# BNAT Sample Paper- Senior

<mark>Mathematical Ability</mark>

1. A mobile phone gets fully charged in 3 hours and, when kept idle, it drains 1% of the battery every 9 minutes. If the completely discharged mobile phone is charged for 2.25 hours and then unplugged and kept idle for 3 hours, what would be the remaining charge in the phone's battery?

    a) 20%
    b) 35%
    c) 55%
    d) 75%

Answer: Option c)

2. The two isosceles right-angle triangles shown in the figure are similar triangles. If the ratio of the area of the triangles is 1:3, what is x in cm?
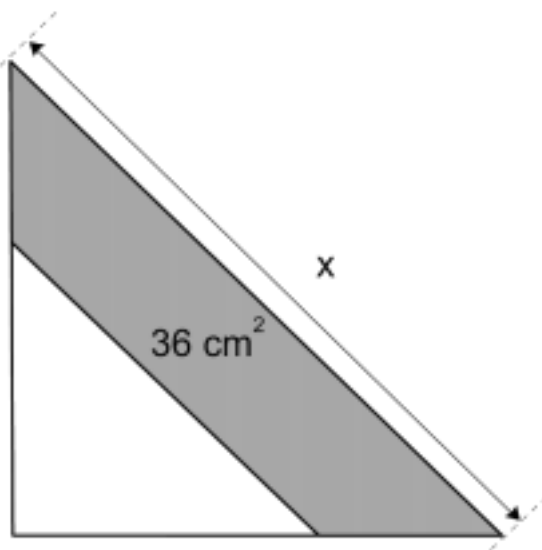
    a) $3\sqrt{3}$
    b) $6\sqrt{3}$
    c) $6\sqrt{6}$

d) 3√6

Answer: Option c)

3. If 160 L of molten metal is cast into 20 identical cubes, how many litres of paint will be required to paint all the cubes completely with a uniform thickness of 1 cm?

    a) 36
    b) 48
    c) 80
    d) 160

Answer: Option b)

4. If the length of the sides of a square are rational numbers, which of the following is true?

    a) Half of its side length is always an integer.
    b) Length of its diagonal is an irrational number.
    c) Its area is definitely a perfect square number.
   d) Its perimeter may or may not be a rational number

Answer: Option b)

5. A and B are the centers of the wheels of the toy tractor shown in the figure. How many times would have the front wheel of the tractor rotated by the time the rear wheel completes one rotation?
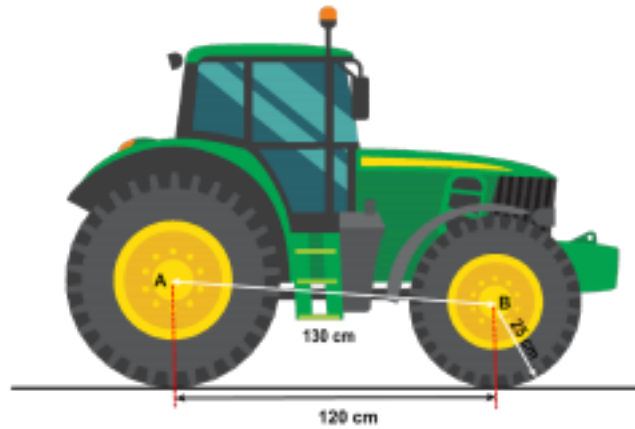
a) 2
b) 2.5
c) 3
d) 4.5

Answer: Option c)
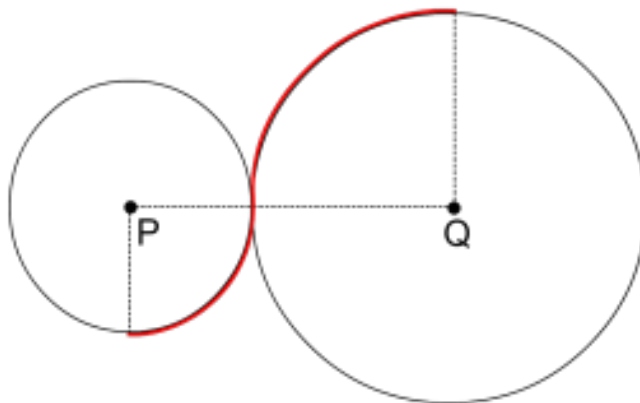
6. In the given figure, what is the ratio of the area of the square to the circle ? (Take π = 22/7)

a) π :4
b) 1: π
c) π :5
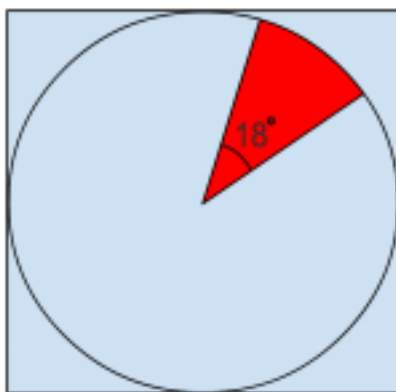**d) 2: π**
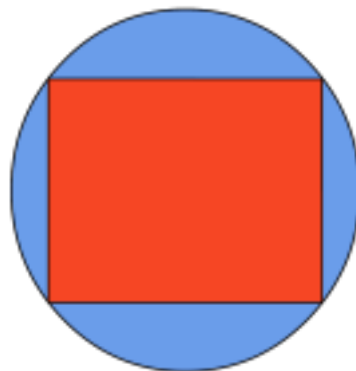
Answer: Option d)

7. If PQ, the distance between the center of two circles, measures 8 units, what is the length of the red curve?

a) 2 π
b) 4 π
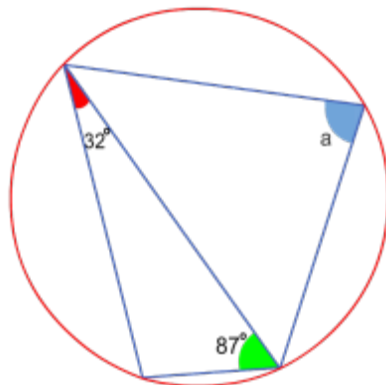c) 6 π
d) 8 π

Answer: Option b)

8. What is the ratio of the area of the red sector to the area of the whole square?
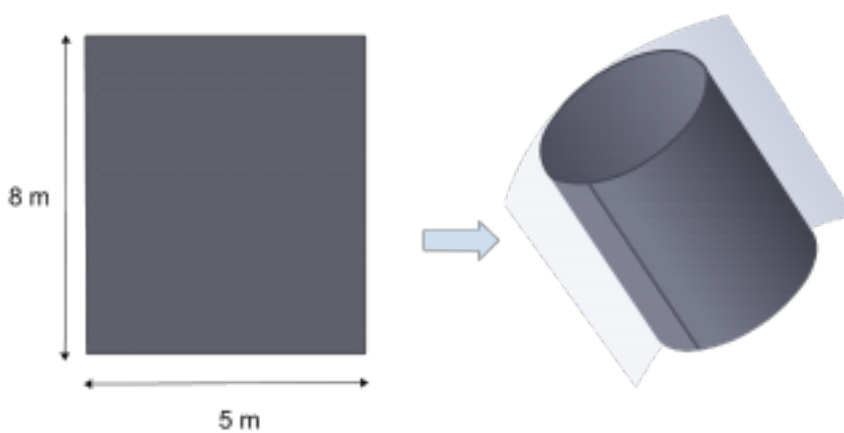

a) π/10
b) π/20
c) π/40
d) π/80

9. Find 'a' in the figure.

a) 61°
b) 87°
c) 93°
d) 119°

Answer: Option d)

10. What is the volume (in m³) of the biggest possible cylindrical pipe formed by folding the sheet as shown in the figure?

a) 200π
b) 50/π
c) 80/π
d) 320π

Answer: Option c)

11. A and B are cylindrical containers. If ¾ ᵗʰ of the water in container B would fill container A to its brim, what is the ratio of the radius of container A to container B?
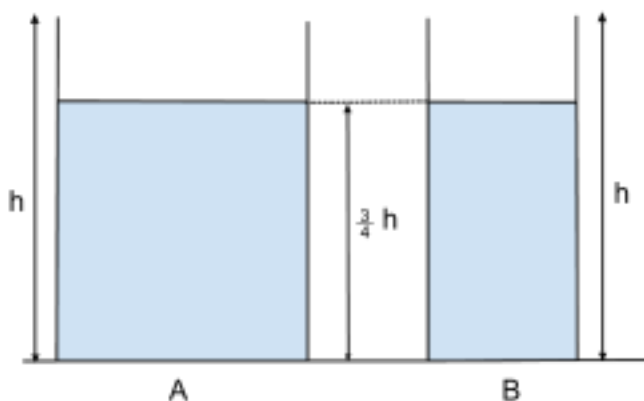
a) 2:1
b) 4:3
c) 3:2
d) 5:2

Answer: Option c)

12. If the red line divides the parallelogram such that a is ⅓ʳᵈ of b and ⅔ʳᵈ of c, what is the measure of d?
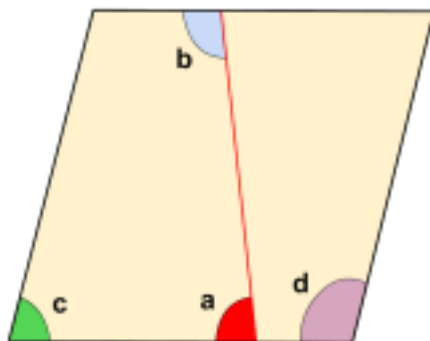
a) 108°
b) 112.5°
c) 120°
d) 124.5°

Answer: Option b)

13. What is the area (in cm²) of the blue region if the area of the whole trapezium is 40 cm²?
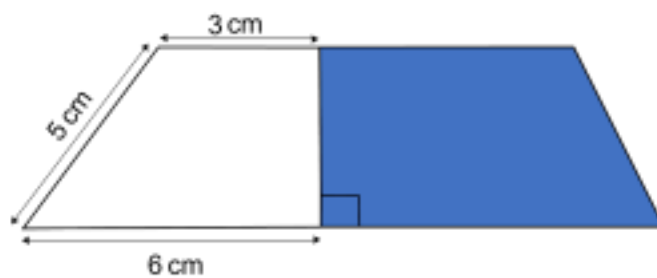
a) 18
b) 21
c) 22
d) 24

Answer: Option c)

14. ΔABC is an isosceles triangle and BC is the diameter of the circle.
    What is the area of the triangle?
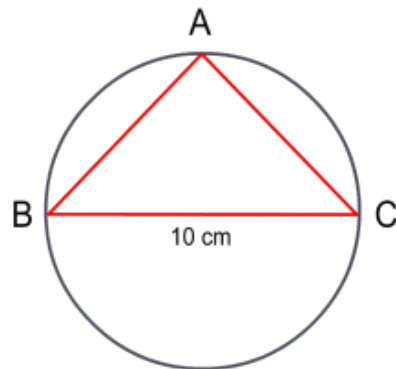
      a) 25 cm²
      b) 50 cm²
      c) 75 cm²
      d) 100 cm²

     Answer: Option a)

Verbal Ability

1. Dismay : Pleasure :: Horrible : ?

    a. Happiness
    b. Sorrow
    c. Joy
    d. Pleasant

Answer: Option d

2. Choose the appropriate option against the bold part to make the sentence correct.
The carpenter did not keep his promise that the work **will be** finished before the end of the week.

    a) can be
    b) could be
    c) would be
    d) may be

Answer: Option c

3. Pick the odd one out with respect to 'rage'.

    a. Calmness
    b. Peace
    c. Harmony
    d. Bliss

Answer: Option d

4. Form an adverb of HAPPY.

    a. Happiness
    b. Happier
    c. Happily
    d. Happening

Answer: Option c

5. Combine the following sentences into one complete sentence:
    That is the man. He gave me a dog. It went mad.

    a. That is the man which gave me a dog who went
    mad.
    **b. That is the man who gave me a dog but it went
    mad.** c. That is the man that gave me a dog and it
    went mad.
    d. That is the man which gave me a dog which went
    mad.

Answer: Option b

6. From the given options, choose the correct meaning of the idiom highlighted in the sentence below.
These yellow balloons are **a dime a dozen** in the parties.

    a) Very beautiful
    b) Very common
    c) Very costly
    d) Very bad

Answer: Option b

7. Fill in the blanks.
There is some doubt _____ the truth _____ this
    statement.

    a. on; of
    b. about; of
    c. about; in
    d. of; in

Answer: Option c

8. Choose the correct sentence.

a. When I woke up, he has already eaten breakfast.
b. When I woke up, he had already eaten breakfast.
c. When I had woken up, he had already ate breakfast.
d. When I had woken up, he has already ate breakfast.

Answer: Option b

9. Convert the given sentence into passive
voice.   Who taught you French?

    a. French taught you who?
    b. French is taught by whom?
    c. By whom was French taught to you?
    d. By who were you taught French?

Answer: Option c

10. Change the following into indirect speech.
He said, 'I am glad to be here this evening.'

    a. He said that he was glad to be here that evening.
    b. He said that I was glad to be here this evening.
    c. He said that he was glad to be there that evening.
    d. He said he was glad to be there that evening.
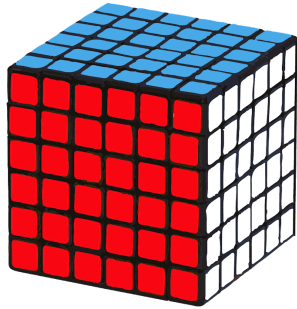
Answer: Option c

Logical Ability

1. An analogue clock is set right at 5 AM. The clock gains 20 seconds in 3 minutes, on the same day, what is the true time when the clock reads 5 PM.

   a. 5: 48 PM
   b. 4: 48 PM
   c. 3:48 PM
   d. 3:12 PM

   Answer: Option c

2. Jack deposits ₹10,000 in a bank that charges an annual maintenance fee of 20% on the principal and gives zero interest. What will be the amount Jack will have after 4 years?

   a. ₹8000
   b. ₹4096
   c. ₹6400
   d. ₹6600

   Answer: Option b

3. A large cube is painted on all six faces and then cut into a certain number of smaller but identical cubes. It was found that among the smaller cubes, there were eight cubes which had no face painted at all. How many smaller cubes was the original large cube cut into?

a. 27
b. 48
c. 64
d. 125

Answer: Option c

4. If a! = a(a-1)(a-2)(a-3)...1, then find X + Y + Z, given that XYZ is a three digit number such that XYZ = X! + Y! + Z!.

    a. 11
    b. 10
    c. 9
    d. 8

    Answer: Option b

5. There are 3 decks of cards, each deck has 6 cards marked 1, 2, 3, 4, 5, and 6. What is the total number of possible ways of drawing one card from each deck, so that the sum of the three cards drawn is 7?

    a. 15
    b. 10
    c. 24
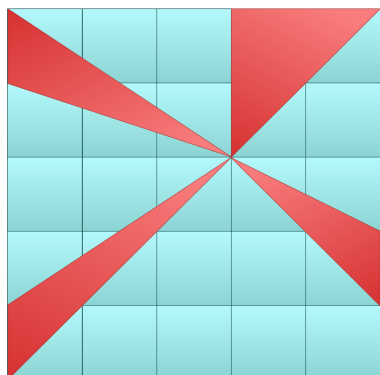   d. 12

    Answer: Option a

6. Harry walks from his house at A to his office at B, by taking the shortest path. Find in how many ways Harry can go from A to B moving only Up or Right at every intersection of roads.
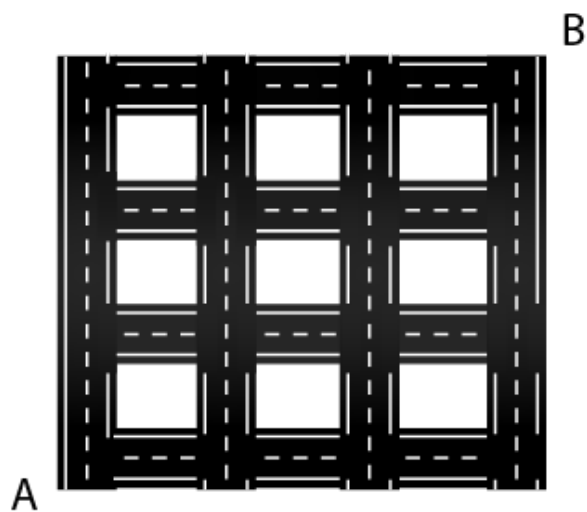
a. 5
b. 30
c. 120
d. 20

Answer: Option d

7. What percentage of the square is red?

a. 20
b. 22

c. 25
d. 30

Answer: Option d

8. There are 5 different shirts 'P' to 'T' placed in a row for a hanger (not necessarily in alphabetical order). If the shirt 'Q' is exactly placed between 'R' and 'S', 'R' is not at either extreme, and 'P' is somewhere between 'S' and 'T', then which shirt is placed in the middle.
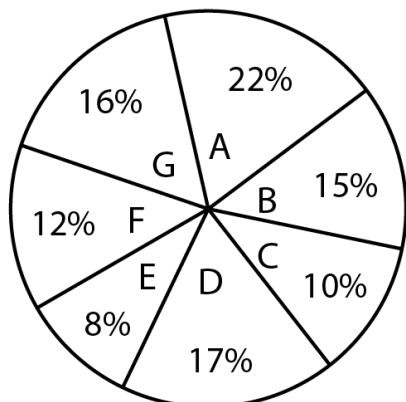
   a. T
   b. P
   c. S
   d. R

   Answer: Option d

9. Metal 'A' is 20 times heavier than iron and metal 'B' is 13 times heavier than iron. In what proportion must these two metals be mixed to obtain an alloy which is 17 times heavier than iron.
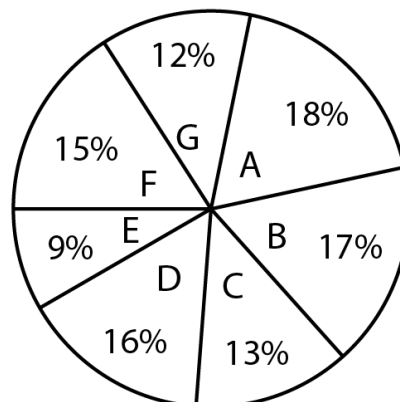
   a. 3 : 4
   b. 3 : 1
   c. 1 : 3
   d. 4 : 3

   Answer: Option d

10. What % of candidates passed with respect to candidates enrolled in school B & C together?

Total Students 8550
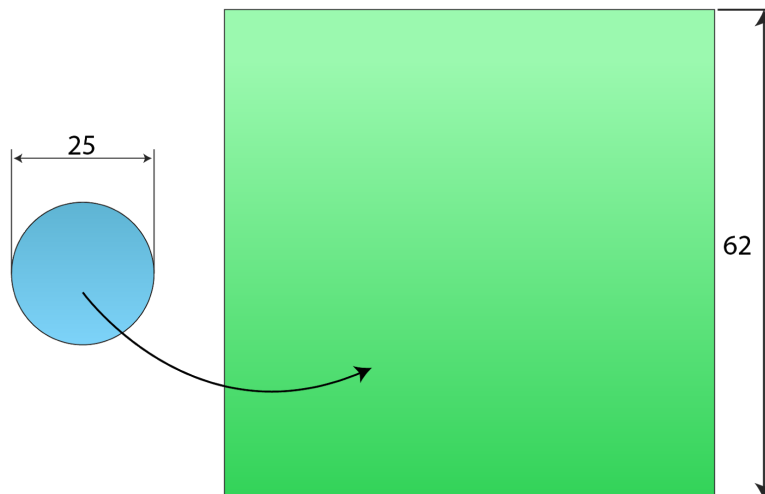

Total Passed 5700

a. 40
b. 60
c. 80
d. 90

Answer: Option c

11. How many such circles can be placed inside the given square?

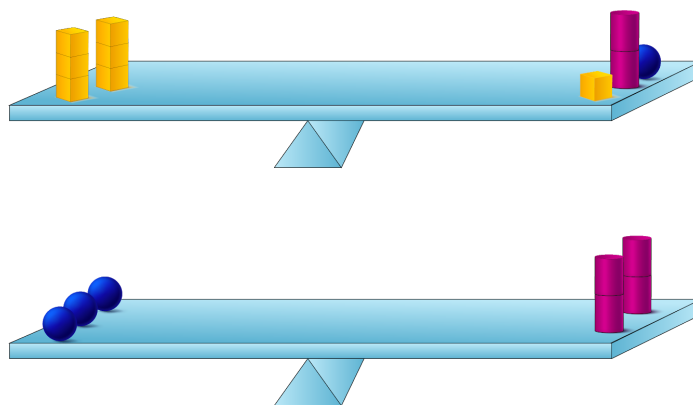a. 4
b. 5

c. 6
d. 7

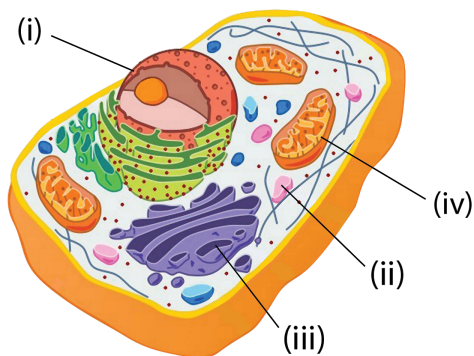**Answer: Option b**

12. How many cubes will balance a sphere?

    a. Half
    b. 1
    c. 2
    d. 3

Answer: Option c

Science

1. Identify the correct option with the organelles and their role in a cell.

a. (i) - Headquarter, (ii) - Post office, (iii) - Suicidal bag, (iv) - Power house

b. (i) - Power house, (ii) - Suicidal bag, (iii) - Post office, (iv) - Headquarter

c. (i) - Power house, (ii) - Headquarter, (iii) - Post office, (iv) - Suicidal bag

**d. (i) - Headquarter, (ii) - Suicidal bag, (iii) - Post office, (iv) - Power house**

Answer: Option d

2. Which of the following options correctly represents the mass ratio of hydrogen, sulphur, and oxygen in sulphuric acid?

a. 1:16:16
b. 1:16:32
c. 2:32:16
d. 2:32:32

Answer:option b

3. Nancy visits a zoo and records the voices of a few animals. From these recordings, she generates some plots representing sound waves as shown below. Which of the following points can we infer from these plots?

Tune A   Tune B   Tune C   Tune D
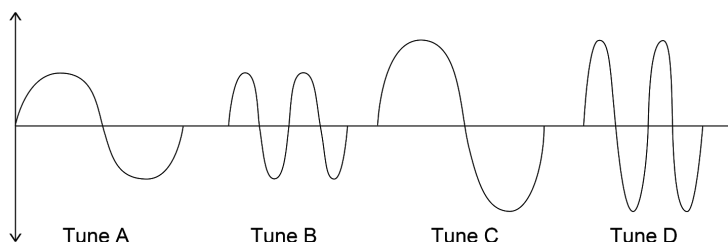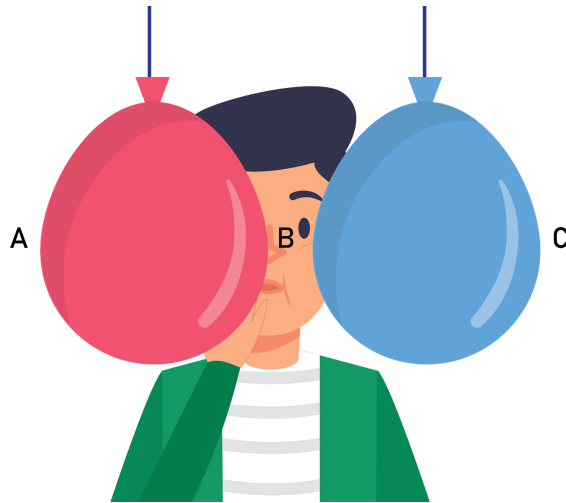
a. Tune A and tune D have the same pitch.
b. Tune A and tune C have the same loudness.
c. Tune C and tune D have the same loudness.
d. Tune B and tune C have the same pitch.

Answer:option c

4. A man tries to blow between two balloons, pink and blue, tied to a string at a certain height as shown in the image below. In which direction, do you think the

balloons will swing?


a. Blue balloon swings towards C and pink balloon pink towards B

b. Blue balloon swings towards B and pink balloon swings towards A

c. Blue balloon swings towards B and pink balloon swings towards B

d. Blue balloon swings towards C and pink balloon swings towards A

Answer:option c

5. You are given 3 specimens of plant cells. Identify the cell which has undergone plasmolysis.

A   B   C
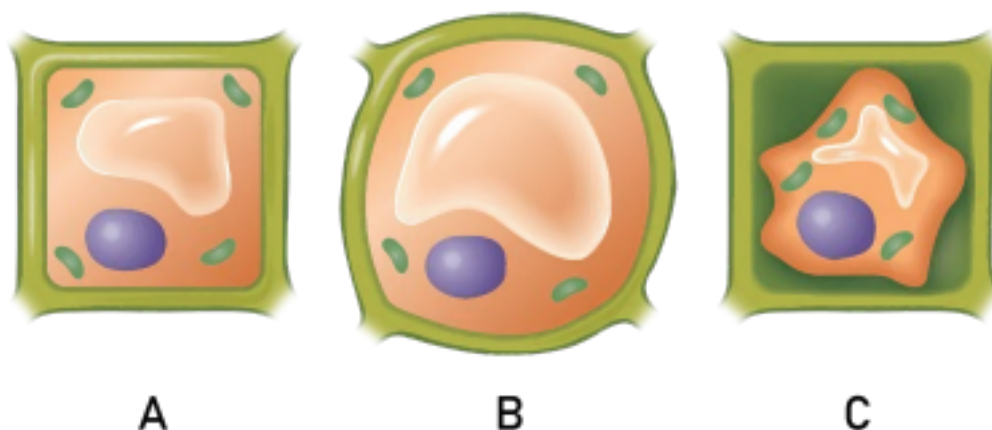
a. A
b. B
c. C
d. Insufficient data

Answer:option c

6. A block is placed on a platform which is kept on the ground. After a while, the platform starts moving. If the velocity of the block with respect to ground is the same as that of the platform with respect to the ground, then which of the following statement(s) is/are correct?

(i) Kinetic friction acts between the ground and the platform.
(ii) Kinetic friction acts between the ground and the block.
(iii) Kinetic friction acts between the platform and the block.

a. Only (i)
b. Only (iii)
c. Both (i) and (iii)
d. Only (ii)

Answer:option a

7. Which amongst the following materials should Ben use to make a container for storing iron sulphate solution ?

a. Copper
b. Aluminium
c. Zinc
d. Magnesium

Answer:option a

Gold atoms
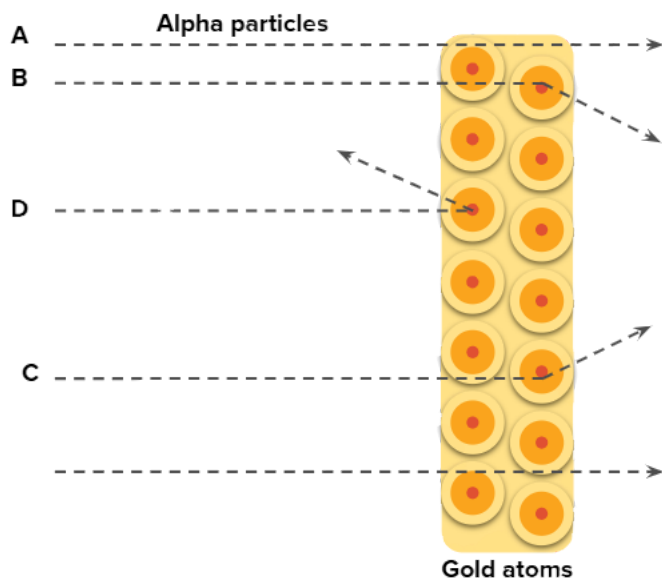
8.

The given image shows alpha rays A, B, C, D striking a gold foil in Rutherford's alpha-ray scattering experiment. Identify the alpha ray which most likely suggests the presence of a positively charged nucleus of an atom.

a. A
b. B
c. C
d. D

Answer:option d

9. Chlorine accepts one electron from element X to form a molecule. Which among the following would most likely be element X?

a. Chlorine
b. Magnesium
c. Sodium

d. Oxygen

Answer:option c

10. **Raju:** I just watched a video on Newton's law and it's just amazing.
    Seema: The video which you have watched is just a series of still images played in a sequence.
    Rahul: An image stays on the retina for about 1/16th of a second.
    Based on their conversation, which of the following statement is correct?

    a. **Seema is correct and the reason given by Rahul is the correct explanation.**
    b. Seema is correct and the reason given by Rahul is not the correct explanation.
    c. Seema is wrong but the reason given by Rahul is correct.
    d. Seema is correct but the reason given by Rahul is wrong.

    Answer:option a

11. A kid had a coin and wanted to perform a trick with it as mentioned.
    Case 1: He wanted to get 5 virtual images of the coin.
    Case 2: He wanted to get 3 virtual images of the coin.
In both cases, how many minimum numbers of plane mirrors have to be used and what should be the orientation of the mirrors (angles between them).

    a. Case 1: 2 mirrors and 90°, Case 2: 2 mirrors and 60°
    b. Case 1: 2 mirrors and 60°, Case 2: 2 mirrors and 90°
    c. Case 1: 2 mirrors and 120°, Case 2: 2 mirrors and 60°
   d. Case 1: 2 mirrors and 90°, Case 2: 2 mirrors and 120°

Answer:option b

12. Identify x, y, and z from the table below.

Hormones	Glands
Growth hormone	x
y	Thyroid
Insulin	z

a. x - pituitary, y - thyroxine, z - pancreas
b. x - pancreas, y - thyroxine, z - pituitary
c. x - pituitary, y - adrenaline, z - pancreas
d. x - pancreas, y - adrenaline, z - pituitary

Answer:option a

13. Identify the type of solution in which the following cells were placed.

Shriveled cells   Normal cells   Cells swell and eventually burst
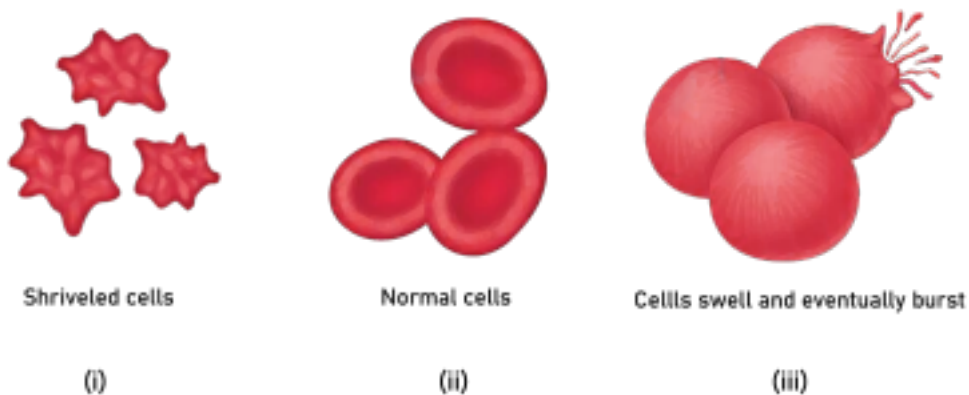
(i)   (ii)   (iii)

a. (I) - Isotonic, (II) - Hypertonic, (III) - Hypotonic
b. (I) - Hypotonic, (II) - Hypertonic, (III) - Isotonic
c. (I) - Hypertonic, (II) - Isotonic, (III) - Hypotonic
d. (I) - Hypertonic, (II) - Hypotonic, (III) - Isotonic

Answer:option c

14. Which of the following is caused due to improper functioning of the pancreas?

a. Goitre
b. Hepatitis
c. Diabetes
d. Anaemia

Answer:option c

Social Science

1. Rani Lakshmibai of Jhansi wanted the British to recognise her adopted son as the heir to the kingdom after the death of her husband, but the British refused this based on a policy/Act. What was the name of that policy?

    a) Regulating Act of 1773
    b) Charter Act of 1833
    c) Doctrine of Lapse
    d) Widow Remarriage Act

Answer:Option c

2. For the production of clay flower vases, the potter uses clay. Which type of capital is the clay used by the potter?

    a) Fixed capital
    b) Working capital
    c) Human capital
    d) Trading capital

Answer:Option b

3. Which type of vegetation is shown by the coloured part on the map?

    a) Tropical evergreen forest
    b) Tropical deciduous forest
    c) Mangrove forest

d) Montane forest

Answer: Option b

4. In 1817, James Mill published a massive three-volume work, 'A History of British India', in which, he divided Indian history into three periods. What were those three periods?

    a) Hindu, Artisans, and Sikh
    b) Priest, Imam, and Christian
    c) Hindu, Muslim, and British
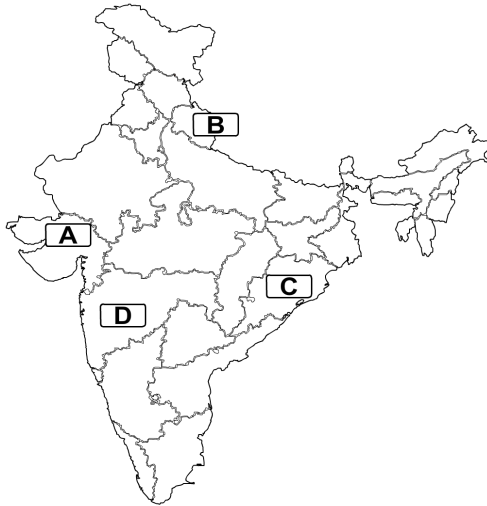   d) Peasants, Artisans, and Clergy

Answer:Option c

5.Which of the following was not a tribal revolt against the Britishers in India?

    a) Bastar Rebellion
    b) Warli Revolt
    c) Mappila Uprising
    d) Theban Revolt

Answer: Option d

6.Which of the following is a correct representation of the location of tribal groups

of India?

a) A - Banjara
b) C - Saharia
c) D - Khasi
d) B - Mala Irurar

Answer: Option a

7. Which of the following food intervention systems was not introduced due to the high incidence of poverty levels, as reported by NSSO?

a) Public Distribution System
b) ICDS
c) Food-for-work
d) Rationing

Answer:Option d

8. Which of the following is not an example of bio reserve?

a) Manas
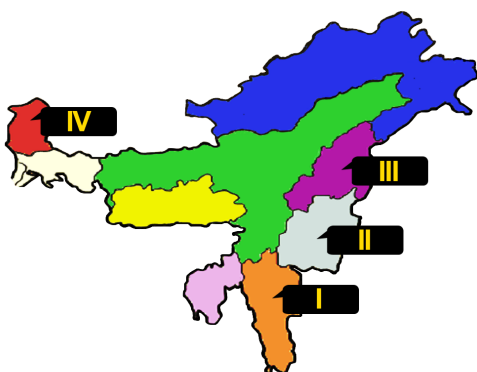b) Dibru Saikhowa
c) Dihang-Dibang
d) Dehing Patkai

Answer: Option d

9. Which of the following public distribution scheme covers indigent senior citizens as a target group?

a) RPDS
b) NFSA
c) APS
d) TPDS

Answer: Option c

10. Which of the following northeastern states has the maximum percentage of area under forest cover, as per the Indian State of Forest Report 2013-14?

a) IV
b) III
c) I
d) II

Answer: Option c