

# Residential Coaching Academy

Aligarh Muslim University, Aligarh

CIVIL SERVICES COACHING ENTRANCE EXAMINATION-2017-18 (PAPER-1)

PARTICULARS TO BE FILLED IN BY THE CANDIDATE		QUESTION PAPER SERIES
Roll Number		<b>D</b>
Name of the Candidate		
Date of the Test		
Signature of the Candidate		

Time (Test Duration): 02 hours

Max. Marks: 200

## INSTRUCTIONS

- Complete all entries on the cover page and put your signature in the space provided.
- Use only Ball Point Pen (black/blue) for making entries in the Question Booklet and the OMR Answer Sheet.
- Candidate should also read carefully the instructions printed on the OMR Sheet before attempting to answer the questions.

1. The Question Booklet consists of **14 pages** (including cover sheet) and contains **100 questions**. Count the number of pages and questions before attempting the questions. Discrepancy, if any, must immediately be brought to the notice of the Invigilator.
2. All questions are compulsory and carry equal marks.
3. The time (test duration) as specified above shall be reckoned from the moment of distribution of the Question Booklets.
4. Blank space in the Question Booklet may be used for rough work.
5. Each question is followed by four alternative answers. Select only one answer, which you consider as the most appropriate. Shade the relevant circle against the corresponding question number on the OMR Answer Sheet.
6. **Question booklet series must be filled up in the OMR Answer sheet.**
7. Answer should **ONLY** be marked on the OMR Answer Sheet. No answer should be written or indicated on the Question Booklet.
8. **The candidate (he/she) shall hand over the OMR Answer Sheet to the Invigilator before leaving his/her seat.**
9. **ONE FOURTH (1/4) MARKS will be DEDUCTED FOR WRONG ANSWERS.**
10. **ANY ELECTRONIC GADGET INCLUDING ELECTRONIC WATCHES, MOBILE PHONES and CALCULATORS are NOT ALLOWED inside the examination hall.**

1. If a large amount of organic waste is dumped in a lake, its Biochemical Oxygen Demand (BOD) will:

- a) Decrease
- b) Increase
- c) Remains unchanged
- d) Can increase or decrease

2. Vishesh Palana Yojane, a Karnataka government scheme that was launched in 2010 and was recently in news, is aimed at which of the following?

- a) It is a scheme to ensure nutrition, education, care and support for HIV positive children
- b) It is a scheme for providing of adequate nutrition to pregnant women
- c) It is a scheme to educate blind children
- d) It is a scheme to ensure nutrition and education of Dalits and Muslims

3. Basava philosophy is most often associated with which of the following communities?

- a) Jains
- b) Buddhists
- c) Lingayats
- d) Brahmins

4. Which of the following statements are correct about INSV Tarini?

- 1. INSV Tarini is a 55-foot sailing vessel which has been built indigenously and was inducted in the Indian Navy in early 2017.
- 2. Six Indian Navy women officers are to circumnavigate the globe in INSV Tarini.
- 3. INSV Tarini is to be deconstructed to build tarmac roads and highways in India.

Choose from the codes given below:

- a) 1 and 2
- b) Only 1
- c) Only 2
- d) All of the above

5. Koel River which was recently in news for its reservoir project in Jharkhand is a tributary of which of the following rivers of India?

- a) Gandak
- b) Sone
- c) Ghaghara
- d) Koyna

6. Which of the following is not a vector borne disease?

- 1. Chikungunya
- 2. Dengue
- 3. Yellow Fever
- 4. Zika

Choose from the codes given below:

- a) 1 and 3
- b) Only 4
- c) All of the above
- d) None of the above

7. 'Garibsal', recently in news, is a name of which of the following:

- a) Train
- b) Airport
- c) Rice variety
- d) Dance form

8. Article 35A of the constitution of India pertains to which of the following?

- a) Acquisition of illegal properties in India
- b) Migrant laborers and their properties
- c) It empowers Indian parliament to define "permanent residents" of a state and provide special rights and privileges to those permanent residents
- d) It empowers the Jammu and Kashmir state's legislature to define

“permanent residents” of the state and provide special rights and privileges to those permanent residents

9. Consider the following statements regarding National Green Tribunal (NGT):

1. NGT can handle cases related to The Public Liability Insurance Act, 1991.
2. The Tribunal shall be bound by the procedure laid down under the Code of Civil Procedure, 1908.
3. It is a federal legislation enacted by the Parliament of India, under India's constitutional provision of Article 21.

Which of the above is NOT correct?

- a) Only 1
- b) Only 2
- c) 1 and 2
- d) 1, 2 and 3

10. Consider the following:

1. Photochemical Smog.
2. Acid Rains.
3. Death of vegetation.
4. Loss of biodiversity in aquatic ecosystem.
5. Damage to buildings.

Sulphur dioxide contributes to all of the problems mentioned above except:

- a) Only 1
- b) 1 and 2
- c) 3 and 5
- d) 2, 3 and 5

11. Consider the following

1. Durban Declaration and Program of Action.
2. Cancun Agreements.
3. Copenhagen Accord.
4. Bali Action Plan.

Which of the above includes commitments to reduce greenhouse gas emissions?

- a) 1, 2 and 4
- b) 1, 3 and 4
- c) 2 and 3
- d) All

12. Consider the following statements

1. The Biological Oxygen Demand (BOD) is the measure of organic matter present in the water.
2. Greater the BOD, lesser is the polluting potential.
3. Microbes in sewage treatment plants increases the BOD of the effluent.

Which of the above is/are NOT correct?

- a) 1 and 2
- b) 2 and 3
- c) Only 3
- d) 1 and 3

13. Soil acidification occurs due to:

1. Heavy Rainfall.
2. Application of Fertilisers.
3. Shifting Cultivation.

Select the correct answer from the codes given below:

- a) 1 and 2
- b) 1 and 3
- c) 2 and 3
- d) All of the above

14. The first outbreak of smallpox in the year 1755 was brought by sailors in

- a) Lisbon, Portugal
- b) Cape Town, South Africa
- c) Shanghai, China
- d) Colombo, Sri Lanka

15. Liberia was founded in

- a) 1820
- b) 1822
- c) 1827
- d) 1821

16. The railway and telegraph line was introduced in India in the year

- a) 1854
- b) 1852
- c) 1853
- d) 1855

17. The first Indian talkie named *Alam Ara*, made in 1931, was directed by

- a) Ardeshir Irani
- b) Dadasaheb Phalke
- c) C. Pullaiah
- d) Dadasaheb Torne

18. The second female head of government in the world was the prime minister of

- a) Israel
- b) Belgium
- c) India
- d) Sri Lanka

19. The Buckingham Canal is a canal running from

- a) Vijayawada to Villupuram
- b) Vijayawada to Cochin
- c) Cochin to Kozhikode
- d) Mumbai to Goa

20. Which one of the following National Highways is the longest?

- a) NH-2
- b) NH-7
- c) NH-8
- d) NH-15

21. Consider the following statements:

1. Igneous rocks are known as primary rocks.
2. Sedimentary rocks do not have layered accumulations.
3. Metamorphic rocks are formed from both igneous and sedimentary rocks.

Which of the above statements is/are correct?

- a) Only 1
- b) 1 and 3
- c) 1 and 2
- d) 1, 2 and 3

22. With reference to the earth's internal structure, consider the following statements:

1. The earth's crust is the outermost rigid solid part of the earth.
2. The crust-mantle boundary is called Mohorovicic discontinuity.
3. The outer core is solid and inner core is liquid.

Which of the above statements is/are correct?

- a) Only 1
- b) 1 and 3
- c) 1 and 2
- d) 1, 2, and 3

23. Consider the following statements:

1. The focus of an earthquake is the point on the surface directly above the location of actual rupture of rock.
2. The waves generated by an earthquake are seismic waves.
3. Intensity of an earthquake is measured on Richter scale.

Which of the above statements is/are correct?

- a) Only 1
- b) Only 2
- c) 1 and 2
- d) 1, 2 and 3

24. The correct sequence of increasing coalification is:

- a) Peat, lignite, bitumen, anthracite
- b) Peat, bitumen, lignite, anthracite
- c) Peat, lignite, graphite, bitumen
- d) Lignite, anthracite, bitumen, peat

25. Which is the correct order of abundance of water?

- a) River > groundwater > atmosphere
- b) Groundwater > atmosphere > river
- c) Atmosphere > river > groundwater
- d) Groundwater > river > atmosphere

26. Which one of the following currents flows equatorward?

- a) Gulf Stream
- b) Brazil Current
- c) Benguela Current
- d) Kuroshio Current

27. Considering the atmosphere from the surface to 200 km altitude, the coldest region would be found around:

- a) 16 km
- b) 50 km
- c) 80 km
- d) 140 km

28. During the solstices,

- a) noon rays of the Sun fall vertically over the equator
- b) noon rays of the Sun fall vertically only over the Tropic of Cancer
- c) noon rays of the Sun fall vertically either over 23.5 ° N or over 23.5 ° S latitude
- d) days are longer and nights are shorter in the northern hemisphere

29. Which one of the following pairs of islands is separated from each other by the 'Ten Degree Channel'?

- a) Sumatra and Java
- b) Maldives and Lakshadweep
- c) Nicobar and Sumatra
- d) Andaman and Nicobar

30. Consider the following crops:

- 1. Wheat
- 2. Groundnut

- 3. Rice
- 4. Cotton

Which of these are Kharif crops?

- a) 1 and 4
- b) 2 and 3
- c) 1, 2 and 3
- d) 2, 3 and 4

31. Which of the following differentiates Indian Parliamentary model from that of Westminster Model?

- 1. Prime Minister can be from either house of the Parliament
- 2. Non supremacy of the Parliament
- 3. No legal responsibility of the ministers

Select the correct answer using the codes given below:

- a) 1, 2 and 3
- b) 1 and 2
- c) 2 and 3
- d) 1 and 3

32. Which of the following Directive Principles was/were added to the Constitution through amendments?

- 1. To secure opportunities for healthy development of children.
- 2. Equal pay for equal work for men and women.
- 3. To promote equal justice and to provide free legal aid to the poor.

Select the correct answer using the codes given below:

- a) 1 and 2
- b) 1 and 3
- c) Only 3
- d) 1, 2 and 3

33. Preamble declares India as sovereign. What does this imply?

- 1. There is no authority above India and is free to conduct its own affair.

2. India can acquire a foreign territory or it can cede part of its territory in favor of a foreign state.

Select the correct answer using the codes given below:

- a) Only 1
- b) Only 2
- c) Both 1 and 2
- d) Neither 1 nor 2

34. Among all the committees of the Constituent Assembly, the most important committee was the Drafting Committee. Who among the following were NOT the members of the committee?

1. N. Gopaldaswamy Ayyangar
2. Syed Mohammad Saadullah
3. T. T. Krishnamachari
4. Dr K M Munshi

Choose the correct answer using the codes given below:

- a) 4 only
- b) 2 and 3 only
- c) 1 only
- d) All were the members

35. The 'August Offer' of 1940 accepted which of these important demands of the Indian National Congress leadership?

- a) Rejection of the idea of partition of India
- b) Establishing a system of provincial elections and giving them greater autonomy
- c) Constituent Assembly of India elected on the basis of adult franchise
- d) Withdrawal of involvement of Indian troops in the Second World War

36. Special provisions (under Part XXI) of the Constitution are applicable to the States of:

1. Maharashtra
2. Gujarat
3. Jharkhand
4. Chattisgarh
5. Andhra Pradesh

Select the correct answer using the codes given below:

- a) 1 and 2
- b) 3 and 4
- c) 1, 2 and 5
- d) 1, 2, 3, 4 and 5

37. The Indian constitution explicitly contains which of the following provisions for exercising direct democracy?

1. Referendum
2. Plebiscite
3. Recall
4. Initiative

Choose the correct answer using the codes given below:

- a) 1 and 2
- b) Only 1
- c) 3 and 4
- d) None of the above

38. The status of the Preamble of the Constitution has always been a question of debate in the country. The present opinion of the Supreme Court about the status of the Preamble is that:

- a) It is a part of the constitution but cannot be amended.
- b) It is a not part of the constitution and cannot be amended.
- c) It is a part of the constitution and can be amended.
- d) It is not a part of the constitution but can be amended.

39. As per the Constitution, which of the following is/are "fundamental in the governance" of the country?

1. Fundamental Rights
  2. Fundamental Duties
  3. Directive Principles of State Policy
- Preamble

Choose the correct answer using the codes given below:

- a) All of the above
  - b) 1, 2 and 3
  - c) 1 and 2
  - d) Only 3
40. Judicial review in India is based on the procedure established by law 'contained in the Indian Constitution (Article 21). What is meant by this principle?
- a) Courts can review a Parliamentary enactment if it is not reasonable.
  - b) Courts can review a Parliamentary enactment if it goes against the goals and objectives enshrined in the constitution.
  - c) Courts can review a Parliamentary enactment only if it was not enacted following the right procedure.
  - d) None of the above
41. In the Drafting Committee of the Constitution of India, two other lawyers serving with Dr. B. R Ambedkar were from:
- a) Madras
  - b) Calcutta and Madras
  - c) Calcutta and Delhi
  - d) None of the above
42. The first Director-General of Archaeological Survey of India was
- a) Alexander Cunningham
  - b) Alexander Dowe
  - c) Alexander Williams
  - d) Michael Cunnigham
43. In the early Buddhist and Jaina texts, *Mahajanapadas* meant
- a) Big cities
  - b) Sixteen states

- c) Four provinces
- d) Market towns

44. How many major political centres did the Mauryan Empire have?

- a) Four
- b) Five
- c) Six
- d) Three

45. Who among the Mughal rulers consciously set out to make Persian the leading language of the Mughal court?

- a) Akbar
- b) Babur
- c) Shah Jahan
- d) Humayun

46. The author of the *Badshah Namah* is

- a) Abul Fazl
- b) Abdul Qadir Badayuni
- c) Abdul Hamid Lahori
- d) Abdul Haq Dehlavi

47. *Resident* was the designation of a representative of the Governor General who lived in a state which was

- a) under direct British rule
- b) not under direct British rule
- c) partially under British rule
- d) none of the above

48. In the 1937 elections to the provincial legislatures, out of 84 reserved constituencies in the Punjab, the Muslim League could capture only

- a) seven seats
- b) five seats
- c) four seats
- d) two seats

49. In relation to partition literature Syed Waliullah is associated with which language?

- a) Urdu
- b) Bengali

- c) Pashto  
d) Sindhi
50. After the annexation of Awadh, the first British revenue settlement, known as the Summary Settlement of 1856, reduced *taluqdars'* hold over 67 percent of total number of villages in Awadh (in pre-British times) to
- 40 percent
  - 39 percent
  - 42 percent
  - None of the above
51. The painting titled "Relief of Lucknow" was painted by
- Thomas James Barker
  - William Jones Barker
  - Thomas Jones Barker
  - William James Barker
52. Which of the following is not covered under Bharat Nirman?
- Rural Housing
  - Rural Electrification
  - Rural Water Supply
  - Rural Hospitals
53. The RBI issues currency notes under the:
- Fixed Fiduciary System
  - Maximum Fiduciary System
  - Minimum Reserve System
  - Proportional Reserve System
54. Interest on Public Debt is a part of:
- Transfer payments by the enterprises
  - Transfer payments by the government
  - National Income
  - Interest payment by households
55. Service Tax was introduced in India for the first time in the year
- 1993-94
  - 1990-91
  - 1991-92
  - 1994-95
56. MODVAT is related to:
- Sales Tax
  - Wealth Tax
  - Income Tax
  - Excise Tax
57. Capital formation in an economy depends on:
- Total income
  - Total demand
  - Total savings
  - Total production
58. If two commodities are complements, then their cross-price elasticity is:
- Zero
  - Positive
  - Negative
  - Imaginary number
59. Who among the following coined the phrase "Hindu rate of growth" for Indian economy?
- A. K. Sen
  - Manmohan Singh
  - Raj Krishna
  - Montek Singh Ahluwalia
60. Which one of the following Five Year Plans of India had growth with social justice and equality for achieving its goal as the main focus?
- VI
  - VII
  - VIII
  - IX
61. A boy is trying to cover a distance of 100m up a ramp. He takes a jump forward and covers 2m, but every time he jumps forward he also slips backwards by 1m. In all, how many jumps would be required to cover the distance?



- a) 99  
b) 100  
c) 98  
d) None of these
62. The ratio between the rates of travelling of A and B is 2:3 and therefore A takes 10 minutes more than the time taken by B to reach a destination. If A had walked at double the speed, the time taken by him to reach the destination would have been:  
a) 25 minutes  
b) 15 minutes  
c) 30 minutes  
d) 20 minutes
63. Five friends A, B, C, D and E are standing in a row facing south but not necessarily in the same order. Only B is between A and E, C is immediate right to E and D is immediate left to A. on the basis of above information, which of the following statements is definitely true?  
a) B is to the left of A.  
b) D is third to the left of E.  
c) B is to the right of E.  
d) A is second to the left of C.
64. A spends 90% of his salary and B spends 85% of his salary. But savings of both are equal. Find the income of B, if sum of their incomes is ₹5000.  
a) ₹2000  
b) ₹2500  
c) ₹3000  
d) ₹3500
65. Three bells toll at intervals of 12, 15 and 18 minutes respectively. If all the three bells toll together at 8 a.m., when will they toll together again?  
a) 9 a.m.  
b) 10 a.m.  
c) 11 a.m.  
d) 1 p.m.
66. In a book, containing 20 pages, one sheet is missing. Sum of the page numbers of the remaining pages is 195. The numbers written on both the sides of the missing sheet must be:  
a) 5, 6  
b) 6, 7  
c) 7, 8  
d) 8, 9
67. In a class, among the passed students, Amisha is twenty-second from the top and Sajal, who is 5 ranks below Amisha, is thirty-fourth from the bottom. All the students from the class have appeared for the exam. If the ratio of the students who passed in the exam to those who failed is 4: 1 in that class, how many students are there in the class?  
a) 60  
b) 75  
c) 90  
d) None of these
68. Sathya goes 5 km towards North from a fixed point. Then he goes 3 km after turning to his right. After this he goes 5 km turning to his right. In the end he goes 4 km after turning to his left. How far and in what direction is he now from the fixed point?  
a) 4 km, West  
b) 7 km, East  
c) 9 km, East  
d) 7 km, West
69. Suresh wrote the numbers 100 to 300 once and started counting all the 2s written down. How many 2s has he written down?  
a) 130  
b) 140  
c) 128  
d) 136
70. The cost of Type-1 rice is ₹ 15 per kg and Type-2 rice is ₹ 20 per kg. If both Type-1 and Type-2 are mixed in the ratio of 2:3,

then the price per kg of the mixed variety of rice is:

- a) ₹ 18
- b) ₹ 18.50
- c) ₹ 19
- d) ₹ 19.50

71. 512 passengers get into a train at the first station. At every subsequent station half the passengers get down and no passengers get in. If only one passenger is left in the train to get down at the last station, at how many stations did the train stop in between the source and destination station?

- a) 10
- b) 8
- c) 9
- d) 7

72. In an election between two candidates, 20% of votes were declared invalid. The first candidate got 480 votes which were 60% of the total valid votes. The total number of votes enrolled in that election was:

- a) 450 votes
- b) 3000 votes
- c) 3200 votes
- d) None of these

73. In how many different ways can the letters of the word SOFTWARE be arranged in such a way that the vowels always come together?

- a) 13440
- b) 1440
- c) 360
- d) None of these

74. Ram arrives at a Bank 15 minutes earlier than scheduled time if he drives his car at 42 km/hr. He arrives 5 minutes late if he drives his car at 35 km/hr. The distance of the Bank from his starting point is:

- a) 60 km
- b) 70 km

- c) 90 km
- d) 140 km

75. Two pipes can fill a cistern in 3 hours and 4 hours respectively and a waste pipe can empty it in 2 hours. If all the three pipes are kept open, then the tank will be filled in:

- a) 5 hours
- b) 8 hours
- c) 10 hours
- d) 12 hours

76. A sum invested in simple interest becomes double in 10 years. How much time will it take to become 6 times the investment?

- a) 60 years
- b) 120 years
- c) 50 years
- d) 30 years

77. Which two months in a year have the same calendar?

- a) June, October
- b) April, November
- c) April, July
- d) October, December

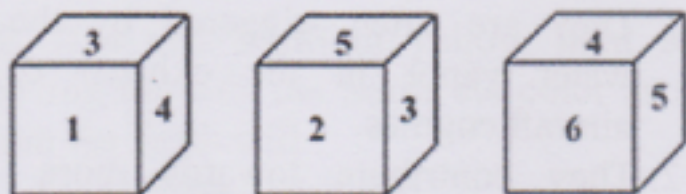
78. A container contains 40 litres of milk. From this container 4 litres of milk was taken out and replaced by water. This process was repeated further two times. How much milk is now contained by the container?

- a) 26.34 litres
- b) 27.36 litres
- c) 28 litres
- d) 29.16 litres

79. The sum of the digits of a 3-digit number is subtracted from the number. The resulting number is always:

- a) divisible by 6
- b) not divisible by 6
- c) divisible by 9
- d) not divisible by 9

80. Three views of a cube following a particular motion are given below:



What is the number opposite to 1?

- a) 2
- b) 6
- c) 5
- d) 4

81. Consider the following statements:

1. Diffusion is the net movement of molecules from a region of high concentration to a region of low concentration.
2. In Osmosis, movement of solvent molecules occurs across the semi-permeable membrane from highly concentrated solution to less concentrated solution.

Select the correct answer using the codes given below:

- a) Only 1 is correct
- b) Only 2 is correct
- c) Both 1 and 2 are correct
- d) Both 1 and 2 are incorrect

82. Consider the following statements:

1. Plant gains weight during photosynthesis but loses weight during respiration.
2. Both respiration and photosynthesis occur during daytime.

Select the correct answer using the codes given below:

- a) Only 1 is correct
- b) Only 2 is correct

- c) Both 1 and 2 are correct
- d) Both 1 and 2 are incorrect

83. Consider the following about Sickle Cell Anaemia:

1. It is a hereditary disease.
2. It spreads via air and water.
3. It leads to jaundice and frequent ailments in children.
4. It can be prevented by increasing iron intake since childhood.

Choose the correct answer using the codes given below:

- a) 1 and 2
- b) 1 and 3
- c) 2 and 4
- d) 3 and 4

84. If a couple has three children with blood groups A, B and AB, what could be the blood group of the parents?

1. A and B
2. A and AB
3. B and AB
4. AB and O

Select the correct answer using the codes given below:

- a) Only 1
- b) 1 and 4
- c) 2 and 3
- d) 1, 2 and 3

85. Consider the following scheme of the circulation of blood in the mammalian heart:

1. Left auricle
2. Right auricle
3. Left ventricle
4. Right ventricle

The correct sequence in which blood flows through the mammalian heart is:

- a) 1, 2, 3, 4
- b) 1, 3, 2, 4
- c) 2, 1, 4, 3
- d) 2, 4, 1, 3

**86.** Consider the following statements provided by the ornithologist for the declining population of the house sparrow around the world:

1. Introduction of unleaded petrol
2. Mobile towers and modern concrete buildings.
3. Reduction in the areas of free growing weeds and use of pesticides and insecticides.

Select the correct answer using the codes given below:

- a) Only 1 is correct
- b) Only 3 is correct
- c) 2 and 3 are correct
- d) 1, 2 and 3 are correct

**87.** The puffed-up appearance of Dosa and Idli is due to the production of which of the following gases:

1. Carbon Monoxide
2. Nitrogen Dioxide
3. Methane

Select the correct answer using the codes given below:

- a) Only 1
- b) Only 3
- c) All of the above
- d) None of the above

**88.** Consider the following statements:

1. Presbyopia is caused due to ageing when it becomes very difficult to change the curvature of eye lens.
2. The near point of human eyes decreases with age.

Select the correct answer using the codes given below:

- a) Only 1 is correct
- b) Only 2 is correct
- c) Both 1 and 2 are correct
- d) Both 1 and 2 are incorrect

**89.** With reference to contrails or condensation trails left behind by aircrafts in atmosphere, consider the following statements:

1. They are often triggered by the water vapor in the exhaust of aircraft engines.
2. They contribute towards more global warming.

Which of the above statements is/are correct?

- a) Only 1
- b) Only 2
- c) Both 1 and 2
- d) Neither 1 nor 2

**90.** With reference to "Catalytic converters", consider the following statements:

1. It performs Redox reactions
2. It is mounted in the exhaust system
3. It is completely eco-friendly in nature.

Which of the above statements is/are correct?

- a) Only 1
- b) 1 and 2
- c) 2 and 3
- d) 1, 2 and 3

**91.** Which of the following properties make dry ice one of the best fire extinguishers?

1. It cuts off the supply of oxygen from the fuel as it is heavier than oxygen.
2. On spraying, it reduces the temperature of the burning fuel.
3. It generally does not harm electrical equipment.

Choose the correct answer using the codes given below:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above

92. If a star emitting yellow light starts moving towards the Earth, its color as seen from the Earth will

- a) Gradually turn red
- b) Gradually turn blue
- c) Remain Yellow
- d) Turn bright yellow

93. Consider the following statements:

1. Ultrasonic sound waves are inaudible to human ears.
2. Ultrasonic waves are used to destroy bacteria in water and to drill holes in hard and brittle materials.
3. Volcanic eruptions emit ultrasonic waves.

Select the correct answer using the codes given below:

- a) Only 1 is correct
- b) 1 and 2 are correct
- c) 1 and 3 are correct
- d) 1, 2 and 3 are correct

94. Burning candle produces flame, but burning coal does not because:

- a) Coal is a complex hydrocarbon
- b) Coal requires much more heat than candle, so it absorbs the flames
- c) Flame is produced when gaseous substances burn
- d) Both (a) and (b)

95. Consider the following statements:

1. The strength of a material increases with its decreasing density
2. The low dense materials carry more weight when the load is distributed equally across their surface

Which of the above statements is/are correct?

- a) Only 1
- b) Only 2
- c) Both 1 and 2
- d) Neither 1 nor 2

96. Which of the following missiles is/are grouped under "surface to surface" category in India?

1. Prithvi
2. Agni
3. Trishul
4. Akash

Select the correct answer using the codes given below:

- a) 1 and 2
- b) 3 and 4
- c) 1, 2 and 3
- d) 2, 3 and 4

97. Satellites with transponders are used for:

1. Telemedicine
2. Search and Rescue
3. Weather forecasting
4. Disaster warning

Select the correct answer using the codes given below:

- a) 1 and 2
- b) 1, 2 and 3
- c) 2, 3 and 4
- d) 1, 2, 3 and 4

98. Consider the following statements with respect to ISRO's indigenous air-breathing propulsion system "Scramjet", which aims to reduce the cost and fuel weight in the forthcoming launches:

1. Scramjet accelerates the air to supersonic velocity before combustion.
2. Scramjet operates at a faster rate by consuming the liquid oxygen fuel from the atmosphere.

Which of the above given statements is/are correct?

- a) Only 1
- b) Only 2
- c) Both 1 and 2
- d) Neither 1 nor 2

99. Consider the following statements related to optical fiber:

1. Light is propagated down an optical fiber by refraction and internal reflection.
2. Electrical signals are converted into pulses of light by semiconductor devices known as Light Emitting Diode (LED) and laser diode before transmission.
3. The advantages of optical fiber include a very large bandwidth, immunity from electromagnetic noise and cost effectiveness compared to copper cables.

Select the correct answer using the codes given below:

- a) 1 and 2 are correct
- b) 1 and 3 are correct
- c) 2 and 3 are correct
- d) 1, 2 and 3 are correct

100. Consider the following statements:

**Assertion (A):** Radar cannot be used to track things in water bodies.

**Reason (R):** Radar uses high electromagnetic frequency which is absorbed by water and thus cannot travel more.

In the context of the statements above, which of these is true?

- a) A and R both are true, and R is the correct explanation for A
- b) A and R both are true but R is not the correct explanation for A
- c) A is correct, R is incorrect
- d) A and R both are incorrect

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