Slippers
(B) Plecard
(C) Banner
(D) Monument
3. (A) Separate
(B) Accommodate
(C) Definitely
(D) Embarass
4. (A) Callibrate
(B) Accelerate
(C) Proliferate
(D) Insinuate
5. (A) Egilitarian
(B) Freedom
(C) Development
(D) Justice

6. (A) Vocifirous
(B) Affliction
(C) Episcopal
(D) Innocuous

Directions (Q. Nos. 7 and 8) :

The following sentences have been split into four segments. Identify the segment that contains a grammatical error.

7. Had you / not reached in time / we will have / lost our lives.
(A) Had you
(B) lost our lives
(C) not reached in time
(D) we will have
8. Rahul sings / very sweet / when he is / in a good mood.
(A) very sweet
(B) when he is
(C) in a good mood
(D) Rahul sings

Directions (Q. Nos. 9 and 10) :

Select the most appropriate meaning of the given idioms.

9. Be hard up

- (A) Find it very difficult to wake up early
- (B) Have very little money
- (C) Unable to calculate
- (D) Have difficulty in climbing stairs

10. Damocles sword

- (A) A blunt sword
- (B) A closely impending disaster
- (C) A sword of Damocles
- (D) A disputed sword

Directions (Q. Nos. 11–20) :

In the following questions, sentences are given with blanks to be filled in with appropriate and suitable words or phrases. Four alternatives are suggested for each question. Choose the correct alternative out of the four.

11. The Union Budget is likely to be presented on March 26th, two days ahead of the _____ date.

- (A) critical
- (B) conventional
- (C) suitable
- (D) convenient

12. I am sorry _____ the mistake.

- (A) from
- (B) for
- (C) with
- (D) at

13. He _____ her that she would pass.

- (A) insured
- (B) ensured
- (C) assumed
- (D) assured

14. Your father _____ to worry. I am a very careful driver.

- (A) needn't
- (B) none
- (C) can't
- (D) doesn't

15. _____ his being innocent of the crime, the judge sentenced him to one-year imprisonment.

- (A) In spite of
- (B) In case of
- (C) On account of
- (D) In the event of

16. It is a story of two men and a batch of _____ armoured cars.

- (A) deceased
- (B) diseased
- (C) decrepit
- (D) defeated

17. It is not _____ for a man to be confined to the pursuit of wealth.

- (A) healthy
- (B) easy
- (C) possible
- (D) common

18. Although there is _____ gunfire, there is no stiff resistance to the revolutionary army.

- (A) bitter
- (B) meagre
- (C) continuous
- (D) sporadic

19. _____ pollution control measures are expensive, many industries hesitate to adopt them.

- (A) Although
- (B) However
- (C) Because
- (D) Despite

20. The _____ chosen for construction of the building is in the heart of the city.

- (A) cite
- (B) slight
- (C) sight
- (D) site

Directions (Q. Nos. 21-25) :

Choose the opposite meaning of the underlined words.

21. His short but pointed speech was applauded by all sections of the audience.

- (A) disapproved
- (B) misunderstood
- (C) praised
- (D) welcomed

22. I worship him as my ideal figure.

- (A) deify
- (B) despise
- (C) abuse
- (D) neglect

23. His smooth manners endeared him to everyone.

- (A) hard
- (B) rough
- (C) polite
- (D) tough

24. His arrogant behaviour made him successful in his trade.

- (A) flattering
- (B) humble
- (C) proud
- (D) happy

25. I suppose you should authorize him to do so.

- (A) pulverize
- (B) prescribe
- (C) detach
- (D) proscribe

PART—B : GENERAL KNOWLEDGE

(Marks : 50)

Each question carries 2 marks

26. Chandrayaan-2 was India's ambitious second lunar mission, launched in 2019 by the Indian Space Research Organization (ISRO). What was the name of the lander used in the Chandrayaan-2 mission?
- (A) Pragyan
(B) Vikram
(C) Rover
(D) Mangalyaan
27. What is the name of the virus that causes COVID-19?
- (A) SARA-CoV-1
(B) MERS-CoV
(C) SARS-CoV-2
(D) H1N1
28. What does NITI in NITI Aayog stand for?
- (A) National Institute of Transformative Innovation
(B) National Institution for Transforming India
(C) National Initiative for Technical Implementation
(D) National Initiative for Transforming Infrastructure
29. In which year did India launch the 'Goods and Services Tax (GST)' to streamline trade and commerce?
- (A) 2015
(B) 2016
(C) 2017
(D) 2018
30. The largest public sector undertaking in the country is
- (A) Railways
(B) Airways
(C) Roadways
(D) Iron and Steel plants
31. The National Education Policy 2020 aims to achieve which of the following by 2030?
- (A) 50% gross enrollment ratio in higher education
(B) 100% literacy rate
(C) 100% enrollment in primary schools
(D) Full access to digital education for all students
32. Which company is known for creating the first successful touch-screen smartphone?
- (A) Apple
(B) Samsung
(C) BlackBerry
(D) Nokia

33. The world's first 5G mobile network was launched by which country?
- (A) Japan
(B) China
(C) South Korea
(D) Malaysia
34. Droupadi Murmu is the first person from which community to become the President of India?
- (A) Dalit
(B) Tribal (Adivasi)
(C) Sikh
(D) Muslim
35. Who is the current Chief Justice of India?
- (A) Uday Lalit
(B) Kapil Sibal
(C) Bhushan Ramkrishna Gavai
(D) Sharad Arvind Bobde
36. The father of Indian missile technology is
- (A) Dr. Homi Bhabha
(B) Dr. Chidambaram
(C) Dr. U. R. Rao
(D) Dr. A. P. J. Abdul Kalam
37. The study of heavenly bodies is known as
- (A) Astrophysics
(B) Astronautics
(C) Astrology
(D) Astronomy
38. Which human organ is responsible for detoxifying harmful substances in the body?
- (A) Kidneys
(B) Lungs
(C) Liver
(D) Pancreas
39. Which of the following plants is important in sericulture?
- (A) Cassia
(B) Legumes
(C) Pea
(D) Mulberry
40. What is the Capital of Telangana?
- (A) Patna
(B) Ranchi
(C) Hyderabad
(D) Gandhinagar
41. Chandigarh is the Capital city of which two States?
- (A) Punjab and Haryana
(B) Chhattisgarh and Odisha
(C) Uttar Pradesh and Uttarakhand
(D) Karnataka and Jharkhand

42. Which of the following movements is associated with the Gandhi-Irwin Pact?
- (A) Rowlatt
 - (B) Civil Disobedience
 - (C) Non-Cooperation
 - (D) Quit India
43. Who introduced dual government system?
- (A) Robert Clive
 - (B) Warren Hastings
 - (C) Lord Cornwallis
 - (D) Lord Wellesley
44. Who invited Gandhi to Champaran in 1917?
- (A) Raj Kumar Shukla
 - (B) Duleep Singh
 - (C) Rajesh Kumar
 - (D) Rajendra Prasad
45. The first newspaper in India was
- (A) *Sambad Kaumudi*
 - (B) *Bengal Gazette*
 - (C) *Mirat-ul-Akhbar*
 - (D) *Pioneer*
46. In which one of the following islands of India is an active volcano found?
- (A) Car Nicobar Island
 - (B) Nancowry Island
 - (C) Barren Island
 - (D) Mayabunder Island
47. What is the name of the weak zone of the earth crust?
- (A) Seismic
 - (B) Cosmic
 - (C) Formic
 - (D) Anemic
48. Who among the following wrote the book, *The Indian War of Independence*?
- (A) V. D. Savarkar
 - (B) Dadabhai Naoroji
 - (C) G. K. Gokhale
 - (D) M. K. Gandhi
49. Global agreement in specific control strategies to reduce the release of ozone-depleting substances, was adopted by the
- (A) Rio de Janeiro Conference
 - (B) Montreal Protocol
 - (C) Kyoto Protocol
 - (D) Vienna Convention
50. The Constitution of India borrowed the scheme of federation from the Constitution of
- (A) USA
 - (B) Canada
 - (C) United Kingdom
 - (D) Ireland

PART—C : MATHEMATICS

(Marks : 100)

Each question carries 2 marks

51. Ten years ago, A was half of B's age. If the ratio of their ages is 3 : 4, what will be the sum of their present ages?
(A) 45 years (B) 30 years
(C) 40 years (D) 35 years
52. Father is aged three times more than his son. After 8 years, he would be two and half times of his son's age. After further 8 years, how many times he would be of his son's age?
(A) 2 (B) 3
(C) 4 (D) 5
53. A father said to his son, "I was as old as you are now at the time of your birth." If the father's age is 38 years now, the son's age five years back was
(A) 38 years
(B) 33 years
(C) 19 years
(D) 14 years
54. The sum of two numbers is 12 and their product is 35. What is the sum of the reciprocals of these numbers?
(A) $\frac{12}{35}$
(B) $\frac{1}{35}$
(C) $\frac{1}{12}$
(D) $\frac{1}{47}$
55. The product of two numbers is 120 and the sum of their squares is 289. The sum of the numbers is
(A) 21
(B) 22
(C) 23
(D) 24
56. The HCF of two numbers is 11 and their LCM is 7700. If one of the numbers is 275, then the other is
(A) 318
(B) 308
(C) 283
(D) 279
57. The greatest number of four digits which is divisible by 15, 25, 40 and 75 is
(A) 9000
(B) 9400
(C) 9600
(D) 9800
58. Which of the following numbers is completely divisible by 45?
(A) 181560
(B) 202860
(C) 331145
(D) 2033555

59. If one-third of one-fourth of a number is 15, then three-tenths of that number is
- (A) 35
(B) 36
(C) 45
(D) 54
60. Which one of the following cannot be the square of a natural number?
- (A) 30976
(B) 30972
(C) 28561
(D) 75625
61. The average weight of 16 boys in a class is 50.25 kg and that of the remaining 8 boys is 45.15 kg. The average weight of all the boys in the class is
- (A) 42.25 kg
(B) 51.25 kg
(C) 48.55 kg
(D) 50.00 kg
62. The average age of 36 students in a group is 14 years. When teacher's age is included to it, the average is increased by 1. Find out the teacher's age in years.
- (A) 53
(B) 51
(C) 50
(D) 49
63. The average age of 5 boys in a class is 15 years. If 7 more boys are admitted to the class with average age of 12 years, and 3 of the existing boys leave the class with average age of 13 years, what will be the new average age of the boys of the class?
- (A) 13.1 years
(B) 13.2 years
(C) 13.3 years
(D) 13.4 years
64. What least number must be added to 1056, so that the sum is completely divisible by 23?
- (A) 2
(B) 3
(C) 18
(D) 21
65. A can do a work in 15 days and B in 20 days. If they work on it together for 4 days, then the fraction of the work that is left is
- (A) $\frac{1}{4}$
(B) $\frac{1}{10}$
(C) $\frac{7}{15}$
(D) $\frac{8}{15}$
66. A, B and C can do a work in 20 days, 30 days and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every third day?
- (A) 12
(B) 15
(C) 16
(D) 18

67. If A and B together can complete a piece of work in 15 days and B alone in 20 days, then A alone can complete the piece of work in
- (A) 60 days
(B) 45 days
(C) 40 days
(D) 30 days
68. 15 men can do a piece of work in 25 days. Find the time in which 20 men can do the same amount of work.
- (A) 18 days
(B) 19 days
(C) 20 days
(D) 21 days
69. An aeroplane covers a certain distance in 5 hours at a speed of 240 kmph. To cover the same distance in $1\frac{2}{3}$ hours, it must travel at a speed of
- (A) 300 kmph
(B) 360 kmph
(C) 600 kmph
(D) 720 kmph
70. A man completes a journey in 10 hours. He travels the first half of the journey at the rate of 21 kmph and the second half at the rate of 24 kmph. Find the total journey in km.
- (A) 220
(B) 224
(C) 230
(D) 234
71. The speed of an auto-rickshaw is 42 km/hr. It travels for 3 hours and 50 minutes. The distance travelled by it is
- (A) 161 km
(B) 171 km
(C) 116 km
(D) 151 km
72. Two ships are sailing in the sea on the two sides of a lighthouse. The angles of elevation of the top of the lighthouse is observed from the ships are 30° and 45° respectively. If the lighthouse is 100 m high, the distance between the two ships is
- (A) 173 m
(B) 200 m
(C) 273 m
(D) 300 m
73. The angle of elevation of a ladder leaning against a wall is 60° and the foot of the ladder is 4.6 m away from the wall. The length of the ladder is
- (A) 2.3 m
(B) 4.6 m
(C) 7.8 m
(D) 9.2 m
74. Reena took a loan of ₹ 1,200 with simple interest for as many years as the rate of interest. If she paid ₹ 432 as interest at the end of the loan period, the rate of interest is
- (A) 3.6%
(B) 6%
(C) 10%
(D) 18%

75. At what rate of compound interest per annum will a sum of ₹ 1,200 become ₹ 1,348.32 in 2 years?
 (A) 6% (B) 6.5%
 (C) 7% (D) 7.5%
76. Two students appeared at an examination. One of them secured 9 marks more than the other and his marks was 56% of the sum of their marks. The marks obtained by them are
 (A) 39, 30
 (B) 41, 32
 (C) 42, 33
 (D) 43, 34
77. The population of a town increased from 175000 to 262500 in a decade. The average percent increase of population per year is
 (A) 6.75% (B) 6%
 (C) 5% (D) 4.37%
78. A hall is 15 m long and 12 m broad. If the sum of the areas of the floor and the ceiling is equal to the sum of the areas of the four walls, then the volume of the hall is
 (A) 720 m^3
 (B) 900 m^3
 (C) 1200 m^3
 (D) 1800 m^3
79. The slant height of a right circular cone is 10 m and its height is 8 m. The area of its curved surface is
 (A) $40\pi \text{ m}^2$
 (B) $60\pi \text{ m}^2$
 (C) $80\pi \text{ m}^2$
 (D) $100\pi \text{ m}^2$
80. If $a - b = 3$ and $a^2 + b^2 = 29$, then the value of ab is
 (A) 10
 (B) 12
 (C) 15
 (D) 18
81. If $(a + b + 1) = 0$, then the value of $a^3 + b^3 + 1 - 3ab$ is
 (A) 0
 (B) 1
 (C) -1
 (D) 2
82. A piece of wire when bent to form a circle will have a radius of 84 cm. If the same wire is bent to form a square, the length of the side of the square is
 (A) 200 cm
 (B) 168 cm
 (C) 152 cm
 (D) 132 cm
83. What will be the area of a square if one of its diagonals is 7 m long?
 (A) 49 m^2
 (B) 49 cm^2
 (C) 24.5 m^2
 (D) 343 cm^2
84. If the difference between a two-digit number and a number obtained by interchanging the position of its digits is 36, what is the difference between the two digits of that number?
 (A) 3
 (B) 4
 (C) 5
 (D) 6

85. Evaluate $\frac{(2.39)^2 - (1.61)^2}{2.39 - 1.61}$.

- (A) 4
- (B) 6
- (C) 8
- (D) 10

86. The value of $\left[2\frac{1}{5} + 3\frac{3}{10} + 4\frac{4}{15} - 5\frac{7}{20}\right]$ is

- (A) $\frac{29}{15}$
- (B) $\frac{31}{12}$
- (C) $\frac{53}{12}$
- (D) $\frac{19}{12}$

87. If $x = \frac{\sqrt{3}+1}{\sqrt{3}-1}$ and $y = \frac{\sqrt{3}-1}{\sqrt{3}+1}$, then the value of $x^2 + y^2$ is

- (A) 15
- (B) 14
- (C) 13
- (D) 10

88. A sum of money is to be distributed among A, B, C and D in the proportion of 5 : 2 : 4 : 3. If C gets ₹ 1,000 more than D, what is B's share?

- (A) ₹ 500
- (B) ₹ 1,000
- (C) ₹ 1,500
- (D) ₹ 2,000

89. The ratio of ages of 3 people is 3 : 7 : 9. If the sum of their ages is 190 years, find the difference between the ages of the eldest and the youngest.

- (A) 50 years
- (B) 60 years
- (C) 30 years
- (D) 45 years

90. In a box, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that the ball is neither red nor green?

- (A) $\frac{1}{3}$
- (B) $\frac{3}{4}$
- (C) $\frac{7}{19}$
- (D) $\frac{8}{21}$

91. On selling 17 balls at ₹ 720, there is a loss equal to the cost price of 5 balls. The cost price of a ball is

- (A) ₹ 45
- (B) ₹ 50
- (C) ₹ 55
- (D) ₹ 60

92. Iadonlang purchased 20 dozens of toys at the rate of ₹ 375 per dozen. He sold each one of them at the rate of ₹ 33. What is his percentage of profit?

- (A) 3.4%
- (B) 4.5%
- (C) 5.6%
- (D) 6.7%

93. $\frac{(469+174)^2 - (469-174)^2}{(469 \times 174)} = ?$

- (A) 2
- (B) 4
- (C) 295
- (D) 643

94. The value of $\left\{ \frac{2}{13} \text{ of } \frac{3}{7} \text{ of } \frac{1}{9} \text{ of } 546 \right\}$ is

- (A) 6
- (B) 8
- (C) 3
- (D) 4

95. Among how many children may 175 mangoes and 105 oranges be equally divided?

- (A) 35
- (B) 40
- (C) 30
- (D) 45

96. The population of a city decreases from 25000 to 24500. The percentage of decrease is

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

97. If 18 binders could bind 900 books in 10 days, how many binders will be required to bind 660 books in 12 days?

- (A) 21
- (B) 14
- (C) 18
- (D) 11

98. If the side of an equilateral triangle is doubled, then how many times is its area increased?

- (A) 4
- (B) 8
- (C) 12
- (D) 16

99. Find the smallest five-digit number which is divisible by 36, 75 and 108.

- (A) 10200
- (B) 10600
- (C) 10800
- (D) 11000

100. The cost of 105 envelopes is ₹ 350. How many envelopes can be purchased for ₹ 100?

- (A) 25
- (B) 30
- (C) 35
- (D) 40

PART—D : SCIENCE

(Marks : 100)

Each question carries 2 marks

101. Trimethylamine $(\text{CH}_3)_3\text{N}$ is a
(A) 1° amine
(B) 2° amine
(C) 3° amine
(D) 4° amine
102. The reaction of ethyl bromide with NaI in dry acetone to give ethyl iodide is called
(A) Finkelstein reaction
(B) Swarts reaction
(C) Wurtz reaction
(D) Wurtz-Fittig reaction
103. The fact that a purine base always pairs through the hydrogen bonds with a pyrimidine base in the DNA double helix leads to
(A) the antiparallel nature
(B) the semi-conservative nature
(C) uniform width throughout DNA
(D) uniform length in all DNA
104. The correct IUPAC name of $[\text{Ni}(\text{CO})_4]$ is
(A) tetracarbonyl nickel (0)
(B) tetracarbonyl nickel (I)
(C) tetracarbonyl nickel (II)
(D) tetracarbonyl nickel (III)
105. The number of chromosomes in polar body of human is
(A) 23
(B) 46
(C) 21
(D) 1
106. Methanogenic bacteria are not found in
(A) rumen of cattle
(B) globular gas plant
(C) bottom of waterlogged paddy fields
(D) activated sludge
107. The correct order of boiling points for primary (1°), secondary (2°) and tertiary (3°) alcohols is
(A) $1^\circ > 2^\circ > 3^\circ$
(B) $2^\circ > 3^\circ > 1^\circ$
(C) $2^\circ > 1^\circ > 3^\circ$
(D) $3^\circ > 2^\circ > 1^\circ$
108. In semiconductor electronics, hole is
(A) an antiparallel electron
(B) a vacancy created when an electron leaves a covalent bond
(C) absence of free electron
(D) an artificially created hole
109. Lenz's law is in accordance with the law of conservation of
(A) energy
(B) charge
(C) momentum
(D) angular momentum
110. Which of the following has the highest biodiversity?
(A) South America
(B) South Africa
(C) Russia
(D) India

111. The value of Henry's law constant K_H
- increases with the increase of temperature
 - decreases with the increase of temperature
 - remains constant
 - first increases then decreases
112. Radio waves and visible light in vacuum have
- same velocity, same wavelength
 - different velocity, different wavelength
 - same wavelength, different velocity
 - same velocity, different wavelength
113. All genes located on the same chromosomes
- form different groups depending upon their relative distance
 - form one linkage group
 - will not form any linkage group
 - form interactive groups that affect the phenotype
114. S_N2 mechanism proceeds through the intervention of
- carbonium ion
 - transition state
 - free radical
 - carbanion
115. A complex involving dsp^2 hybridisation has
- a square planar geometry
 - a tetrahedral geometry
 - an octahedral geometry
 - a trigonal planar geometry
116. In a typical bisexual and hypogynous flower, the arrangement of floral whorls on the thalamus from the outermost to the innermost is
- calyx, corolla, androecium and gynoecium
 - calyx, corolla, gynoecium and androecium
 - gynoecium, androecium, corolla and calyx
 - androecium, gynoecium, corolla and calyx
117. The ratio of the peak and r.m.s. voltage at any instant of time from an AC source is
- 1 : 2
 - 2 : 1
 - 1 : $\sqrt{2}$
 - $\sqrt{2}$: 1
118. Keystone species deserve protection because these
- are capable of serving in harsh environmental condition
 - indicate presence of certain minerals in the soil
 - have become rare due to over-exploitation
 - play an important role in supporting other species
119. Rust is a mixture of
- FeO and $Fe(OH)_2$
 - FeO and $Fe(OH)_3$
 - Fe_2O_3 and $Fe(OH)_3$
 - Fe_3O_4 and $Fe(OH)_3$

120. An enzyme catalyzing the removal of nucleotides from the ends of DNA is
- endonuclease
 - exonuclease
 - DNA ligase
 - Hind-II
121. Two layers of cloth of equal thickness provide warmer covering than a single layer of cloth of double thickness because
- they have lesser thickness
 - they allow heat from the atmosphere to the body
 - they behave like a thermos
 - they enclose between them a layer of air
122. Which element **does not** show variable oxidation state?
- Sc
 - V
 - Fe
 - Hg
123. In KMnO_4 , oxidation state of Mn is
- +2
 - +4
 - +6
 - +7
124. An azeotropic solution of two liquids has boiling point lower than either of the two liquids when it
- shows no deviation from Raoult's law
 - shows a +ve deviation from Raoult's law
 - shows a -ve deviation from Raoult's law
 - is saturated
125. Bt cotton is **not**
- a GM plant
 - an insect resistant
 - a bacterial gene expressing system
 - resistant to all pesticides
126. The radius of innermost electron orbit of hydrogen atom is $5.3 \times 10^{-11} \text{ m}$. What are the radii of $n=2$ and $n=3$ orbits?
- 0.55 Å and 0.66 Å
 - 0.21 Å and 0.47 Å
 - 5.5 Å and 6.6 Å
 - 2.1 Å and 4.7 Å
127. Decomposers like fungi and bacteria are
- autotrophs
 - heterotrophs
 - saprotrophs
 - chemoautotrophs

128. Paleontological evidences for evolution refer to the

- (A) development of embryo
- (B) homologous organs
- (C) fossils
- (D) analogous organs

129. Consider the Arrhenius equation given below and mark the correct option :

$$k = Ae^{-\frac{E_a}{RT}}$$

- (A) Rate constant increases exponentially with increasing activation energy and decreasing temperature
- (B) Rate constant decreases exponentially with increasing activation energy and decreasing temperature
- (C) Rate constant increases exponentially with decreasing activation energy and decreasing temperature
- (D) Rate constant increases exponentially with decreasing activation energy and increasing temperature

130. The force of repulsion between two positive charges of magnitude 1 C each separated by a distance of 1 m in vacuum is

- (A) 1 N
- (B) 1.6×10^{-19} N
- (C) 9×10^9 N
- (D) 6.25×10^8 N

131. The autosomal disorder/disease in human is

- (A) colour blindness
- (B) haemophilia
- (C) Turner's syndrome
- (D) thalassemia

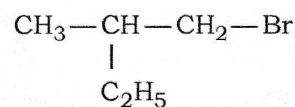
132. Biopiracy means

- (A) use of biopatents
- (B) thefts of plants and animals
- (C) stealing of bioresources
- (D) exploitation of bioresources without authentic permission

133. When phenol is treated with aqueous bromide solution, the product obtained is

- (A) 2-bromophenol
- (B) 4-bromophenol
- (C) a mixture of 2-bromophenol and 4-bromophenol
- (D) 2,4,6-tribromophenol

134. What is the correct IUPAC name of the following?



- (A) 1-bromo-2-ethyl propane
- (B) 1-bromo-2-ethyl-2-methyl ethane
- (C) 1-bromo-2-methyl butane
- (D) 2-methyl-1-bromobutane

135. A series LCR circuit having inductive reactance X_L and capacitive reactance X_C tuned to resonance the impedance is

(A) R

(B) $[R^2 + (X_L - X_C)^2]^{\frac{1}{2}}$

(C) $[R^2 + (X_L^2 - X_C^2)]^{\frac{1}{2}}$

(D) 0

136. A metallic plate exposed to white light emits electrons. For which of the following colours of light the stopping potential will be maximum?

(A) Blue

(B) Yellow

(C) Red

(D) Violet

137. Fe, Co and Ni are

(A) ferrimagnetic materials

(B) anti-ferromagnetic materials

(C) ferromagnetic materials

(D) diamagnetic materials

138. Denaturation of protein destroys

(A) primary structure of proteins

(B) secondary structure of proteins

(C) tertiary structure of proteins

(D) both secondary and tertiary structure of proteins

139. How many chromosomes are present in spermatids?

(A) 46

(B) 23

(C) 24

(D) 45

140. In which of the following types of viruses does reverse transcription occur?

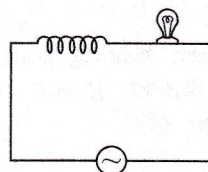
(A) CMV

(B) PMV

(C) TMV

(D) HIV

141. An iron-cored coil is connected in series with an electric bulb with an AC source as shown in the figure below :



When iron piece is taken out of the coil, the brightness of the bulb will

(A) decrease

(B) increase

(C) remain unaffected

(D) fluctuate

142. Prussian blue is obtained by mixing together aqueous solution of Fe^{3+} salt with

(A) ferricyanide

(B) ferrocyanide

(C) hydrogen cyanide

(D) sodium cyanide

- 143.** What is the mole fraction of a solute in 2.5 M aqueous solution?
- (A) 0.032
(B) 0.021
(C) 0.043
(D) 0.052
- 144.** Antibodies present in colostrum which protect the newborn from certain diseases is of
- (A) IgG type
(B) IgA type
(C) IgD type
(D) IgE type
- 145.** A person having genotype $I^A I^B$ would show blood group as AB. This is because of
- (A) pleiotropy
(B) co-dominance
(C) segregation
(D) incomplete dominance
- 146.** Magnification of an image by a convex lens is positive only when an object is placed
- (A) at its focus F
(B) between F and $2F$
(C) at $2F$
(D) between F and optical centre
- 147.** Which of the following has tetrahedral geometry?
- (A) $[\text{Ni}(\text{CN})_4]^{2-}$
(B) $[\text{Pd}(\text{CN})_4]^{2-}$
(C) $[\text{Pd}(\text{Cl})_4]^{2-}$
(D) $[\text{Ni}(\text{Cl})_4]^{2-}$
- 148.** Inheritance of skin colour in human is an example of
- (A) co-dominance
(B) incomplete dominance
(C) point mutation
(D) polygenic inheritance
- 149.** Spring is made of steel not of copper because
- (A) Young's modulus of elasticity of copper is more
(B) Young's modulus of elasticity of steel is less
(C) Young's modulus of elasticity of steel is more
(D) Bulk modulus of copper is less
- 150.** The linkage which holds various amino acid units in the primary structure of protein is
- (A) glycosidic linkage
(B) hydrogen bond
(C) peptide linkage
(D) ionic bond