

Section 1 - Paper1-English Language

1) Select the correct plural form from the given options.

Three _____ are waiting in line.

- A) womans
 - B) womens
 - C) woman
 - D) women
-

2) Find the most appropriate opposite meaning word:
GRACEFUL

- A) Enticing
 - B) Expert
 - C) Miserable
 - D) Disproportioned
-

3) Find the most appropriate opposite meaning word:
PERTINENT

- A) Insistent
 - B) Irrelevant
 - C) Irregular
 - D) Irrational
-

Read the passage and answer the questions that follow:

An izba is a traditional Russian countryside dwelling. Often a log house, it forms the living quarters of a conventional Russian farmstead. It is generally built close to the road and inside a yard, which also encloses a kitchen garden, hay shed, and barn within a simple woven stick fence. Traditional, old-style izba construction involved the use of simple tools, such as ropes, axes, knives, and spades. Nails were not generally used, as metal was relatively expensive, and neither were saws a common construction tool. Both interior and exterior are of split pine tree trunks, the gap between is traditionally filled with river clay, not unlike the North American log cabin. The dominant building material of Russian vernacular architecture, and material culture generally, for centuries was wood. Specifically, houses were made from locally-cut rough-hewn logs, with little or no stone, metal, or glass. Even churches and urban buildings were primarily wooden until the eighteenth century. All of the building's components were simply cut and fitted together using a hand axe.

Coins, wool, and frankincense were customarily placed beneath the corners of the house to ensure that those living there would be healthy and wealthy. From the fifteenth century on, the central element of the interior of izba was the Russian oven, which could occupy up to one quarter of the floorspace in smaller dwellings. Often there were no beds (in the Western sense) for many members of the household, as people would sleep directly on the plaster top of the oven, or on shelves built directly above the stove. Outside izbas were often embellished by various special architectural features, for example the rich wood carving decoration of windows. Such decorative elements and the use of the Russian oven are still commonly found in many modern Russian countryside houses, even though only the older wooden houses are called izbas today.

4) From the 15th century, a central element of the Izba interior was:

- A) a frankincense
 - B) a wood carving
 - C) a Russian oven
 - D) a shelf
-

5) The gaps between the interior and the exterior is traditionally filled with which of the following?

- A) Cement
 - B) River clay
 - C) Latex from pine tree
 - D) White cement
-

6) Cutting and fitting of the building component was done with the help of a

- A) Saw
 - B) Glass
 - C) Hand axe
 - D) Special nail
-

7) Izba architecture also included decorations like the

- A) Russian oven
- B) Wood carvings
- C) Plaster top oven
- D) Placement of frankincense

8) The material used by the Russian vernacular architecture until the 18th century was?

- A) Wood
 - B) Clay
 - C) Stone
 - D) Wool
-

9) Select the right option.

Generally speaking, _____ boys are physically stronger than girls.

- A) no article
 - B) a
 - C) an
 - D) the
-

10) Select the right form of verb from the given options.

They _____ their new car two weeks ago.

- A) had been buying
- B) would buy
- C) bought
- D) will buy

Section 2 - Paper I-Education and General Awareness

11) According to the views of University Education Commission, (1948-49) good general school education means one "which will prepare pupil for university work, and _____"

- A) practical work to earn his living if he did not proceed to a university
 - B) practical work for leisure
 - C) practical work for leisure and knowledge
 - D) practical work to earn his living as well as to study in university
-

12) What is the minimum age that a person must attain to be eligible to be a member of a Panchayati Raj Institution?

- A) 25 years
 - B) 18 years
 - C) 21 years
 - D) 30 years
-

13) The New Education Policy felt the need to awaken people about the various

- A) Objectives of Primary Education
 - B) Secondary School Developments
 - C) Scientific and technological developments
 - D) Higher Education Initiatives
-

14) Which of the following is the scope of State Institute of Education (SIE) ?

- A) higher secondary and university education
 - B) secondary and college education
 - C) pre-primary, primary, secondary and higher secondary education
 - D) non formal education
-

15) The disease diphtheria affects which of the following body parts?

- A) Throat and Nose
- B) Small and Large Intestine
- C) Lungs and Trachea
- D) Bones and Joints

Section 3 - PaperI-Reasoning

16) In a certain code language, PHYSICS is written as TDJTZIQ. How is BIOLOGY coded in that language?

- A) CJMPHPZ
 - B) ZJCHPMP
 - C) ZHPMPJC
 - D) ZPHPMJC
-

17) Instruction: Below mentioned are statements followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance from the commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

Statements:

- Some prints are mails.
- Some mails are couriers.
- No courier is post.

Conclusions:

- I) No post is mail.
- II) No courier is print.
- III) Some mails are prints.

- A) Only III follows
 - B) Only I and II follow
 - C) Only II and III follow
 - D) Only I follows
-

18) Instruction: In the following questions mark:
1, if the question can be answered with the help of statement I alone.

2, if the question can be answered with the help of statement II alone.

3, if the question can be answered with the help of both I and II.

4, if the question can't be answered at all.

When is Justin's birthday?

Statement I : Justin's mother was born on 12th June 1965

Statement II : Justin is 2 years younger than his brother

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

19) If Ravi covers a distance of 800 meters in 3 minutes, what will be his speed in kmph?

- A) 17
 - B) 18
 - C) 15
 - D) 16
-

20) Instruction: Below mentioned are statements followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance from the commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

Statements:

- Some producers are writers.
- All the directors are writers.

Conclusions:

- I) Some writers are directors
- II) Some writers are producers

- A) None of the conclusions follow
- B) Only I follows
- C) Both I and II follow
- D) Only II follows

Section 4 - Paper I-Teaching Aptitude

21) In a classroom environment, the time taken to change from one activity to another is known as

- A) Middle time
 - B) Extended time
 - C) Transition time
 - D) Changing time
-

22) What should be the aim of education according to naturalistic view-point?

- A) The existing social and economic conditions of life should determine the education needs of a child
 - B) Self-expression or self-realisation of the natural impulses of the child
 - C) The spiritual development of an individual should be the supreme aim of education
 - D) Development of individual capacities that enable them to control their environment and fulfil possibilities
-

23) Which of the following strategies CANNOT be used with students having ADHD disorder?

- A) Provide longer projects and no time limit to the child to complete activities
 - B) Provide agendas with schedule of the day so that they know what to expect
 - C) Allow students to stand up on their desks, if it helps the child stay on task
 - D) Provide opportunities of choice in assignments and presentation methods
-

24) The Synthesis category falls under which of the following options that is a domain of educational activities of Bloom's Taxonomy?

- A) Affective
- B) Concept learning
- C) Cognitive
- D) Personalised approach

25) Which of the following is the CORRECT order of six major cognitive categories, from simplest to the most complex?

- A) Knowledge, Comprehension, Analysis, Synthesis, Application, Evaluation
 - B) Knowledge, Comprehension, Synthesis, Analysis, Application, Evaluation
 - C) Knowledge, Comprehension, Application, Analysis, Synthesis, Evaluation
 - D) Knowledge, Comprehension, Application, Synthesis, Analysis, Evaluation
-

26) Which of the following options is INCORRECT about the features of Rubrics?

- A) It is a great tool for teachers to set up a grading criteria for assignments
 - B) It can be used by the teacher to provide feedback which students can act on to improve their performance
 - C) Same rubrics can be used for languages as well as Mathematics and Sciences
 - D) It is a useful tool to use to communicate the teachers' expectations to students about their work
-

27) NDLM is an effort to complement Indian Government's vision to transform one from each household as digitally literate by the year 2020. What does NDLM stand for?

- A) National Digital Literacy Mission
 - B) Nationally Directed Literacy Mission
 - C) National Division of Literacy Mission
 - D) Naturally Digital Literacy Mission
-

28) What does PSRN in development mean?

- A) Programming skills, Review skills and Numerics
- B) Project development skill, Reading skills and Numbers
- C) Problem solving skill, Reasoning and Numeracy
- D) Promoting skills, Reaffirmed Network

29) How does the NCERT check the health of the educational system and provide information about the learning achievement of students in Classes – III, V, VIII, and X?

- A) By approaching the poor and lower middle class parents of the target classes
 - B) By conducting the National Achievement Surveys for the target classes
 - C) By recording the growth and progress of the students in the primary classes
 - D) By conducting surveys on the technical infrastructure of the target classes
-

30) Central Institute of Educational Technology (CIET) came into existence in the year 1984 with the merger of Centre for Educational Technology (CET) and which other organization?

- A) Department of Experimental Sciences (DES)
- B) Department of Teaching Resources (DTR)
- C) Department of Teaching Aids (DTA)
- D) Department of Teaching Learning Material (DTLM)

Section 5 - PaperII-Physical Science

31) The following objects are made up of same material and have same mass. They are heated to 100 °C. Which of them will cool fastest?

- A) Sphere
 - B) Cylinder
 - C) Cube
 - D) Circular plate
-

32) What is the ratio of velocity of electron in the 2nd and 3rd Bohr orbit in the hydrogen atom?

- A) 2 : 3
 - B) 3 : 2
 - C) 4 : 9
 - D) 9 : 4
-

33) Splitting of spectral lines in the presence of electric field is called

- A) Compton effect
 - B) Paschen Back effect
 - C) Zeeman effect
 - D) Stark effect
-

34) What is the ratio of the intensity of magnetic field inside a long current carrying solenoid at its centre and at a point near its end?

- A) 1 : 2
 - B) 1 : 4
 - C) 2 : 1
 - D) 1 : 1
-

35) Which of the following actions will decrease the sensitivity of a moving coil galvanometer?

- A) Using a spring of larger torsional constant
- B) Using a coil of larger area
- C) Increasing the number of turns of the coil
- D) Using strong magnets

36) Which of the following quantities has its dimension similar to that of pressure?

- A) Surface tension
 - B) Impulse
 - C) Stress
 - D) Moment of force
-

37) In which of the following orbitals of a neutral atom, the energy of an electron is minimum?

- A) 4f
 - B) 3d
 - C) 4s
 - D) 3p
-

38) Which of the following is NOT a characteristic of inelastic collision?

- A) Total energy is conserved
 - B) Total momentum is conserved
 - C) Mechanical energy is not converted partially or fully into any other form of energy
 - D) Some or all of the forces involved are non-conservative in nature
-

39) The number of elements present in the 4th period of the modern periodic table is

- A) 7
 - B) 8
 - C) 2
 - D) 18
-

40) A 1 kg model rocket is launched vertically from rest with a constant thrust of 20 N until the rocket reaches an altitude of 20 m. Then the thrust ends. Neglecting air resistance, find the speed of the rocket when it returns to the ground. (acceleration due to gravity, $g = 10 \text{ m/s}^2$)

- A) $20\sqrt{2} \text{ m/s}$
- B) 20 m/s
- C) $40\sqrt{2} \text{ m/s}$
- D) 40 m/s

41) The half life period of a zero order reaction is

- A) independent of the rate constant
- B) independent of the initial concentration of the reactants
- C) directly proportional to the rate constant
- D) directly proportional to the initial concentration of the reactants

42) What types of mirrors are used as rear/side view mirrors in vehicles?

- A) Convex
- B) Cylindrical
- C) Planar
- D) Concave

43) The potential due to a quadrupole moment varies as (where r is the distance)

- A) $1/r^3$
- B) $1/r^2$
- C) $1/r^4$
- D) $1/r$

44) Which of the following is NOT a state function?

- A) Entropy
- B) Work
- C) Enthalpy
- D) Gibb's Free Energy

45) Two charges 15 C and 10 C are separated by a distance of 5 meters. If Coulomb constant is $9 \times 10^9 \text{ Nm}^2 \text{ C}^{-2}$, what is the magnitude of electric force experienced by two charges?

- A) $27 \times 10^{10} \text{ N}$
- B) $5.4 \times 10^9 \text{ N}$
- C) $2.7 \times 10^9 \text{ N}$
- D) $5.4 \times 10^{10} \text{ N}$

46) Consider the following reaction: $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3$. At equilibrium at 600 K, the concentrations of N_2 , H_2 and NH_3 are $2 \times 10^{-2} \text{ M}$, $4 \times 10^{-2} \text{ M}$ and $3.2 \times 10^{-2} \text{ M}$, respectively. Find the approximate equilibrium constant of the reaction.

- A) 2.5×10^{-2}
- B) 40
- C) 12.5×10^{-4}
- D) 800

47) 20 decibels represents a sound of intensity:

- A) 10^{-11} W/m^2
- B) 10^{-20} W/m^2
- C) 10^{-12} W/m^2
- D) 10^{-10} W/m^2

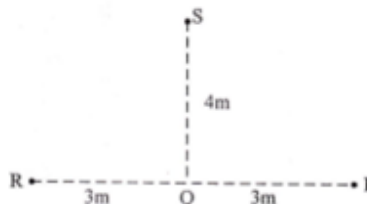
48) Two bodies A and B having masses m_A and m_B are moving with same kinetic energy. What will be the ratio of their momentum?

- A) $\sqrt{m_B/m_A}$
- B) m_B / m_A
- C) $\sqrt{m_A/m_B}$
- D) m_A / m_B

49) If in a reaction the change in Gibb's free energy is negative ($\Delta G < 0$), then the reaction is

- A) non-spontaneous
- B) forbidden
- C) in equilibrium
- D) spontaneous

50) In the given figure, what is the ratio of sound intensity at points S, R and Q if point P is the source of sound?



- A) 36:25:100
- B) 25:36:144
- C) 144:36:100
- D) 169:100:144

Section 6 - PaperII-Biological Science

51) According to the ecological succession, the establishment of new species in bare area is known as

- A) invasion
 - B) stabilization
 - C) competition
 - D) nudation
-

52) Chlorophyll molecules have a porphyrin-like ring structure coordinated by a centrally located

- A) zinc atom
 - B) copper atom
 - C) manganese atom
 - D) magnesium atom
-

53) In plants the proteins forms channels in the membrane for molecules to pass through. A type of transport protein in which both molecules cross the membrane in the same direction is termed as

- A) imbibition
 - B) symport
 - C) antiport
 - D) uniport
-

54) In the following taxonomical hierarchy, which order of ranking is CORRECT?

- A) Phylum-Family-Order-Class-Genus-Species
 - B) Phylum-Family-Class-Order-Genus-Species
 - C) Phylum-Order-Class-Family-Genus-species
 - D) Phylum-Class-Order-Family-Genus-Species
-

55) Which of the following animals belongs to the phylum Platyhelminthes?

- A) Tapeworm
- B) Blood sucking leech
- C) Roundworm
- D) Earthworm

56) Which one of the following is the biotic factor of an ecosystem?

- A) Plants
 - B) Sunlight
 - C) Soil
 - D) Temperature
-

57) In a mature embryo sac of angiosperms, the synergids have special cellular thickening at the micropylar end known as

- A) egg apparatus
 - B) antipodals
 - C) filiform apparatus
 - D) chalazal end
-

58) Ozone layer present in the stratosphere is a

- A) diatomic molecule
 - B) pentaatomic molecule
 - C) triatomic molecule
 - D) tetraatomic molecule
-

59) The function of malpighian tubules of the insect is to

- A) regulate body temperature
 - B) regulate enzyme activity
 - C) help in osmoregulation
 - D) promotes gas exchange
-

60) Which of the following is the major constituent of biogas?

- A) Propane
- B) Butane
- C) Ethane
- D) Methane

61) In chloroplast, which of the following is a type of leucoplast which stores carbohydrates?

- A) Elaioplast
 - B) Amyloplast
 - C) Tonoplast
 - D) Proteinoplast
-

62) In a simple food chain, which one of the following is an example of primary consumers?

- A) Sheep
 - B) Lion
 - C) Plants
 - D) Tiger
-

63) Thomas Hunt Morgan used which of the following as a model system for his experimental research by which he established the chromosome theory of heredity?

- A) Arabidopsis thaliana
 - B) Drosophila melanogaster
 - C) Mus musculus
 - D) Caenorhabditis elegans
-

64) Which of the following cell organelles found in some plant cells are known as dictyosomes?

- A) Plastids
 - B) Mitochondria
 - C) Centrosome
 - D) Golgi apparatus
-

65) How many germinal layers are present in the roundworms?

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

66) Prokaryotes contain 70S ribosomes. The 70S ribosomes are made up of two subunits

- A) 40S and 20S
 - B) 40S and 30S
 - C) 50S and 30S
 - D) 60S and 40S
-

67) The process where bacteria or other decomposers break down nitrogen-containing chemicals from waste or a dead body into simpler chemicals, such as ammonia is termed as

- A) nitrification
 - B) eutrophication
 - C) denitrification
 - D) ammonification
-

68) Khadins and Tankas are ancient structures that are examples for

- A) afforestation
 - B) water harvesting
 - C) thermal power plants
 - D) soil conservation
-

69) Which of the following enzymes present in peroxisomes converts hydrogen peroxide into water and oxygen?

- A) Protease
 - B) Catalase
 - C) Lipase
 - D) Phosphatase
-

70) Which of the following is caused by a chemical reaction that starts when sulfur dioxide and nitrogen oxides are released into the air?

- A) Soil erosion
- B) Floods
- C) Acid rain
- D) Deforestation

Section 7 - PaperII-Mathematics

71) The value of $(32)^{0.16} \times (32)^{0.04}$ is

- A) 0
 - B) 1
 - C) $\sqrt{32}$
 - D) 2
-

72) The three angles of a quadrilateral are 80° , 70° and 120° , the fourth angle of the quadrilateral is

- A) 100°
 - B) 80°
 - C) 45°
 - D) 90°
-

73) A parallelogram in which all sides are equal and two adjacent sides are perpendicular to each other is called

- A) a rectangle
 - B) a rhombus
 - C) a trapezium
 - D) a square
-

74) What is the value of $(8^{0.16} \times 2^{0.52})$?

- A) 6
 - B) 4
 - C) 1
 - D) 2
-

75) P is directly proportional to Q and $Q = 7$ when $P = 15$. What is the value of P when $Q = 14$?

- A) 36
 - B) 30
 - C) 59
 - D) 54
-

76) The integral part of logarithm of a number is called

- A) decimal
 - B) characteristic
 - C) mantissa
 - D) point
-

77) What is the remainder when the polynomial $x^4 - 3x^2 + 7x - 10$ is divided by $(x - 2)$?

- A) 0
 - B) 12
 - C) 8
 - D) 20
-

78) If $\cos^2 \theta + 2 \sin^2 \theta = 2$ where θ is a positive acute angle, then the value of θ is

- A) 30°
 - B) 0°
 - C) 90°
 - D) 45°
-

79) The value of $\sin 60^\circ =$

- A) $1/2$
 - B) 0
 - C) 1
 - D) $\sqrt{3}/2$
-

80) If $\sin \theta + \operatorname{cosec} \theta = 2$, then the value of $\sin^4 \theta + \operatorname{cosec}^4 \theta$ (when $0^\circ \leq \theta \leq 90^\circ$) is

- A) 2
 - B) $1/2$
 - C) 0
 - D) 1
-

81) The ratio of present ages of two brothers is $1 : 2$ and 5 years back the ratio of their ages was $1 : 3$. What will be the ratio of their ages after 8 years?

- A) $2 : 5$
 - B) $9 : 14$
 - C) $2 : 3$
 - D) $3 : 5$
-

82) If A and B are two sets, then $A \cap (A \cup B) =$

- A) Φ
 - B) $A \cap B$
 - C) A
 - D) B
-

83) The inverse function of the function $f(x) = 5x + 1$ can be written as

- A) $g(x) = (x - 1)/5$
 - B) $g(x) = (x + 1)/5$
 - C) $g(x) = (x + 1)$
 - D) $g(x) = (x - 1)$
-

84) If 'p' and 'q' are the roots of the equation $2x^2 + 5x + 3 = 0$, then the value of $(p+q)/(pq)$ is

- A) $-5/3$
 - B) $-10/3$
 - C) $5/6$
 - D) $5/3$
-

85) If R is a relation in the set of natural numbers N defined by the operation ' \leq ', then R is

- A) transitive and reflexive
 - B) only reflexive
 - C) only symmetric
 - D) only asymmetric
-

86) Two numbers are in the ratio 3 : 5. If 9 is subtracted from each, then new numbers are in the ratio 12 : 23. The smaller number is

- A) 55
- B) 33
- C) 27
- D) 11

87) If θ is an acute angle and $\sec \theta = 5/4$, then the value of $\cot (90^\circ - \theta)$ is

- A) 1
 - B) $1/2$
 - C) $3/2$
 - D) $3/4$
-

88) If a triangle ABC is similar to the triangle DEF such that vertices A, B and C correspond to the vertices D, E and F respectively and $\angle A = 48^\circ$, $\angle E = 64^\circ$, then $\angle C =$

- A) 68°
 - B) 70°
 - C) 65°
 - D) 72°
-

89) If the equation $x^2 + 2kx + 9 = 0$ has two equal roots, then what is the possible value of 'k'?

- A) 0
 - B) $3/2$
 - C) 9
 - D) -3
-

90) If $\log_8 x + \log_8 (1/3) = 1/3$, then the value of x =

- A) 6
- B) $1/3$
- C) 2
- D) 3

Question Paper No:

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Answer Key

- | | | |
|-------|-------|-------|
| 1. D | 31. D | 61. B |
| 2. D | 32. B | 62. A |
| 3. B | 33. D | 63. B |
| 4. C | 34. C | 64. D |
| 5. B | 35. A | 65. A |
| 6. C | 36. C | 66. C |
| 7. B | 37. D | 67. D |
| 8. A | 38. C | 68. B |
| 9. A | 39. D | 69. B |
| 10. C | 40. A | 70. C |
| 11. A | 41. D | 71. D |
| 12. C | 42. A | 72. D |
| 13. C | 43. A | 73. D |
| 14. C | 44. B | 74. D |
| 15. A | 45. D | 75. B |
| 16. C | 46. D | 76. B |
| 17. A | 47. D | 77. C |
| 18. A | 48. C | 78. C |
| 19. D | 49. D | 79. D |
| 20. C | 50. A | 80. A |
| 21. C | 51. A | 81. B |
| 22. B | 52. D | 82. C |
| 23. A | 53. B | 83. A |
| 24. C | 54. D | 84. A |
| 25. C | 55. A | 85. A |
| 26. C | 56. A | 86. B |
| 27. A | 57. C | 87. D |
| 28. C | 58. C | 88. A |
| 29. B | 59. C | 89. D |
| 30. C | 60. D | 90. A |