



UNIFIED COUNCIL

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NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION

Solutions for Class : 7

MATHEMATICS

- (B) $A = a = 50^\circ$
 $a + c = 180^\circ$
 $c = 130^\circ$
 $b = c = 130^\circ$
- (D) $DEF = 180^\circ - 124^\circ = 56^\circ$
 $DCE = DEC = 56^\circ$ [$\because DC = DE$]
But $BCA + 72^\circ + 56^\circ = 180^\circ$
 $BCA = 52^\circ$
 $A = BCA = 52^\circ$
In $\triangle ABC$, $52^\circ + 52^\circ + y = 180^\circ$
 $y = 76^\circ$
- (A) PQR is equilateral.
 \therefore Each of its angles is 60° .
In $\triangle PRS$, $PR = RS$
 $x + y + y = 180^\circ$
Also, $x = 180^\circ - 60^\circ = 120^\circ$
 $y = \frac{180^\circ - 120^\circ}{2} = 30^\circ$
- (C) In $\triangle PRS$, given $PR = RS$
 $S = RPS = 28^\circ$
 $QPS = 90^\circ + 28^\circ = 118^\circ$
In $\triangle PQS$ $x + 118^\circ + 28^\circ = 180^\circ$
 $x + 146^\circ = 180^\circ$
 $x = 34^\circ$
- (A) When considering congruent triangles, the order is very important.

Therefore, $\triangle ABF \cong \triangle EDF$.

PHYSICS

- (A) When the end M of a metal rod given in the figure is heated the drop w placed at 5 cm takes 2 minutes to fall off. Hence, for a drop at 10 cm to fall off, it takes $2 \times 2 = 4$ minutes.
Thus, the time taken by drops x, y, z are 4 minutes, 6 minutes and 10 minutes respectively.
- (B) Electrical appliances shown in options (A), (C) and (D) use the magnetic effects of current. An electric bulb converts the electric energy to light energy.
- (D) As per the image of a clock as seen in a plane mirror, the correct time is 9.25.
- (B) A hot air balloon rises up because the hot air in the balloon is less dense than the cooler air surrounding it.
- (C) Conduction occurs only in solids, convection occurs only in liquids and gases, and radiation requires no medium.

CHEMISTRY

- (C) A glass bottle after it breaks undergoes a change only in its size and shape, but not in its composition. So, it is a physical change.
- (C) Air on the surface of the earth gets heated up due to sunlight. It becomes lighter and goes up. It gets cooled and comes down. Thus, convectional currents occur on the earth.

13. (A) Statements I and II are correct.
 (I) Ozone protects us from sun's harmful radiations.
 (II) Ozone absorbs the UV radiations from the sun and breaks down to oxygen.
 (III) Ozone acts as a protective shield not oxygen.

14. (A) Sodium hydroxide and hydrochloric acid react to form sodium chloride and water which is a neutralisation reaction.

Option (B): It is a thermal decomposition of calcium carbonate.

Option (C): It is the burning (combustion) of hydrogen gas.

Option (D): It is the burning (combustion) of methane gas.

15. (C) Water is first allowed to settle so that a sediment of impurities is formed. Then chemicals like alum and lime are added so that sediments further settle down. Then the water is filtered through sand and gravel, there by making it pure. Then it is chlorinated to make it free from germs and bacteria.

BIOLOGY

16. (D) Pitcher plant / venus fly trap / bladder wort.

Pitcher plant found in Khassia hills of Meghalaya is an endangered plant producing pitchers as modified leaf lamina. They attract and kill their prey, but passively through their attractive colours. They also produce sugary nectar and sweet scents. From this relationship the plants primarily gain nitrogen and phosphorous to supplement there nutrient requirement for growth.

17. (A) Oesophagus connect the mouth to the stomach.

18. (D)  – Malpighian tubules.

19. (B) C → E → B → D → A

20. (A) P-Respiration; Q-Photosynthesis; R-Respiration.

CRITICAL THINKING

21. (C)

22. (A)

23. (D)

24. (C)

25. (B)