

Section 1 - Paper I-English Language

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

I _____ my homework because I didn't understand the questions.

- A) did do
 - B) didn't do
 - C) did
 - D) will do
-

2) Select the correct option.

He is _____ really good person to go out with.

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

3) Find the most appropriate opposite meaning word:
FRESH

- A) Disgraceful
 - B) Sluggish
 - C) Stale
 - D) Faulty
-

Read the passage and answer the questions that follow:

Mountain biking is a sport of riding bicycles off-road, often over rough terrain, using specially designed mountain bikes. Mountain bikes share similarities with other bikes but incorporate features designed to enhance durability and performance in rough terrain. Mountain biking can generally be broken down into multiple categories: cross country, trail riding, all mountain (also referred to as "Enduro"), downhill, free ride and dirt jumping. However, the majority of mountain biking falls into the categories of Trail and Cross Country riding styles. This non-sport requires endurance, core strength and balance, bike handling skills, and self-reliance. Advanced riders pursue both steep technical descents and high incline climbs. In the case of freeride, downhill, and dirt jumping, aerial maneuvers are performed off both natural features and specially constructed jumps and ramps. Mountain bikers ride on off-road trails such as single track, back-country roads, fire roads, and often venture to ski resorts that stay open in the summer for such activities. Because riders are often far from civilization, there is a strong ethic of self-reliance in the sport. Riders learn to repair broken bikes and flat tires to avoid being stranded. Many riders carry a

backpack, including water, food, tools for trailside repairs, and a first aid kit in case of injury. Group rides are common, especially on longer treks. Mountain bike orienteering adds the skill of map navigation to mountain biking. Maintenance of the rider's bike needs to be carried out more frequently for mountain biking than for casual commuter biking. Mountain biking places higher demands on every part of the bike. Jumps and impacts can crack the frame or damage components or the tire rims, and steep, fast descents can quickly wear out brake pads. Since the widespread adoption of hydraulic and mechanical disk brakes on most mountain bikes from the late 1990's, the issues of brake pad wear, misalignment with, or slippage of rim brake pads on rims designed for rim brakes or "V brakes", has become a non issue. Thus, whereas a casual rider may only check over and maintain their bike every few months, a mountain biker should check and properly maintain the bike before and after every ride.

4) Brake pads wear out soon because of

- A) rough terrain slippage
 - B) impacts due to climb
 - C) jumps and impacts
 - D) steep, fast descents
-

5) A mountain bike orienteering also adds the skill of

- A) trail mapping
 - B) compass reading
 - C) aerial manoeuvres
 - D) map navigation
-

6) 'Because riders are often far from civilization, there is a strong ethic of self-reliance in the sport' means:

- A) Riders have to be self sufficient when something goes wrong with the bike, since they are away from city
- B) Mountain biking makes the riders strong, reliable and rugged
- C) Riders are away from the city and their families
- D) Mountain bikers are less civilized since they take up this rough sport

7) Choose the correct option.

A mountain biker should:

- (i) have endurance to face the rough terrain
- (ii) ride steep technical descents
- (iii) climb high inclination

- A) (i) only
 - B) (i), (ii) and (iii)
 - C) (i) and (ii)
 - D) (i) and (iii)
-

8) Majority of mountain biking falls into one of these categories:

- A) Dirt and Free Jumping
 - B) Trail and Cross-Country Riding
 - C) Free and Downhill Ride
 - D) All mountain Ride
-

9) Select the correct form of plural from the given options.

Cats like to catch _____ when they are hungry.

- A) mouses
 - B) mouse
 - C) mice
 - D) mices
-

10) Find the most appropriate opposite meaning word:
NADIR

- A) Modernity
- B) Zenith
- C) Liberty
- D) Progress

Section 2 - Paper1-Education and General Awareness

11) Which of the following agencies of education provide support to Alternative Education Centres?

- A) Family and Society
 - B) CBSE, ICSE and State Boards
 - C) Village Panchayat
 - D) CRCs and BRCs
-

12) Which of the following Commissions stated, "The destiny of India is now being shaped in her classrooms"?

- A) University Education Commission
 - B) The National Education Commission
 - C) Secondary Education Commission
 - D) Sadler Commission
-

13) An electric motor is a device for converting

- A) Mechanical energy into electrical energy
 - B) Chemical energy into electrical energy
 - C) Electrical energy to mechanical energy
 - D) Heat energy into electrical energy
-

14) Which of the following bodies emphasised that part-time education and correspondence courses should be developed on a large scale at the university stage?

- A) National Policy on Education
 - B) National Education Convention
 - C) National Convention for Education
 - D) National Education and Policy Development
-

15) Who among the following is the Indian government's chief legal advisor, and its primary lawyer in the Supreme Court of India?

- A) Additional Solicitor General
- B) Solicitor General
- C) Chief Justice of India
- D) Attorney General

Section 3 - PaperI-Reasoning

16) If three fifth of "a" is equal to a quarter of "c" which in turn is equal to 4/7th of "e", then what is e:c:a?

- A) 21 : 24 : 20
- B) 7 : 16 : 05
- C) 7 : 12 : 05
- D) 21 : 48 : 20

17) Directions : If the first and last letters of the word are vowels, then their codes must be interchanged. In a certain code language EUPHORIA is written as 13786995. How is AUDIENCE written in that code?

- A) 53495531
- B) 53559431
- C) 13495535
- D) 13559435

18) 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:

All the ants are insects.
Some bees are insects.

Conclusions:

- I) All the ants are bees.
- II) Some insects are bees.

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

19) 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.

Did David go to the market yesterday?

Statement I : David went to market today.

Statement II : David goes to market on every alternate days.

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

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:

All the values are emotions.
All the ethics are emotions.
Some morals are ethics.

Conclusions:

- I) Some values are ethics
- II) Some emotions are morals
- III) Some emotions are ethics

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

Section 4 - Paper-I-Teaching Aptitude

21) "One of the important social objectives of education is to equalize opportunity, enabling the backward or underprivileged classes and individuals to use education as a tool for improvement of their social and economic condition". This statement was given by

- A) National Education Department
 - B) Indian Education Commission
 - C) The Kothari Commission
 - D) The Right to Education Committee
-

22) Which of the following refers to learner-centered approach?

- A) Learners given total liberty in the teaching or learning process
 - B) Learners respond to teachers only if they have interest in the said topic or subject
 - C) Teachers assist the learners in accomplishing their tasks everytime
 - D) Teaching focus on maximum learner involvement with the teacher giving direction and support
-

23) 'The sum of the knowledge, skills, and attitudes that enable a volunteer teacher to work successfully with students, fellow teachers, administrators, and parents at a host school'. Which of the following terms can be used to refer to this statement?

- A) Personal Intelligence
 - B) Social Intelligence
 - C) Behavioral Intelligence
 - D) Cultural Intelligence
-

24) Which of the following options is NOT a cause of misbehavior in a classroom?

- A) Need for attention
- B) Desire for power
- C) Need for learning
- D) Looking for revenge

25) Which of the following educational schemes in India was renamed as Jan Shikshan Sansthan in April 2000?

- A) Sarva Shiksha Abhiyan
 - B) Deen Dayal Upadhyaya Antyodaya Yojana
 - C) Shramik Vidyapeeth
 - D) Saakshar Bharat
-

26) The Section 29 of the Right to Education (RTE) Act, deals with the which of the following provisions?

- A) Maintenance of pupil teacher ratio, by the appropriate government and local authority
 - B) Qualifications and terms and conditions of service of school teachers
 - C) Curriculum and evaluation procedure in elementary schools
 - D) Protection of rights of the child through the National/State Commissions
-

27) Which of the following is an example of an informal agency for a child's education?

- A) University
 - B) School
 - C) College
 - D) Community
-

28) Which of the following Committees/Commissions observed that an internship model for teacher training should be implemented?

- A) Indian Education Commission
 - B) Mudaliar Commission
 - C) Acharya Ramamurti Committee
 - D) Hunter Commission
-

29) Which of the following are domains of educational activities under Bloom's Taxonomy?

- A) Concept learning and Cognitive activities
- B) Cognitive and Meta-cognitive
- C) Psychological, Social and Personalised approach
- D) Cognitive, Affective and Psychomotor

30) Which of the following is NOT one of the behavioural symptoms of ADHD, a disorder which affects children?

- A) Impulsivity
- B) Hyperactivity
- C) Inattention
- D) Disobedience

Section 5 - PaperII-Physical Science

31) The molecular (chemical) formula of propane gas is

- A) CH₄
 - B) C₃H₈
 - C) C₄H₁₀
 - D) C₂H₆
-

32) Which of the following statements is CORRECT?

Statement I: An ideal voltmeter must have zero resistance.

Statement II: An ideal ammeter must have infinite resistance.

- A) Statement I: TRUE, Statement II: TRUE
 - B) Statement I: TRUE, Statement II: FALSE
 - C) Statement I: FALSE, Statement II: FALSE
 - D) Statement I: FALSE, Statement II: TRUE
-

33) Which of the following orbitals does NOT exist?

- A) 4f
 - B) 4d
 - C) 4g
 - D) 4s
-

34) A cubical room of volume 8000 m³ has walls, floor and ceiling of same sound absorption coefficient equal to 0.06. What will be the reverberation time (T) of the room? (Given proportionality constant, k=0.161)

- A) 8.94 s
- B) 3.33 s
- C) 0.05 s
- D) 5.33 s

35) The chemical reaction $H_2 + I_2 \rightleftharpoons 2HI$ is taking place in a closed vessel and has an equilibrium constant 57.0 at 700 K. If the molar concentrations of H₂, I₂ and HI in the vessel at any arbitrary time are 2 M, 2.5 M and 20 M, respectively, then the reaction will

- A) not occur
 - B) proceed in the forward direction
 - C) be in equilibrium
 - D) proceed in the reverse direction
-

36) In photoelectric effect, the stopping potential varies linearly with the frequency of incident radiation. The slope of this variation is equal to (Given, h = Planck's constant, ω = work function of the material; e = charge of the electron)

- A) h/e
 - B) h/ ω
 - C) h ω
 - D) h
-

37) If the temperature of a chemical reaction is increased by 10 K, the rate of the chemical reaction will

- A) become nearly half
 - B) decrease by 10%
 - C) become nearly double
 - D) increase by 10%
-

38) The amount of work done in placing a dipole, of dipole moment p, in a direction perpendicular to the electric field E is

- A) pE
- B) (-) pE
- C) 2pE
- D) 0

39) Between an open organ pipe and a closed organ pipe of same material and dimensions, whose sound quality is richer?

- A) Closed organ pipe
 - B) Both are equally rich
 - C) Open organ pipe
 - D) Cannot be compared
-

40) Which of the following is NOT a property of equipotential surfaces?

- A) The equipotential surfaces for a flat surface with uniform charge distribution are planes non-parallel to the surface
 - B) The electric field lines are always perpendicular to the equipotential surface and are directed from higher to lower potentials
 - C) The potential difference between any two points on an equipotential surface is zero
 - D) No work is required to move a particle along an equipotential surface
-

41) The pH value of 0.01 M NaOH solution is

- A) 2
 - B) 12
 - C) 14
 - D) 7
-

42) What is the maximum number of electrons that can be accommodated in the shell of total quantum number $n = 3$?

- A) 9
 - B) 18
 - C) 36
 - D) 3
-

43) Mass of a copper rod at the equator is 10 kg. What will be its mass at the north pole?

- A) 10.5 kg
- B) 12 kg
- C) 10 kg
- D) 9.5 kg

44) If a supersonic plane is flying at Mach number 2, then its speed will be (Given, speed of sound in air = 332 m/s)

- A) 2390.4 km/h
 - B) 597.6 km/h
 - C) 1195.2 km/h
 - D) 298.8 km/h
-

45) A refrigerator is placed inside a closed kitchen and is working. If its door is left open for a long time, which of the following is most likely to happen?

- A) The temperature of the kitchen will reach the temperature of its freezer
 - B) The temperature of the kitchen will increase
 - C) The temperature of the kitchen will not change
 - D) The temperature of the kitchen will decrease
-

46) If a cubical block just begins to slide down a rough plane inclined at an angle 30° to the horizontal, then the coefficient of limiting friction between the block and the plane is

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

47) For a general chemical reaction $aA + bB \rightarrow cC + dD$ the rate expression is $R = k[A]^{3/2}[B]^{-1}$, where k is the rate constant. What is the order of this chemical reaction?

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

48) A faulty balance has unequal arms. However, the beam is horizontal when the pans are empty. If an object weighs 12 g when placed on one pan and 3 g when placed on the other, its true weight is

- A) 6 g
- B) 10 g
- C) 7.5 g
- D) 4.5 g

49) The inductance of the closely packed coil of 100 turns is 25 mH. The current in the coil is 5 A. What will be the flux through a single turn? (Symbols and notations carry their usual meanings)

- A) 0.125 Wb
 - B) 0.00125 Wb
 - C) 1.25 Wb
 - D) 0.0125 Wb
-

50) A car travelling at 72 km/h can stop at a distance of 50 m upon applying brakes on a level road. What would be the braking distance if the car is travelling under same conditions at a 30° incline upwards? (acceleration due to gravity = 10 m/s^2)

- A) 200 m
- B) 22.2 m
- C) 18.6 m
- D) 50 m

Section 6 - PaperII-Biological Science

51) Hemocyanins are proteins that transport oxygen throughout the bodies of some invertebrate animals. These metalloproteins contains

- A) copper atom
 - B) magnesium atom
 - C) iron atom
 - D) nickel atom
-

52) Which one of the following phylum comes under diploblastic organisation?

- A) Arthropoda
 - B) Annelida
 - C) Platyhelminthes
 - D) Cnidaria
-

53) How many pyrrole rings are found in the chlorophyll molecule?

- A) 5
 - B) 3
 - C) 4
 - D) 2
-

54) Under water pollution, which of the following is an example of physical pollutants?

- A) Oil spill
 - B) Biocide
 - C) Heavy metals
 - D) Pathogens
-

55) Which of the following cell organelles is surrounded by a double membrane?

- A) Peroxisome
- B) Nucleus
- C) Vacuole
- D) Lysosome

56) Which of the following parts of the human sperm contains respiratory enzymes which supply energy for the movement of the sperm?

- A) Neck
 - B) Tail piece
 - C) Middle piece
 - D) Head
-

57) Which of the following models was proposed by Singer and Nicolson on the concept of cell membrane structure?

- A) Unit Membrane Model
 - B) Fluid Mosaic Model
 - C) Kavanau's Lipid Pillar Model
 - D) Danielli and Davson Model
-

58) Which of the following Divisions does NOT belong to the sub-kingdom Cryptogamae?

- A) Thallophyta
 - B) Bryophyta
 - C) Pteridophyta
 - D) Gymnosperm
-

59) Biological nitrogen fixation is done by certain microorganism. Which of the following microorganism are found in the root nodules of legumes?

- A) Clostridium
 - B) Rhizobium
 - C) Nostoc
 - D) Anabaena
-

60) In animal kingdom, which of the following phylum possess radial symmetry?

- A) Platyhelminthes
- B) Arthropoda
- C) Annelida
- D) Ctenophora

61) Which of the following cell organelles helps in intracellular digestion?

- A) Entoplasmic Reticulum
 - B) Golgi complex
 - C) Mitochondria
 - D) Lysosomes
-

62) The first step in glycolysis is the phosphorylation of glucose by ATP to form glucose 6-phosphate. This reaction is catalyzed by the enzyme

- A) pyruvate kinase
 - B) aldolase
 - C) phosphofructokinase-1
 - D) hexokinase
-

63) From the options given below which of the following is NOT a natural resource?

- A) Cement
 - B) Coal
 - C) Air
 - D) Soil
-

64) How can we control global warming?

- A) By emission of greenhouse gases into the atmosphere
 - B) Extensive use of nitrogen fertilisers in agriculture
 - C) By cutting down the use of fossil fuel
 - D) Deforestation
-

65) The process by which water vapor changes into water droplets is termed as

- A) deposition
- B) condensation
- C) sublimation
- D) transpiration

66) Burning of fossil fuels like coal and petroleum releases oxides of nitrogen and sulphur in the atmosphere that leads to which of the following phenomenon?

- A) Acid rain
 - B) Eutrophication
 - C) Biomagnification
 - D) Soil erosion
-

67) Which of the following cell organelles produce cellular energy in the form of ATP?

- A) Ribosomes
 - B) Mitochondria
 - C) Chloroplast
 - D) Nucleus
-

68) Minamata disease was caused by eating large quantities of fish and shellfish polluted by which of the following heavy metals discharged into the Minamata Bay?

- A) Methyl isocyanate
 - B) Arsenic
 - C) Methyl mercury
 - D) Lead
-

69) Members of which of the following Phyla is also known as sponges?

- A) Annelida
 - B) Ctenophora
 - C) Porifera
 - D) Cnidaria
-

70) Which of the following is related to a global agreement, "The Montreal Protocol" that was finalized in 1987?

- A) Stratospheric ozone layer
- B) Swiss alps
- C) Great barrier reef
- D) Amazon rainforest

Section 7 - PaperII-Mathematics

71) Sum of the internal angles of a quadrilateral is

- A) 360°
 - B) 90°
 - C) 45°
 - D) 180°
-

72) If $(8)^{2/3} \times (16)^{(-1/4)} = 2^x$, then the value of 'x' is

- A) 2
 - B) 4
 - C) 1
 - D) 0
-

73) One of the base angles of an isosceles triangle is 60° . The vertical angle of the triangle is

- A) 30°
 - B) 60°
 - C) 80°
 - D) 45°
-

74) $(\log_3 5) \times (\log_5 27) =$

- A) 2
 - B) 3
 - C) 1
 - D) 5
-

75) The sum of a natural number and its square equals the product of first three prime numbers. The natural number is

- A) 2
- B) 6
- C) 5
- D) 3

76) If the roots of the equation $x^2 - 10x + k = 0$ with variable 'x' are in the ratio 2 : 3, what is the value of 'k' ?

- A) 12
 - B) 5
 - C) 10
 - D) 24
-

77) If 'a' and 'b' are two odd numbers, then which of the following yields an even number?

- A) $a + b$
 - B) $a + b + 1$
 - C) $a + b + 2ab$
 - D) $a + b + ab$
-

78) If a function f maps different elements of the domain set to different elements of the codomain set, then the function is necessarily

- A) an identity function
 - B) a bijective function
 - C) a surjective function
 - D) an injective function
-

79) If $\tan 7\theta \tan 2\theta = 1$, then the value of θ is

- A) 60°
 - B) 25°
 - C) 10°
 - D) 45°
-

80) If two-third of A and four-fifth of B are equal, then A : B =

- A) 3 : 2
- B) 9 : 10
- C) 6 : 5
- D) 5 : 4

81) Which of the following is equivalent to the polynomial $16s^4 - 4t^2$?

- A) $4(2s^2 - t)(2s^2 + t)$
 - B) $(8s^2 - 2t)(2s^2 + 2t)$
 - C) $4(s^2 - t)(4s^2 + t)$
 - D) $4(4s^2 - t)(s^2 + t)$
-

82) $\sin(90^\circ - x) =$

- A) $\sin x$
 - B) 1
 - C) $\tan x$
 - D) $\cos x$
-

83) The value of $(243 / 32)^{4/5}$ value is

- A) $81/16$
 - B) $3/2$
 - C) $9/4$
 - D) $16/81$
-

84) What is the simplified value of $(8^{2/3} \times 2^{-2} \div 2^0)$?

- A) 0
 - B) 1
 - C) 4
 - D) 2
-

85) A relation R is defined on a set A such that when aRb and bRc hold, then aRc also holds. The relation R is called

- A) Transitive
 - B) Symmetric
 - C) Reflexive
 - D) Antisymmetric
-

86) A boy who is 4 ft tall casts a 3 ft long shadow. At the same time, a flagpole casts a 48 ft long shadow. The height of the flagpole is

- A) 30 ft
- B) 45 ft
- C) 25 ft
- D) 64 ft

87) The degree of a polynomial A is 7. There is another polynomial B such that degree of the product of the two polynomials $A \times B$ is 56. What is the degree of the polynomial B?

- A) 8
 - B) 63
 - C) 9
 - D) 49
-

88) A chord 16 cm long is drawn in a circle of diameter 20 cm. The perpendicular distance of the chord from the centre is

- A) 9 cm
 - B) 8 cm
 - C) 4 cm
 - D) 6 cm
-

89) If 'n' is the function providing cardinality of a set and $n(A) = 12$, $n(A \times B) = 36$, then $n(B)$ is

- A) 24
 - B) 36
 - C) 12
 - D) 3
-

90) If $\sec^2 \theta + \tan^2 \theta = 5/12$, then $\sec^4 \theta - \tan^4 \theta =$

- A) 2
- B) 7
- C) 1
- D) $5/12$

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Answer Key	

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