BVPY QUESTION PAPER – STAGE 2
Feb. 07, 2021

Part A – Mathematics (Q1 to Q30)

Part B – Science (Q1 to Q30)

Maximum Marks: 100   **Duration : 180 minutes**

Instructions for Students :

1. This paper consists two parts i.e. Part 'A' (Mathematics) Q.1 to 30, Part 'B'(Science) Q1 to 30.

2. For rough work please use last two pages.

PART 'A' (MATHEMATICS)

SECTION 1 (Maximum Marks: 15)

- This section contains Q.1 to Q. 15.
- Each question has **FOUR** options 'A', 'B', 'C' and 'D'. **ONLY ONE** of these four options is correct
- For each question, marks will be awarded in one of the following categories:

  Full Marks   : +1 If only the bubble corresponding to the correct option is darkened

  Zero Marks   : 0 If none of the bubbles is darkened

  Negative Marks : −0.25 In all other cases

1. Read the statements carefully :

   Statement 1 : When we divide a number by 0, we obtain 0 as the quotient.

   **Statement 2 :** The sum is always greater than addend.

   Statement 3 : Dividend is always greater than divisor.

   Statement 4 : a × (b + c) = (a × b) + (a × b)

   Which of the above Statement is true.

   A. Statement : 1   B. Statement : 2

   C. Statement : 3   D. Statement : 4

2. The value of 0.2 × 0.2 × 0.2 × 30 × 10 is ?

   A. 0.24   B. 0.34

   C. 2.4   D. 0.0024

3. Peter bought 5*kg* 350*g* potatoes, 3*kg* 725*g* tomatoes and 2*kg* 475*g* onions. The total weight of vegetable bought by him is ?

   A. 11*kg* 350*g*   B. 10*kg* 550*g*

   C. 11*kg* 550*g*   D. 10*kg* 530*g*

4. Each of the following angles are less than straight angle except ?

   A. Acute angle   B. Reflex angle

   C. Obtuse angle   D. Right angle

5. Represent the shaded part as a fraction and choose the correct option :
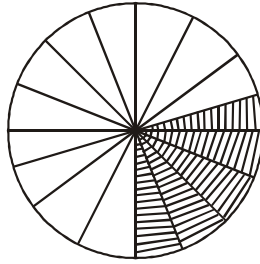
A. It is a proper fraction
B. It is an improper fraction
C. It is a mixed fraction
D. It is a unit fraction

6. Convert the mixed fraction $154\dfrac{5}{9}$ into improper fraction :

A. $\dfrac{1931}{9}$

B. $\dfrac{1391}{9}$

C. $\dfrac{1911}{9}$

D. $\dfrac{1191}{9}$

7. There are 40 students in a class, $\dfrac{3}{4}$ of them attended a picnic. How many students did not attend the picnic ?

A. 10
B. 20
C. 30
D. 40

8. Which one of the following is the correct expanded form for the decimal 40.0235?

A. $4+\dfrac{2}{100}+\dfrac{3}{1000}+\dfrac{5}{10000}$

B. $40+\dfrac{2}{100}+\dfrac{3}{1000}+\dfrac{5}{10000}$

C. $40+\dfrac{2}{10}+\dfrac{3}{100}+\dfrac{5}{1000}$

D. $400+\dfrac{2}{10}+\dfrac{3}{100}+\dfrac{5}{1000}$

9. Here is a group of faces.
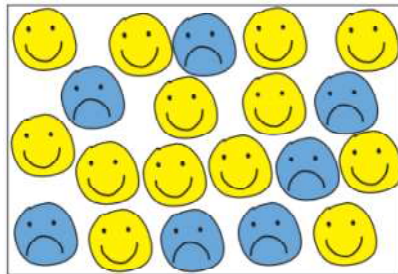
What fraction of the group has smiling faces ?

A. $\dfrac{13}{13}$

B. $\dfrac{13}{20}$

C. $\dfrac{7}{13}$

D. $\dfrac{7}{25}$

10. The figure given below is made up of two rectangles. Its total area is :
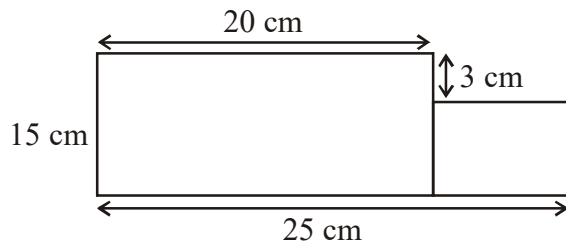
A. 360 cm²   B. 300 cm²

C. 336 cm²   D. 315 cm²

11. Here is a number pattern.

255, 365, 475, 585, ☐, ...

Which number is next in this pattern ?

A. 695   B. 685

B. 605   D. 595

12. One hundred million divided by ten thousand equals

A. 100000   B. 10

C. 1   D. 10000

13. Find the mirror image of the given figure.

Mirror
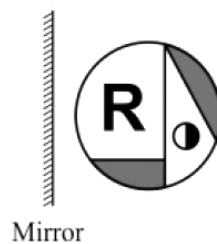
A.   B.

C.   D.

14. Hari and Giri are painting two identical walls.

The figure below shows how the walls looked like at lunch time.
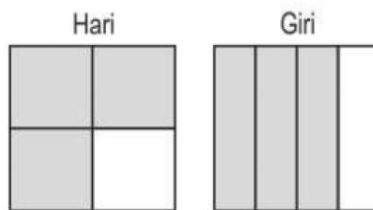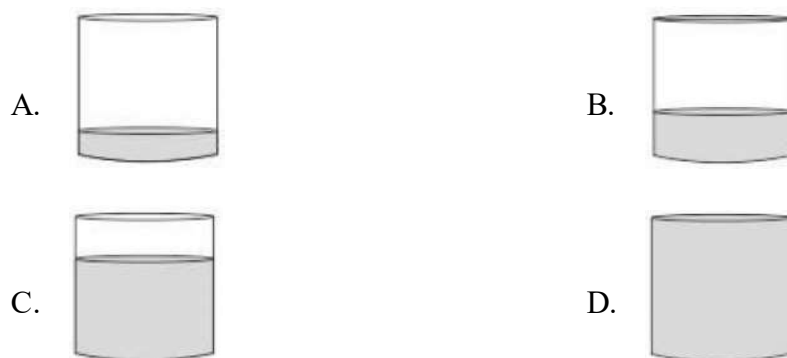

Who painted a greater part of the wall ?

A. Hari

B. Giri

C. Both of them painted equal parts of the wall.

D. We cannot say anything from the given information.

15. Shown below is a glass and a jar of equal height. Both are half filled with water.
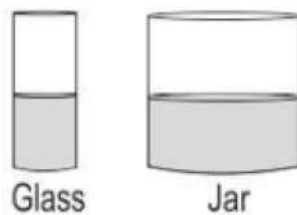
All the water from the glass is now poured into the jar.

Which of these figures shows how the level of water in the jar would look like?

A.

B.

C.

D.

16.   Divide 69398 by 50. Then

    A.   Quotient = 1386 and Remainder = 46   B.   Quotient = 1386 and Remainder = 48

    C.   Quotient = 1387 and Remainder = 46   D.   Quotient = 1387 and Remainder = 48

17.   The daily consumption of milk in a family is $2\dfrac{3}{4}$ liters. The quantity of milk consumed by the family in the month of february in 2012 is :

    A.   77 liters

    B. $77\dfrac{3}{4}$ liters

    C. $79\dfrac{3}{4}$ liters

    D.   79 liters

18. $\dfrac{0.1}{0.01}+\dfrac{0.01}{0.1}$ is equal to ?

    A.   10.10

    B.   1.01

    C.   1.10

    D.   10.01

19.   In an examination, peter got 75 marks out of 90. The percentage of marks did he got, was (approximately) ?

    A.   72%

    B.   80%

    C.   83%

    D.   90%

20.   The difference between 9 hours 25 minutes and 3 hours 45 minutes is?

    A.   3 hours 40 minutes

    B.   5 hours 25 minutes

    C.   5 hours 40 minutes

    D.   3 hours 25 minutes

21.   What least number should be subtracted from 2465445455207 so that the number becomes exactly divisible by 5?

    A.   7

    B.   4

    C.   5

    D.   2

22. The reciprocal of fraction represented by the shaded parts in the given figure is :
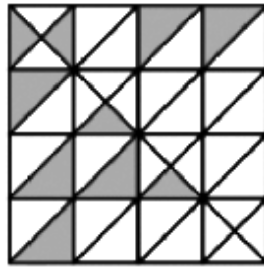
A. 4 B. 3

C. 2 D. 6

23. Five children drew a circle to play a game. At the start of the game, they stood at different locations as shown below. Ajay was at the centre of the circle.
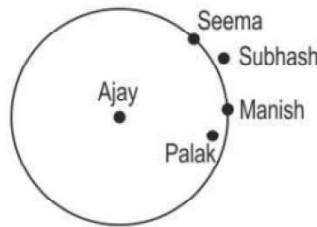
Which two children were at the SAME distance from Ajay ?

A. Seema and Palak B. Seema and Manish

C. Subhash and Palak D. Subhash and Manish

24. You have Rs. 500. Your father gives you Rs. 70 and your mother gives you Rs. 9. What is the total amount you have (in Roman Numerals) ?

A. DLIII B. XXDL

C. DLXXX D. DLXXIX

25. How many times during a day the hands of a clock make a straight line ?

A. 11 B. 24.

C. 22 D. 44

26. Find the product of 77875 and X. X is a natural number which is 7 more than 55.

    A. 4283125

    B. 4283129

    C. 4283105

    D. 4828250

27. $M = 34$, $O = 23$, $N = 45$, $K = 21$, $E = 7$, $Y = 24$ then what is the value of $M - O + N \times K \div E + Y$?

    A. 7256

    B. − 45

    C. 170

    D. −345

28. The *LCM* of a and b is 220. Which of the following can be the *HCF* of a and b ?

    A. 33

    B. 15

    C. 20

    D. 12

29. Arrange 0.34 *km*, 56000 *cm*, 310000 *mm* and 1600 *m* in descending order :

    A. 1600 *m* > 0.34 *km* > 310000 *mm* > 56000 *cm*

    B. 56000 *cm* > 0.34 *km* > 1600 *m* > 310000 *mm*

    C. 1600 *m* > 56000 *cm* > 0.34 *km* > 310000 *mm*

    D. 0.34 *km* > 310000 *mm* > 1600 *m* > 56000 *cm*

30. What is the *HCF* of 210, 350 and 546 ?

    A. 14

    B. 28

    C. 7

    D. 1

PART 'B' (SCIENCE)

SECTION 1 (Maximum Marks: 15)

- This section contains Q.1 to Q. 15.
- Each question has **FOUR** options 'A', 'B', 'C' and 'D'. **ONLY ONE** of these four options is correct
- For each question, marks will be awarded in one of the following categories:

    Full Marks   :   +1 If only the bubble corresponding to the correct option is darkened

    Zero Marks   :   0 If none of the bubbles is darkened

    Negative Marks :   –0.25 In all other cases

1. Ten kilometres Is equal to

    A. 1000 centimetres.   B. 10000 centimetres.

    C. 100000 centimetres   D. 1000000 centimetres.

2. When a magnet is placed on a plastic plate with iron pins spread on it, then ——

    A. Pins stick all around the magnet

    B. Pins stick at the middle of the magnet

    C. Pins stick at the ends of the magnet

    D. None

3. A body which emits light by itself is

    A. Luminous body   B. Non luminous body

    C. Opaque body   D. Shadow

4. Hottest planet of the solar system is :

    A. Mercury   B. Pluto

    C. Jupiter   D. Venus

5. _____time is taken by moon to completes its revolution around the earth.

    A. 27 days 7 hours 43 minutes   B. 27 days 8 hours 43 minutes

    C. 27 days 9 hours 43 minutes   D. 27 days 10 hours 43 minutes

6. A matter having definite volume but no definite shape is called

    A. Solid   B. Liquid

    C. Gas   D. All of these

7.   Which of the following should be kept in between woollen clothes to keep the insects away ?
A. Perfume
B. Naphthalene balls
C. Sand balls
D. None of these

8.   Which of these is not an igneous rock ?
A. Shale
B. Basalt
C. Pumice
D. Obsidian

9.   Which of these is a sedimentary rock.
A. Sandstone
B. Obsidian
C. Slate
D. Pumice

10.   Which of these is a mineral used to make glass.
A. Marble
B. Slate
C. Silica
D. Diamond

11.   Which part of the ear receives vibrations from outside ?
A. Pinna
B. Eardrum
C. Cochlear
D. Ear canal

12.   Which of these is not a type of Pollution ?
A. Air and Water
B. Land and Soil
C. Woise
D. Deforestation

13.   Which of these lead to soil erosion ?
A. Dumping of waste
B. Burning of waste
C. Growing trees
D. Cutting trees

14.   _____ is not a nutrient.
A. Roughage
B. Proteins
C. Carbohydrates
D. Vitamins

15.   Refer to the given figure of human brain.

Which of the following regulates blood pressure and flow in our body ?
A. P
B. Q
C. R
D. S

16. Phases of the moon are observed because :

    A. We can only only that part of the moon which reflects light towards us

    B. The relative position of the sun, earth and the moon changes

    C. The shadow of earth falls on the moon

    D. Only some parts of the moon can emit light

17. The shape of the Milky Way Galaxy is

    A. spherical.   B. elliptical.

    C. spiral.   D. circular.

18. You cannot see the flame of a lighted candle through a bent pipe but you can see it through a straight pipe,

    because

    A. light travels in a straight line.   B. pipe is polished.

    C. bent pipe was blocked.   D. the straight pipe is transparent.

19. Due to directive property of magnets, a freely suspended bar magnet

    A. comes to rest in North-South direction.

    B. attracts magnetic materials.

    C. comes to rest in East-West direction.

    D. repels non-magnetic materials.

20. Match the following

    P. Physical change   i.   Ripening of a fruit

    Q. Chemical chage   ii. Mixing of sand and water

    A. P(ii), Q(i)   B. P(i), Q(i)

    C. P(i), Q(ii)   D. P(ii), Q(ii)

21. Identify the gas, which is used by plants to prepare their food in the process of photosynthesis.

   A. Nitrogen gas
   B. Carbon dioxide gas
   C. Ammonia gas
   D. Oxygen gas

22. Which rocks are used to make floors and statues. The world famous Taj Mahal in Agra is made of these rocks. They are formed from the sedimentary rock limestone.

   A. Slate
   B. Quartzite
   C. Marble
   D. None of these

23. Refer to the given relationship and select the option which correctly identifies X.
   Hinge joint : Elbow : : Gliding joint : X

   A. Wrist
   B. Knee
   C. Shoulder
   D. Neck

24. Which of the following plant group possesses root system similar to the one shown in the given figure ?
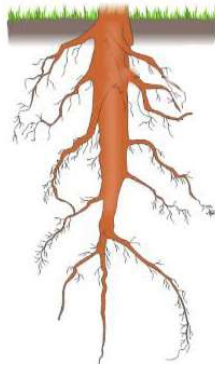
   A. Grass, Litchi, Wheat
   B. Mango, Bean, Pea
   C. Wheat, Rice, Oat
   D. Pea, Maize, Wheat

25. Which of the labelled arrows correctly represent the movement of water in and out of the leaf ?
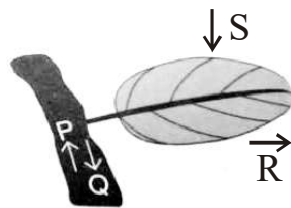
	In	Out
A.	S	Q
B.	S	R
C.	P	R
D.	P	Q

SECTION 3 (Maximum Marks: 15)

- This section contains Q.26 to Q. 30.
- Each question has **FOUR** options 'A', 'B', 'C' and 'D'. **ONLY ONE** of these four options is correct
- For each question, marks will be awarded in one of the following categories:

  Full Marks : +3 If only the bubble corresponding to the correct option is darkened

  Zero Marks : 0 If none of the bubbles is darkened

  Negative Marks : −1 In all other cases

26. Measurement means the comparison of

    A. two known quantities.

    B. two unknown quantities.

    C. an unknown quantity with all known quantities of different kind.

    D. an unknown quantity with some known quantity of same kind.

27. The Speed of the light in free space is -

    A. 3×10^9 ms^{-1}

    B. 3×10^8 ms^{-1}

    C. 3×10^7 ms^{-1}

    D. 3×10^{10} ms^{-1}

28. Match the following .

    | P. | Talc | i. | Used as a source of fuel |
    | Q. | Tungsten | ii. | Used to make wires inside bulbs |
    | R. | Gemstones | iii. | Used to make jewellery |
    | S. | Coal | iv. | Used to make talcum powder |

    A. P(i), Q(ii), R(iii) S(iv)

    B. P(iii), Q(ii), R(i) S(iv)

    C. P(ii), Q(i), R(iii) S(iv)

    D. P(iv), Q(ii), R(iii) S(i)

29. Match the following.

    | P. | Troposphere | i. | Meteors generally burn up in this layer |
    | Q. | Mesosphere | ii. | The ozone layer |
    | R. | Exosphere | iii. | Outermost layer of the atmosphere |
    | S. | Stratosphere | iv. | Layer of atmosphere closest to the earth |

    A. P(i), Q(ii), R(iii) S(iv)

    B. P(iv), Q(i), R(iii) S(ii)

    C. P(ii), Q(i), R(iii) S(iv)

    D. P(iv), Q(ii), R(iii) S(i)

30. Match the columns.

Column A

1. Knee
2. Neck
3. Hip
4. Ankle
5. Skull

Column B

a. Ball and socket
b. Gliding joint
c. Hinge joint
d. Brain
e. Pivot joint

A. 1 – C., 2 – (e), 3 – (a), 4 – B., 5 – D.
B. 1 – (e), 2 – B., 3 – C., 4 – D., 5 – (a)
C. 1 – D., 2 – (e), 3 – (a), 4 – B., 5 – C.
D. 1 – C., 2 – (e), 3 – B., 4 – (a), 5 – D.

**Space for rough work**

Space for rough work