Test Booklet Code

| 0914 |

NATIONAL TEACHERS COUNCIL

All India Talent Search Examination - 2014

| **Class - IX** |

Time Allowed: 2 Hours   Maximum Mark: 100

This Test Booklet contains 20 pages. Do not open the Test Booklet until you are asked to do so.

Important instructions

1.   This question paper contains 100 multiple choice questions each of one mark.

2   The question paper is divided into two sections, **A** and **B.**

3.   Section **A** is **S**cholastic **A**ptitude **T**est (**SAT**), contains 60 questions. This section covers **Physics, Chemistry, Biology and Mathematics**.

4.   Section **B** is **M**ental **A**bility **T**est **(MAT), C**omputer **A**wareness and **G**eneral **K**nowledge**,** contains 40 questions.

5.   There will be no negative marks for wrong answer.

6.   A separate answer sheet is provided for answering the questions. Each question should be answered by **darkening** the appropriate circle (A, B, C, or D) with a **blue or black ball pen**.

7.   Answer recorded once in the answer sheet cannot be altered.

8.   All rough works should be done only in the space provided for **rough work** in this question paper.

9.   Calculator is not permitted in the examination hall.

10.   Candidate should write his / her name in the space provided for the purpose.

Roll Number   :………………………

Candidates Name   : …………………….

Candidates Signature   :……………………..   ……………………….
                                                          Invigilator's Signature
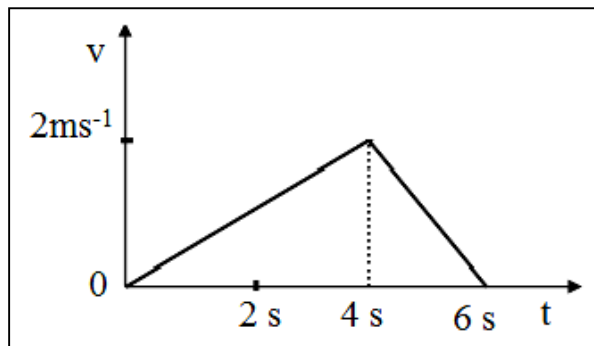
SECTION: A

PHYSICS (Q No: 1 to 15)

1. Two bodies have their masses in the ratio 3 : 1 and their kinetic energy in the ratio 1 :3. The ratio of their velocities

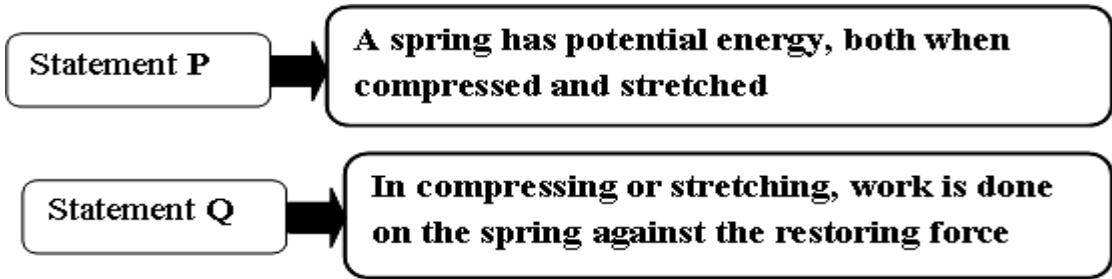   (A) 1 : 1   (B) 1 : 3   (C) 1 : 2   (D) 1 : 9

Questions 2 and 3: The velocity-time graph of a particle along a straight line is shown in the figure below. Study the graph and answer the questions 2 and 3.

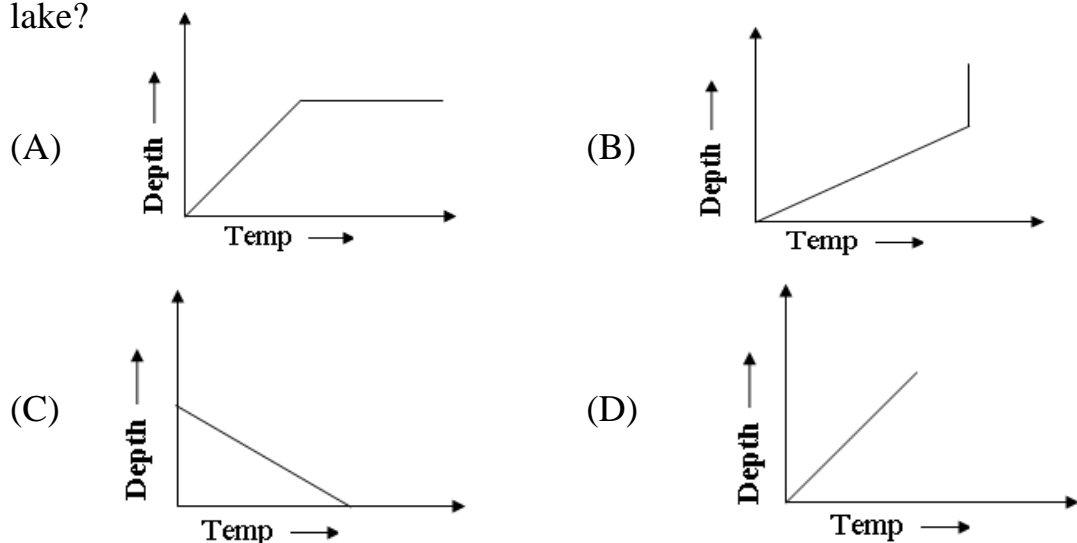2. The distance covered by the particle in the last two seconds is

    (A) 4m   (B) 6m   (C) 1m   (D) 2m

3. Which of the following statement regarding the motion of the particle is correct?

    (A) The motion is uniform

    (B) The acceleration is uniform

    (C) Particle moves with uniform acceleration and then uniform retardation

    (D)The particle changes its direction after 4th second

4. An ordinary clock losses time during summer because the length of the pendulum

    (A) Increases and therefore the time period increases

    (B) Increases and therefore the time period decreases

    (C) Decreases and therefore the time period increases

    (D) Decreases and therefore the time period decreases

5. A man is hit harder when he falls on concrete floor than when falls on sand from same height because

   (A) In latter case velocity is more than in former case.

   (B) In former case the surface is harder than the latter case

   (C) In latter case friction is more than in former case

   (D) In latter case the feet of the man are brought to rest in a longer time than in former case

6. The absorption of ink by blotting paper involves

   (A) Viscosity of ink

   (B) Capillary action phenomenon

   (C) Diffusion action through the blotting

   (D) Siphon action

7. A coil of wire of cross section 0.75mm^2 weighs 125g in air and 115g in water. The length of the coil in centimeter (cm) is

   (A) $\dfrac{10^5}{75}$ cm   (B) $\dfrac{10^5}{0.75}$ cm   (C) $\dfrac{10^2}{0.75}$ cm   (D) $\dfrac{10^3}{75}$ cm

8. Which of the following statement is wrong?

   (A) The speed of sound in water is higher than in air

   (B) The speed of sound in wood is higher than in air

   (C) Changes in air pressure have no effect on the speed on sound

   (D) In a medium, speed of sound increases, if we increase the temperature

9. Hydrometer is an instrument

   (A) For measuring sound under water

   (B) To detect the presence of hydrogen in the atmosphere

   (C) For measuring the specific gravity of liquids

   (D) To detect the changes in the atmospheric humidity

10. Read the following statements carefully and mark the correct option.

Statement P ▶ **A spring has potential energy, both when compressed and stretched**

Statement Q ▶ **In compressing or stretching, work is done on the spring against the restoring force**

   (A) Both statements P and Q are true, Statement Q is correct explanation for statement P

   (B) Both statements P and Q are true, Statement Q is not the correct explanation for statement P

   (C) Statement P is true and statement Q is false

   (D) Statement P is false and statement Q is true

11. A racing bike moves at a speed of $5ms^{-1}$ for 500m and at a speed of $10ms^{-1}$ for next 500m. What is the average speed for the race for 1km?

   (A) $5.5ms^{-1}$ (B) $6.6ms^{-1}$ (C) $7.5ms^{-1}$ (D) $8.7ms^{-1}$

12. If the momentum of a certain body is increased by 50%, then increase in kinetic energy of the body will be

   (A) 25%   (B) 50%   (C) 100%   (D) 125%

13. Which one of the following represents the temperature profile of a frozen lake?

(A)

(B)

(C)

(D)

14. A stone dropped from the top of a building passes a window 1.5m high, 10m below it. Then the correct value of the time taken by the ball to pass the window is

      (A) 0.5sec   (B) 0.2 sec   (C) 0.1 sec   (D) 1 sec

15. Match the following and select the correct option

Column A		Column B	
P	Pitch	**1**	Waveform
Q	Quality	**2**	Frequency
R	Loudness	**3**	Intensity

	P	**Q**	**R**
A	**2**	**1**	**3**
B	**3**	**1**	**2**
C	**2**	**3**	**1**
D	**3**	**2**	**1**

CHEMISTRY (Q No: 16 to 25)

16. Which of the following does not increase the rate of evaporation?

      (A) Increase of temperature   (B) Increase in wind speed

      (C) Increase in surface area   (D) Increase in humidity

17. During the formation of an ionic bond the atom that receives electrons is the atoms with

      (A) Higher electronegativity   (B) Lower oxidation number

      (C) Higher ionization energy   (D) Lower electronegativity

18. Which of the following process or processes require heating?

  (i) **Fusion** (ii) **Condensation** (iii) **Vapourisation** (iv) **Solidification**

      (A) (i) & (ii)   (B) (ii) & (iii)

      (C) (i) & (iii)   (D) (i), (ii), (iii) & (iv)

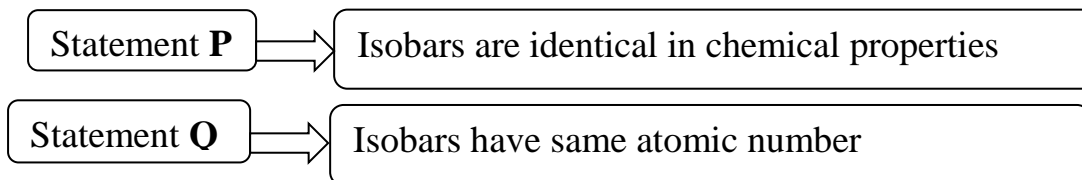19. The boiling points of some gases found in air are given below

Gases	Krypton	Neon	Nitrogen	Oxygen
Boiling point ºC	-152	-246	-196	-183

If liquid mixture of these gases is fractionally distilled, the order of gases distilled out is

(A) Krypton, Neon, Nitrogen, Oxygen

(B) Neon, Nitrogen, Oxygen, Krypton

(C) Nitrogen, Neon, Oxygen, Krypton

(D) Oxygen, Neon, Nitrogen, Krypton

20. What weight of oxygen gas will contain the same number of molecules as 56g of nitrogen gas?

(A) 64g   (B) 32g   (C) 56g   (D) 28g

21. Read the following statements carefully and mark the correct option.

Statement **P** $\implies$ Isobars are identical in chemical properties

Statement **Q** $\implies$ Isobars have same atomic number

(A) Both statements P and Q are true, Statement Q is correct explanation for statement P

(B) Both statements P and Q are true, Statement Q is not the correct explanation for statement P

(C) Statement P is true and statement Q is false

(D) Statements P and Q are false

22. If the atomic weight of an element is 23 times that of the lightest element and it has 11 protons, then it contains

(A) 11 proton, 12 neutrons, 23 electrons

(B) 11 protons, 23 neutrons, 11 electrons

(C) 11 protons, 11 neutrons, 11 electrons

(D) 11 protons, 11 neutrons, 23 electrons

23. A saturated solution at a particular temperature

      (A) Is colourless

      (B) Does not dissolve no more solute

      (C) Contains suspended solid particles

      (D) Contains insoluble solute

24. Equal masses of Oxygen, hydrogen and Methane are kept in the similar environment. What would be the ratio of the volume of the three gases?

      (A) 1 : 4 : 1   (B) 2 : 16 : 1   (C) 1 : 16 : 2   (D) 1 : 8 : 1

25. Which one of the following is used as anti-freeze for the automobile engines?

      (A) Propyl alcohol   (B) Ethylene glycol

      (C) Methanol   (D) Ethanol
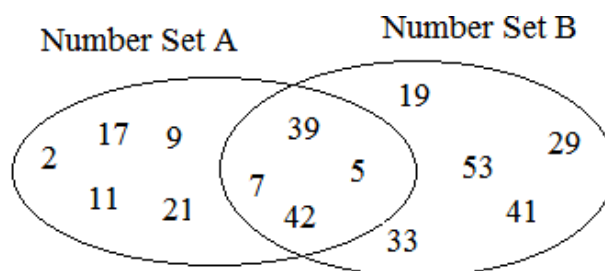
BIOLOGY (Q No: 26 to 35)

26. A group of closely related, structurally and functionally similar organism which interbreed with one another in nature, but not organism of other group is known as

      (A) Order   (B) Genus   (C) Species   (D) Family

27. Which of the following is a vitamin?

      (A) Insulin   (B) Adrenalin   (C) Keratin   (D) Riboflavin

28. A doctor advices a patient to take plenty of citrus fruits, guavas, tomatoes and amalas (gooseberry) over a period of two months regularly. What do you think is the complaint of the patient?

      (A) Softness and pain in bones, bending of vertebral column

      (B) Gums spongy, swollen and bleed easily

      (C) Blurred vision, burning and dryness of eye and tongue, cracking of skin of the chin

      (D) Extreme weakness, swelling and pain in leg, loss of appetite, headache.

29. The hormone that induces cell division in plant is

    (A) Auxins   (B) Gibberellins   (C) Kinns   (D) Dornins

30. The basis of DNA finger printing is

    (A) Phenotypic differences between individuals

    (B) Availability of cloned DNA

    (C) Knowledge of human Karyo-type

    (D) Occurrence of restriction fragment length polymorphism

31. Structural component of chlorophyll among the following is

    (A) Magnesium   (B) Manganese

    (C) Iron   (D) Zinc

32. The cell walls of the adjacent cells are joined together by a jelly like substance made up of calcium and magnesium pectate. This is called

    (A) Microfibril   (B) Middle lamella

    (C) Plasmodesmata   (D) Plasmalemma

33. Which one of the following statements regarding the apical meristem is NOT TRUE?

    (A) It brings about the elongation of the roots and stem

    (B) It brings about primary growth

    (C) It brings about secondary growth

    (D) None of the above

34. Which of the following regions are called the zone of mega diversity?

    (A) Tropical regions   (B) Temperature regions

    (C) Polar region   (D) All of these

35. **X** is produced by incorporating useful genes in order to obtain desirable characters. What is **X**?

    (A) Hybridised crops   (B) Genetically modified crops
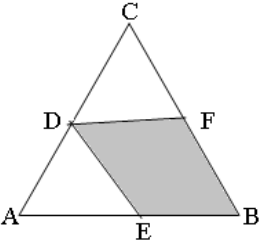
    (C) Transgenic crops   (D) Both (B) & (C)

MATHEMATICS (Q No: 36 to 60)

36. Two distinct points in a plane determines

(A) One line   (B) Two lines

(C) Three line   (D) Infinite lines

37. An isosceles right triangle has area 8cm^2. The length of its hypotenuse is

(A) 4cm   (B) 4√3 cm   (C) 2√6 cm   (D) 4√2cm

38. If a person walks at 14km/hr instead of 10km/hr, he would have walked 20km more. The actual distance travelled by him is

(A) 56km   (B) 50km   (C) 80km   (D) 70km

39. If $9x^2 + \mathbf{k}xy + 16y^2$ be a perfect square, then the value of **k** is

(A) 32   (B) 28   (C) 24   (D) 16

40. An unbiased dice is thrown. What is the probability of getting a multiple of 3?

(A) $\dfrac{1}{3}$ (B) $\dfrac{1}{4}$ (C) $\dfrac{2}{3}$ (D) $\dfrac{1}{2}$

41. A number is first increased by 20% and then reduced by 20%. What would be the percentage change in the number?
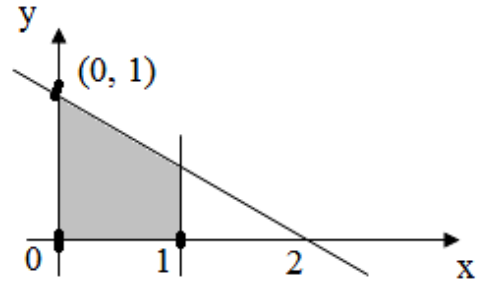
(A) 0   (B) 2   (C) 4   (D) 6

Questions 42 & 43: Study the following diagram carefully and answer the questions given below

42. What is the sum of the numbers which are exclusively in Set A?

(A) 60   (B) 65

(C) 102   (D) 99

43. What is the difference between the sum of all numbers in set B and the numbers which are exclusively in Set B?

      (A) 82   (B) 268   (C) 33   (D) None of these

44. The LCM of two numbers is 864 and their HCF is 144. If one of the numbers is 288, the other number is

      (A) 576   (B) 1296   (C) 432   (D) 144

45. 30 men can do a work in 50 days. After 20 days 10 men leave the work. The work will complete in

      (A) 53 days   (B) 65 days   (C) 45 days   (D) 60 days

46. ABC is a triangle in which D, E and F are the mid points of the sides AC, BC and AB respectively. What is the ratio of the area of the shaded to the unshaded region in the figure?

      (A) 1 : 1   (B) 3 : 5

      (C) 4 : 5   (D) 1 : 2

47. The number $x = 1.242424\ldots$ can be expressed in the form $x = \dfrac{p}{q}$ where p and q are positive integers having no common factors. Then p + q =

      (A) 72   (B) 74   (C) 41   (D) 53

48. 12 litres of water are poured into an aquarium of dimensions 50cm length, 30cm breadth, and 40cm height. How high (in cm) will the water rise? (1 litre = 1000cm3)

      (A) 10   (B) 20   (C) 6   (D) 8

49. If $\left(a + \dfrac{1}{a}\right)^2 = b$ then $a^3 + \dfrac{1}{a^3}$ is equal to

      (A) b^3 (B) $b^{3/2}$

      (C) $b^{3/2} - 3b^{1/2}$ (D) $b^{3/2} + 3b^{1/2}$

50. In the rectangular-coordinate system below, the shaded region is bounded by straight lines. Which of the following is not an equation of one of the boundary lines?

    (A) x = 0

    (B) x = 1

    (C) x − y = 0

    (D) x + 2y = 2
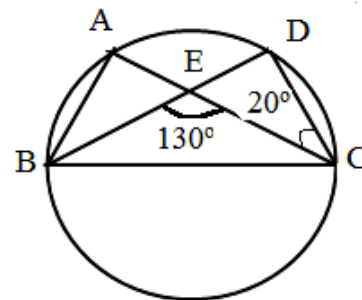
51. You are given a cone and a cylinder of same heights and radii. If the volume of cylinder is 72cm³, the volume of cone is

    (A) 216 cm³   (B) 144 cm³

    (C) 9 cm³   (D) 24 cm³

52. The angles of a triangle are in the ratio 5 : 3 : 7. The triangle

    (A) Acute   (B) Obtuse   (C) Right   (D) Isosceles

53. A, B, C and D are four points on a circle. AC and BD intersect at a point E such that angle BEC = 130° and angle ECD = 20°. Then the angle BAC is

    (A) 90°

    (B) 100°

    (C) 110°

    (D) 120°

54. The supplement of 80° is

    (A) 10°   (B) 100°   (C) 120°   (D) 180°

55. If **d − 2e = 4** and **3d + e = -9,** then the value of **d** is

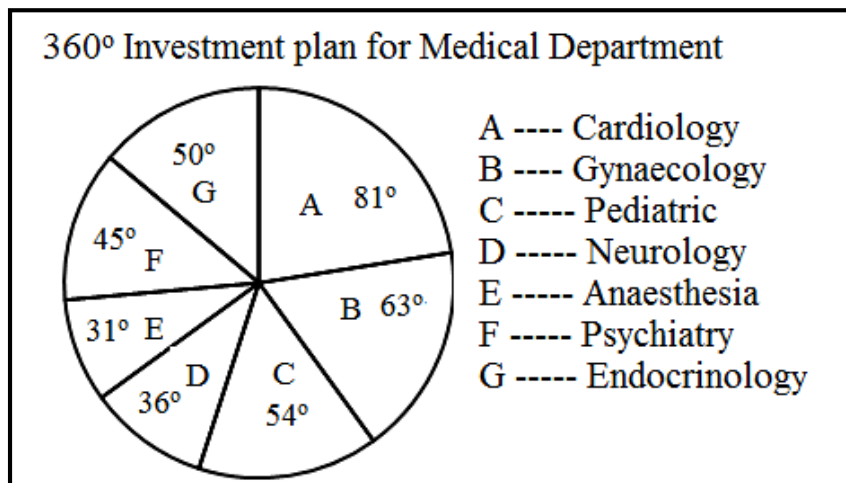   (A) -3   (B) -2   (C) 1   (D) 3

56. A cricketer has a certain average for 9 innings. In the tenth innings, he scores 100 run, thereby increasing his average by 8 runs. His new average is

    (A) 24   (B) 32

    (C) 20   (D) 28

57.   An article when sold for Rs. 840 earns a profit which is double the amount
       of loss when the same article is sold for Rs. 600. What is the Cost Price of
       the article?

              (A) Rs. 680   (B) Rs. 600

              (C) Rs 500   (D) Rs. 720

Questions 58 to 60: The pie chart given here shows the investment plan of a
country on various medical departments during a particular year. Study the
graph carefully and answer the questions 58 to 60

58.   What percent of total expenditure is on psychiatry?

              (A) 25%   (B) 22.5%

              (C) 12.5%   (D) 45%

59.   By what percent money spent on Gynecology is more than expenses on
       Neurology?

              (A) 27%   (B) 35%

              (C) 57%   (D) 75%

60.   If the total amount spent on Medical departments during the year was 2
       crores, what was the amount spend on Cardiology and Gynecology together?

              (A) Rs. 800000   (B) Rs. 8000000

              (C) Rs. 12000000   (D) Rs. 16000000
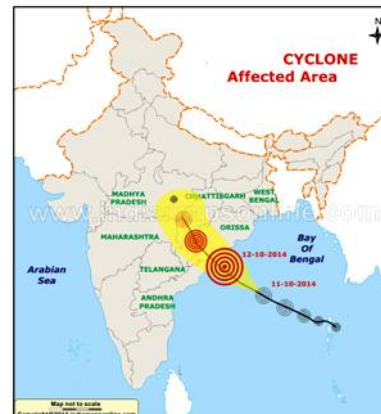
SECTION: B

61. Which one of the following can't act both as input and output device to the computer

    (A) CD   (B) Visual and Display Unit

    (C) Pen Drive   (D) Key board

62. The main objective to form a network is to:

    (A) Share information and resources

    (B) Integrate data and resources

    (C) Combine data and resources

    (D) Collect data and resources

63. Giving a value to a variable is known as

    (A) Explicitly   (B) Implicitly

    (C) Separators   (D) Assigning

64. A variable can be declared by using:

    (A) Dim   (B) Do……………Loop

    (C) IF ………..WHEN   (D) For ……..Next

65. Which one of the following is the collection of logically related record in the form of a table?

    (A) Data Source   (B) Data Base

    (C) Query   (D) Report

66. Which one of the following is an extension given to a database saved in MS Access 2007

    (A) .odt   (B) .jpej   (C) .accdle   (D) .org

67. Which of the following is a programming system created to give a user friendly environment that supports graphical user interface?

    (A) Q BASIC   (B) MS Excel

    (C) C++   (D) Visual Basic

68. This software provide various tools for selecting, painting, drawing, editing erasing and viewing images

 (A) MS Word   (B) Photoshop   (C) MS Paint   (D) MS Access

69. Which one of the following statement is a wrong about programme flow chart?

 (A) It is a powerful programme tool for defining complex program logic

 (B) It enhances communication with computers

 (C) It expresses the total sequence of events to solve problem

 (D) It is a detailed picture of programming structure

70. Hypertext markup language is used for:

 (A) Creating E mail   (B) Creating website

 (C) Running CD   (D) Displaying Windows

71. Which one of the following is a common statement for both the personalities?

 (A) They fight against terrorist activities

 (B) Both of them witnessed terrorist attack

 (C) They share 2014 Nobel Prize for Peace

 (D) They work for women uplift

72. Identify the name of the cyclone by using following map

 (A) Hudhud

 (B) Lyla

 (C) phailin

 (D) Phyan

73.   A geographic region has the following distinct characteristic

            1. Warm and Moist Climate

            2. Mid and wet winter

            3. Evergreen and oak trees

The above features are the distinct characteristics of which one of the following region?

    (A) Mediterranean   (B) Eastern China

    (C) Central Asia   (D) Atlantic Coast of America

74.   Consider the following statement:

            1. Rotation of the earth

            2. Air Pressure and wind

            3. Density of Ocean water

Which factors are responsible for movement of ocean water?

    (A) 1 and 2   (B) 2 and 3 only

    (C) 1 and 3   (D) All of the above

75.   A particular state of India has following characteristics

        1. It is located in the same latitude which passes through northern Rajasthan

        2. It has over 80% of its area under forest cover

        3. Over 12% of the forest cover constitutes protected area network in this state

Which one among the following states has all the above characteristics?

    (A) Assam   (B) Arunachal Pradesh

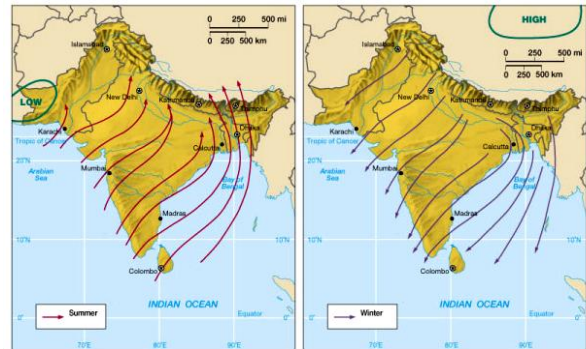   (C) Himachal Pradesh   (D) Uttarakhand

76.   Identify the marked river:

    (A) Krishna

    (B) Godavari

    (C) Cauvery

    (D) Narmada

77. The following maps are suitable to explain

(A) Wind movement of India

(B) Seasons of India

(C) Monsoons of India

(D) Temperature of India

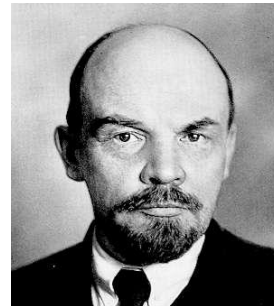78. The following news paper published in the year

(A) 1941

(B) 1939

(C) 1945

(D) 1789

79. Identify the person with the help of adjacent clue.

(A) Fedal Castro

(B) Socrates

(C) Vladimir Lenin

(D) Jean Jacques Rousseau

80. Identify this building:

(A) Supreme Court of India

(B) Office of the Election Commission
of India

(C) Office of the Attorney General

(D) Office of the CAG

81. The Nobel Prize in Literature in 2013 was awarded to Alice Munro. She belongs to which country?

      (A) China

      (B) America

      (C) Yugoslavia

      (D) France

82. Identify this personality who recently visited India and extended support for '**Swachha Bharath Abhiyan'**

      (A) Mark Zuckerberg

      (B) Dick Costolo

      (C) Eric Schmidt

      (D) Marissa Mayer

83. The largest of Gross Domestic Product (GDP) in India comes from:

      (A) Agriculture and allied sector

      (B) Manufacturing industries

      (C) Service Sector

      (D) Defense

84. The following programme is related to:

      (A) NREGA

      (B) Grama Swaraj

      (C) Swachha Bharat Abhiyan

      (D) Food for the work Programme

85. Who presents budget in Lok Sabha

      (A) Finance Minister   (B) Prime Minister

      (C) Speaker   (D) Home Minister

86. Anisha walked 7m in the direction of North and then he turned to his to his right and walked 6m. After this he turned to his right and moved 15m. Now how far he is from the starting point

    (A) 20m.   (B) 28m.   (C) 10m.   (D) 5km

87. From the given alternatives select the word which cannot be formed using the letter of the given word:

    ## GEOGRAPHY

    (A) GRAPE   (B) GRAPH   (C) GORGE   (D) ECHO

88. Select the related word from given alternative:

    Knowledge is related to **Reading** same way **Experience** is related to**:**

    (A) Working   (B) Training   (C) Traveler   (D) Training

89. Select the missing number.

    (A) 15

    (B) 28

    (C) 29

    (D) 27

1	2	3
4	5	6
7	8	9
11	18	?

90. How many meaningful English words can be formed from the word **GOODBYE** without changing the order and no letter is repeated in a word?

    (A) 2   (B) 3   (C) 1   (D) None of these

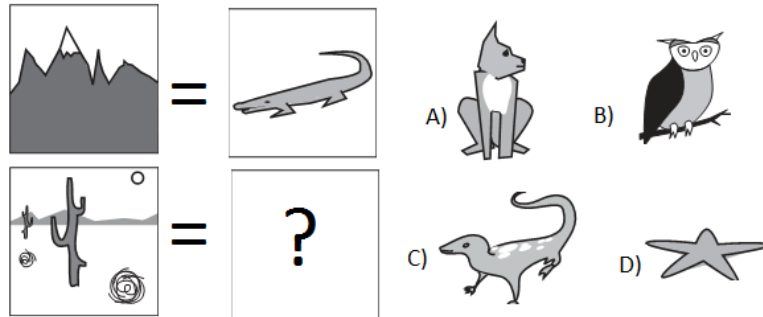91. In certain code **MOUNTS** written as **NPVMSR**, in that code **PERSUE** may be written as

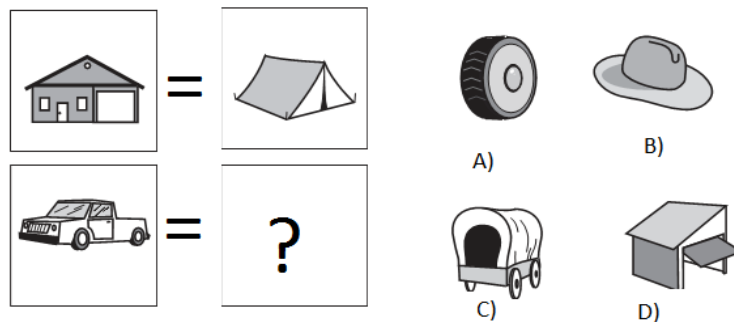   (A) QFSRTD   (B) QFSTVF   (C) QFSTFV   (D) DTRQFS

92. If the day before yesterday was Saturday, what day will fall on the day after tomorrow?

    (A) Friday   (B) Saturday   (C) Wednesday   (D) Monday
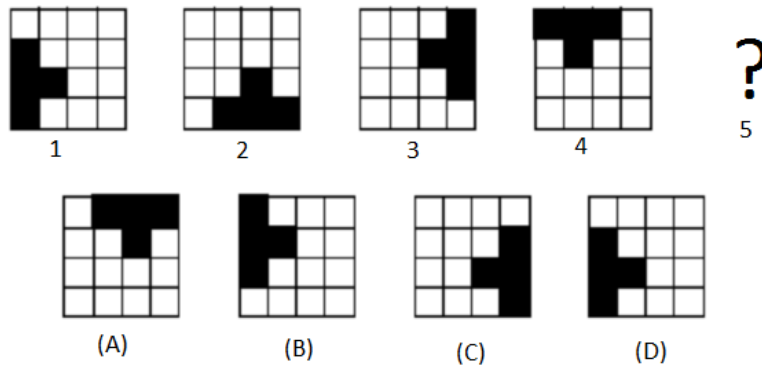
93.   Replace the question mark

94.   Replace question mark:
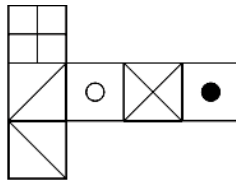

95.   Complete the series:

96.   Find the odd one out:

      (A) Narmada   (B) Mahanadi   (C) Cauvery   (D) Krishna

97.   How many digits are there in the number 893542 retain its position if they are rearranged in ascending order?

      (A) None   (B) One   (C) Two   (D) Three

98.

When the above is folded to form a cube, which is is the only oneof the following that can be produced

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

99.   **BD** is related to **DH** in the same way **MO** is related to:

(A) PR   (B) QR   (C) OS   (D) OP

100.   2018 Asian Games will be held in:

(A) China   (B) Indonesia

(C) Singapore   (D) Bangladesh

SPACE FOR ROUGH WORK