

**CLASS**  
**7**

# **BVPY QUESTION PAPER – STAGE 1**

**December 17, 2020**

Part A – Mathematics (Q1 to Q30)

Part B – Science (Q1 to Q30)

**Maximum Marks: 60**

**Duration : 60 minutes**

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## **Instructions for Students :**

1. Each question carries one mark.
2. This paper consists two parts i.e. Part ‘A’ (Mathematics) Q.1 to 30, Part ‘B’(Science) Q1 to 30.
3. There is no negative marking .

## PART 'A' (MATHEMATICS)

1. A insect crawls up 5 cm every second on a 60 cm vertical rod and then falls down 2 cm over the next second. How many seconds will it take to climb the rod.  
A. 20 seconds  
B. 39 seconds  
C. 60 seconds  
D. 30 seconds
2. If 23 integers are multiplied and the product is negative then which of the following statements can be true about them :  
A. 10 are negative, 13 are positive  
B. 14 are negative, 9 are positive  
C. 12 are negative, 21 are positive  
D. 17 are negative, 6 are positive
3. Arrange the following fractions in ascending order  $\frac{3}{7}, \frac{4}{5}, \frac{7}{9}, \frac{1}{2}$   
A.  $\frac{4}{5}, \frac{7}{9}, \frac{3}{7}, \frac{1}{2}$   
B.  $\frac{3}{7}, \frac{1}{2}, \frac{7}{9}, \frac{4}{5}$   
C.  $\frac{4}{5}, \frac{7}{9}, \frac{1}{2}, \frac{3}{7}$   
D.  $\frac{1}{2}, \frac{3}{7}, \frac{7}{9}, \frac{4}{5}$
4. Find m if  $\frac{7}{10} + \frac{3}{1000} + \frac{9}{m} = 0.712$  is  
A. 10  
B. 100  
C. 1000  
D. 10000
5. The product when simplified will give  
 $\left(2 - \frac{1}{3}\right)\left(2 - \frac{3}{5}\right)\left(2 - \frac{5}{7}\right) \dots \dots \left(2 - \frac{997}{999}\right)$   
A.  $\frac{5}{999}$   
B.  $\frac{1001}{999}$   
C.  $\frac{1001}{3}$   
D.  $\frac{5}{3}$
6. A student was asked to multiply a number by  $\frac{3}{2}$ . Instead he divided the number by  $\frac{3}{2}$  and obtained a number smaller by  $\frac{2}{3}$ ; the number is  
A.  $\frac{4}{5}$   
B.  $\frac{3}{5}$   
C.  $\frac{2}{3}$   
D.  $\frac{1}{2}$

7. In the following rational numbers,  $x$  is a positive integer. Which among these is the least ?

A.  $\frac{-x}{3}$

B.  $\frac{-x}{4}$

C.  $\frac{x}{5}$

D.  $\frac{-x}{6}$

8. Which one of the following statements is not false :

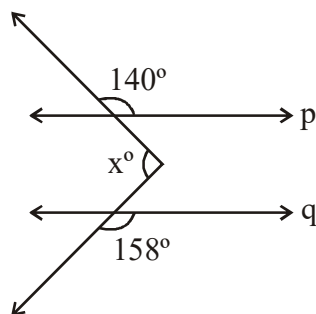
A. If two angles forming a linear pair, then each of these angles is of measure  $90^\circ$

B. Angles forming a linear pair can both be acute angles.

C. One of the angles forming a linear pair can be obtuse angle.

D. bisectors of the linear adjacent angles form a right angle.

9. Assume  $p \parallel q$  in the figure shown. Then  $x$  equals



A.  $18^\circ$

B.  $22^\circ$

C.  $62^\circ$

D. Can not be determine

10. How many isosceles triangles are there with  $40^\circ$  as one of three angles ?

A. 0

B. 1

C. 2

D. 3

11. The degree measure of each of the three angles of the three angles of a triangle is a integer. Which of the following could not be the ratio of their measures ?

A. 2 : 3 : 4

B. 3 : 4 : 5

C. 5 : 6 : 7

D. 6 : 7 : 8

12. Two chimneys 18 m and 13m high stand upright on a ground. If their feet is 12m apart, then the distance between their tops is

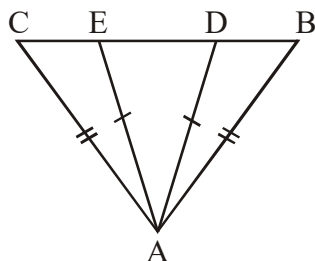
A. 5 m

B. 31 m

C. 13 m

D. 18 m

13. In the figure,  $AB = AC$  and  $AD = AE$



Which of the following statement is not true ?

- A.  $\angle CAE = \angle DAB$                       B.  $\triangle ACE \cong \triangle ABD$   
C.  $\triangle AEC \cong \triangle ABD$                       D.  $BE = DC$

14.  $\left[6^{-1} + \left(\frac{3}{2}\right)^{-1}\right]^{-1} = ?$

- A.  $\frac{2}{3}$
- B.  $\frac{5}{6}$
- C.  $\frac{6}{5}$
- D. None of these

15. Find the value of  $x$ , if  $2^x + 2^x + 2^x = 192$ .

- A. 6  
B. 5  
C. 8  
D. 3

16. The product of the reciprocal of  $\frac{x+3}{x+2}$  and  $\frac{x^2-4}{x^2-9}$  is

- A.  $\frac{1}{(x-3)(x-2)}$
- B.  $\frac{x-2}{x-3}$
- C.  $\frac{x-3}{x-2}$
- D.  $(x-3)(-2)$

17.  $1 + \frac{1}{x} = \frac{x+1}{x}$  , what does  $x$  equal to ?

- A. 1 or 2 only  
B. 1 and 0 only  
C. 1 and  $-1$  only  
D. Any number except 0

18. Mode of following frequency distribution is :  

A. 18 cm	B. 156 cm
C. 162 cm	D. 3 cm
19. Which of the following has the same mean, median and mode ?  

A. 6, 2, 5, 4, 3, 4, 1	B. 4, 2, 2, 1, 3, 2, 2
C. 2, 3, 7, 3, 8, 3, 2	D. 4, 3, 4, 3, 4, 6, 4
20. Which one of the following cannot be the probability of an event.  

A. $\frac{2}{5}$	B. 0.2
C. $\frac{5}{2}$	D. $\frac{2}{77}$
21. On tossing a coin, the outcome is  

A. Only head	B. Only tail
C. Neither head nor tail	D. Either head or tail
22. Choose the correct statement from the following :  

A. A triangle has 3 sides and 4 vertices	B. A cylinder has 3 faces
C. All sides of the rectangle are equal	D. A cuboid has 4 flat faces and 12 straight edges.
23. Diagonals of rhombus are 15 cm and 20 cm. then its area and perimeter are :  

A. 150 cm <sup>2</sup> , 50 cm	B. 120 cm <sup>2</sup> , 50 cm
C. 150 cm <sup>2</sup> , 70 cm	D. 120 cm <sup>2</sup> , 70 cm
24. Which one of the following represents the largest area ?  

A. $\frac{1}{4}$ of a circle of radius 3 cm	B. a square of side 2 cm
C. A rectangle of dimensions 3 cm by 1 cm	D. A triangle of base 3 cm and vertical height 4 cm

25. The third proportional to 0.36 and 0.48 is :  
A. 0.64  
B. 0.1728  
C. 0.42  
D. 0.94
26. The ratio 3 : 8 is equal to  
A. 3.75%  
B. 37.5%  
C. 0.375%  
D. 265%
27. If A is 20% more than B, by what percent is B less than A ?  
A. 16.66%  
B. 26.36%  
C. 9.09%  
D. 27.27%
28. If the numbers  $\frac{4}{5}$ , 81% and 0.801 are arranged from smallest to largest, the correct order is :  
A.  $\frac{4}{5}$ , 81%, 0.801  
B. 81%, 0.801,  $\frac{4}{5}$   
C. 0.801,  $\frac{4}{5}$ , 81%  
D.  $\frac{4}{5}$ , 0.801, 81%
29. A man sold 10 eggs for Rs 5 rupees and gained 20%. How many eggs did he buy for Rs 5 rupees ?  
A. 12  
B.  $\frac{25}{12}$   
C. 25  
D. 20
30. In how much time will the simple interest be half of its principal 10% per annum.  
A. 2 years  
B. 4 years  
C. 5 years  
D. None of these

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## PART 'B' (SCIENCE)

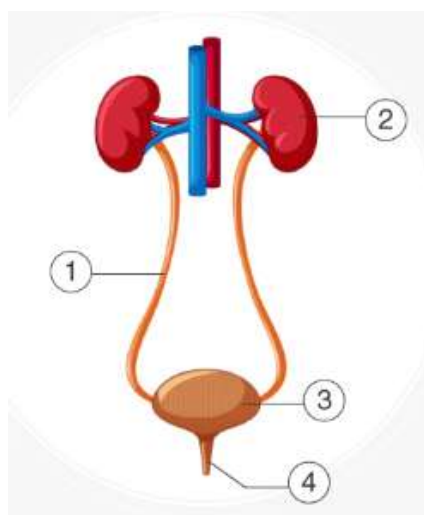
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1. While an electrician repairs an electric switch he wears rubber gloves to
  - A. just for fun
  - B. save electricity
  - C. prevent him for shock
  - D. All of these
2. The image formed by pinhole camera is -
  - A. real and inverted
  - B. virtual and erect
  - C. of a size larger than object
  - D. All of these
3. Which one of these is temporary magnet ?
  - A. Bar magnet
  - B. Electromagnet
  - C. U shaped magnet
  - D. Horse-shoe magnet
4. Converting  $2 \text{ kg m}^2 \text{ s}^{-2}$  to  $\text{g cm}^2 \text{ s}^{-2}$  we get.
  - A.  $1 \times 10^7 \text{ g cm}^2 \text{ s}^{-2}$
  - B.  $2 \times 10^7 \text{ g cm}^2 \text{ s}^{-2}$
  - C.  $3 \times 10^7 \text{ g cm}^2 \text{ s}^{-2}$
  - D.  $4 \times 10^7 \text{ g cm}^2 \text{ s}^{-2}$
5. A particle is travelling with a constant speed. This means :
  - A. Its position remains constant as time passes
  - B. It covers equal distances in equal interval of time
  - C. Its acceleration is zero
  - D. It does not change its direction of motion
6. Convert 293 K into Celsius scale.
  - A.  $566^\circ\text{C}$
  - B.  $293^\circ\text{C}$
  - C.  $20^\circ\text{C}$
  - D.  $496^\circ\text{C}$
7. In a sound wave, the direction of propagation is :
  - A. in the direction of the vibrations of the vibrating body
  - B. at an angle of  $120^\circ$  to the direction of vibrations of the vibrating body
  - C. perpendicular to the direction of vibrations of the vibrating body
  - D. at an angle of  $60^\circ$  to the direction of vibrations of the vibrating body
8. A sound wave has a frequency of  $2 \text{ KHz}$  and wavelength of 35 cm. How long will it take to travel  $1.5 \text{ km}$  ?
  - A. 1.5 s
  - B. 2.1 s
  - C. 3s
  - D. 4s

9. The unit for measuring household electrical energy is :  
A. Watt hour  
B. Joules  
C. Kilowatt hour  
D. Kilowatt
10. Which mirror is used by driver to see the object behind the car :  
A. Concave mirror  
B. Convex mirror  
C. Plane mirror  
D. None of these
11. Examples of synthetic fibres are :  
A. Rayon and wool  
B. Silk and polyester  
C. Nylon and polyester  
D. Silk and wool.
12. A solution is prepared by dissolving sodium chloride in water. It is called  
A. Non-aqueous solution.  
B. Aqueous solution.  
C. Alcoholic solution.  
D. Heterogeneous solution.
13. Why one should not wear polyester clothes while working in kitchen ?  
A. It catches fire & sticks to the body  
B. Clothes are costly  
C. Moisture absorbing capacity is less  
D. They are uncomfortable
14. Reeling is  
A. Removing fleece from sheep  
B. Washing of hair removed from sheep  
C. Process of taking out threads from cocoon  
D. Selecting parents to obtaining special characteristics in daughter sheep.
15. Caustic soda and caustic potash are the common name for \_\_\_\_\_ and \_\_\_\_\_ respectively.  
A. NaOH, KOH  
B. KOH, NaOH  
C. NaCl, KCl  
D. KCl, NaCl
16. \_\_\_\_\_ and \_\_\_\_\_ acid are present in vinegar and lemon  
A. Citric acid, acetic acid  
B. Acetic acid, oxalic acid  
C. Tartaric acid, citric acid  
D. Acetic acid, citric acid
17. Soda-acid fire extinguisher contains -  
A.  $\text{Na}_2\text{SO}_4$  and HCl  
B. NaOH and HCl  
C.  $\text{NaHCO}_3$  solution and dil.  $\text{H}_2\text{SO}_4$   
D. None of these
18. Sulphur burns in oxygen to form sulphur dioxide. The properties of sulphur dioxide are -  
A. Totally different from sulphur and oxygen  
B. Similar to sulphur  
C. Similar to oxygen  
D. More similar to sulphur than oxygen



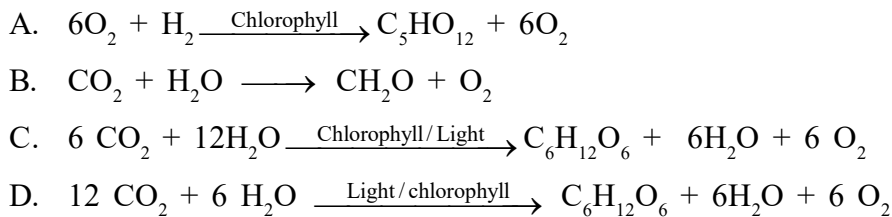
19. Which of the following is an example of chemical change ?
- (i) Crystallisation of sugar from its solution      (ii) Making of ice cream  
 (iii) Clotting of blood      (iv) Breaking of a glass pane
- A. (i) and (ii) only      B. (iii) only  
 C. (ii) and (iii) only      D. (i) to (iv) all
20. Which of the following is not a chemical change ?
- A. Magnetisation of an iron piece      B. Curding of milk  
 C. Ripening of fruits      D. None of these
21. Which of the following is a group of plants that are propagated through underground roots ?
- A. Bryophyllum and kalanchoe      B. Ginger, potato and onion  
 C. Pisita, chrysanthemum and pineapple      D. Sweet potato, asparagus and dahlia
22. Refer to the above diagram of excretory system and choose the incorrect statement from among the following:



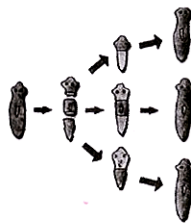
- A. (1) is made up of muscles.      B. (2) contains only harmful substances from the body.  
 C. (3) performs the function of storage.      D. (4) is used for urination
23. **Statement 1 :** Plants absorb water and minerals by the roots.  
**Statement 2 :** The outer wall of roots have numerous projections called root hair.
- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.  
 B. Both statements 1 and 2 are true, but statement 2 is not the correct explanation of statement 1.  
 C. Statement 1 is true and statement 2 is false.  
 D. Both statements 1 and 2 are false.

24. **Assertion (A) :** Arteries have thick elastic walls  
**Reason (R) :** A They carry blood from all parts of the body back to the heart with high pressure
- A. Both *A* and *R* are true and *R* is the correct explanation of *A*.  
 B. Both *A* and *R* are true but *R* is **NOT** the correct explanation of *A*.  
 C. *A* is true but *R* is false.  
 D. *A* is false but *R* is true.

25. Which of the following is the best equation representing photosynthesis?



26. The following figure shows which process

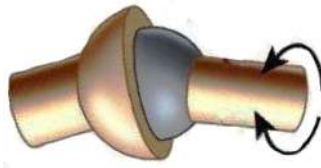


- A. Vegetative reproduction  
 B. Multiple fission  
 C. Regeneration  
 D. Budding
27. Hibernation, migration of suitable places and insulation of the body by fur or feathers are characteristics of
- A. polar animals  
 B. animals of temperate regions  
 C. animals of tropical regions  
 D. animals of equatorial regions
28. Which of the following options is correct regarding the given picture?



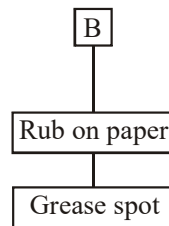
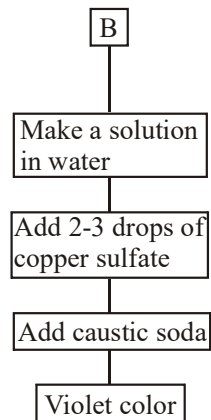
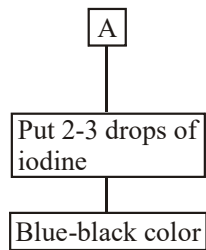
- A. It is a method of farming adopted in hilly areas.  
 B. It is a method to prevent soil erosion.  
 C. This method reduces the force of rainwater and prevents soil from being washed away.  
 D. All of these

29. Which of the following joints work as the figure given below ?



- A. Ankle and knee joints
- B. Hip and shoulder joints
- C. Neck and wrist joints
- D. Shoulder and knee joints

30. Refer to the above figure and choose the correct statement regarding A, B and C.



- A. C gives less energy as compared to A.
- B. B gives more energy than A.
- C. A is the quickest source of energy.
- D. A special form of A does not provide energy.

**Space for rough work**

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