BOARD - QUE PAPER **7** SOLUTION

SOLUTIONS

SCIENCE AND TECHNOLOGY

QUESTION PAPER-7 : MARCH-2014

STANDARD-10 | MARCH 2014 | 011(E)

Part-A : Time : 1 Hour / Marks : 50 **Part-B : Time : 2 Hours / Marks : 50**

PART-A

Time : 1 Hour] **011(E)** **[Maximum Marks : 50**

Instructions : As per Question Paper-1

1. Which of the following alternative shows the correct path of oxygenated blood flow in human beings?
   (A) Different organs → Right atrium → Right ventricle → Pulmonary artery → lungs.
   (B) Lungs → Pulmonary artery → left atrium → left ventricle → different organs
   (C) Lungs → Pulmonary vein → left atrium → left ventricle → different organs
   (D) Lungs → Pulmonary artery → Right atrium → Right ventricle → different organs
2. Which of the following statement is wrong for arteries?
   (A) Arteries carry blood from heart to different organs.
   (B) All arteries carry pure blood.
   (C) Blood flows in arteries under high pressure.
   (D) Arteries have thick & elastic walls.
3. In plants, photosynthetic products are transported through _____ .
   (A) Sieve cells (B) Sieve cells and companion cell
   (C) Sieve tubes and companion cell (D) Sieve tubes and sieve cells
4. When we say a nephron is the structural and functional unit of the kidneys we mean that _____ .
   (P) The kidney is made up of many nephrons.
   (Q) The filtration of blood that occurs in the kidneys is because of what the nephrons do.
   (R) Urea formation occurs in the nephrons.
   (A) Only P and Q (B) Only Q and R (C) Only P and R (D) All - P, Q and R
5. Compared to other animals, the ability of speech has developed more in humans. Mainly development of which organ is responsible for this?
   (A) Mouth (B) Heart (C) Tongue (D) Brain
6. There is a Mimosa plant grown in one of the pot in the garden. It's leaves get 'folded up' on touching it. What is this behaviour called in scientific language?
   (A) Photonesty (B) Hydronesty (C) Thermonesty (D) Thigmonesty
7. Some organisms and their type of reproduction is given below. Find the correct alternative showing correct pair.

(a) Paramoecium	(1) Spore formation
(b) Hydra	(2) Budding
(c) Mucor	(3) Fission
(d) Spirogyra	(4) Fragmentation

(A) a - 1, b - 2, c - 3, d - 4 (B) a - 3, b - 4, c - 2, d - 1

(C) a - 2, b - 3, c - 4, d - 1 (D) a - 3, b - 2, c - 1, d - 4

8. Statement X : Disease, AIDS destroys immunity of the body.

Statement Y : Gonorrhea and Syphilis are sexually transmitted diseases caused only in males.

Which one of the alternative is correct regarding statement X and Y?

(A) Both X and Y are true. (B) Statement X is true but Y is wrong.

(C) Both X and Y are wrong. (D) Statement X is wrong but Y is correct.

9. Study following statements and choose the correct alternative.

P : Those organs which have the same internal structure but different functions are called homologous organs.

Q : Organs which have different basic design but have similar appearance and carry out similar functions are called analogous organs.

R : The impressions of dead plants or animals, that lived in the past are known as fossils.

(A) All the three (P, Q, R) statements are true.

(B) Statements P and Q are true but R is false

(C) Only R is true (D) All three statements are wrong.

10. Which of the following statement is true for variation in organisms?

(1) The occurrence of differences among the individuals of the same species is known as variation.

(2) Variations decreases the possibilities of survival.

(3) The process of evolution decreases the variation in organisms.

(4) During meiosis, crossing over takes place between the genes and hence, new combinations are formed, which ultimately results in producing variations.

(A) (1) and (4) (B) (2) and (4) (C) (1) and (3) (D) (2) and (1)

11. Which of the following statement is wrong incase of food - chain?

(A) The one which are not producers are consumers.

(B) More energy is available at lower trophic levels.

(C) Decomposers can derive their food from all other nutritional substances except producers.

(D) One organism may be associated with more than one food chain.

12. In a food – chain, deer is eaten by lion and deer eats vegetation. Which one of the statements given is true?

(X) Lion is second order consumer and deer is first order consumer.

(Y) Lion is predator and deer is prey.

(Z) Lion is first order consumer and deer is second order consumer.

(e) Lion is third order consumer and deer is second order consumer.

(A) Only (X) and (Y) (B) Only (Y) and (Z)

(C) Only (X) and (e) (D) Only (X) and (Z)

13. One boy goes to a school on his vehicle. On the way he reaches to a cross – road where red signal is shown. He turns off his vehicle till green signal appears. from this, he has used which R to save the environment.

(A) Reduce (B) Recycle (C) Reuse (D) None of the given

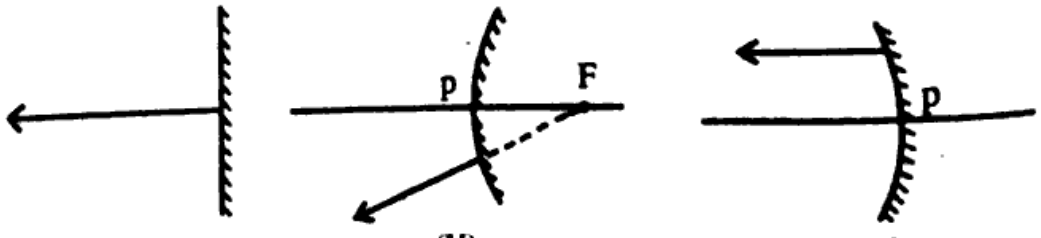
14. With increase in population, our needs have increased. Today the world is facing a problem of energy crisis. We must conserve energy. Which one of the following statement do not show energy conservation approach.
(A) Switch off the lights, fans, television and other appliances when not in use.
(B) One should use individual vehicle instead of public transport system.
(C) Make use of pressure cooker.
(D) Use of bicycle while going to school.

15. Which of the following statement is true incase of carbon Nanotubc?
(A) Compressive strength is more compared to it's tensile strength.
(B) Temile strength of carbon Nanotube is very less compared to that of steel.
(C) Under excessive tensile strain, it does not show permanent deformation.
(D) Carbon Nanotubes can be bent like a rubber - tube.

16. Microscopes are used to see extremely minute things which cannot be seen by our naked eyes. These are some of the microscopes that arc invented.
P. Optical Microscope
Q. Scanning 'funneling Microscope
R. Atomic Force Microscope
Which of the given microscope can be used to see nano structures.
(A) Only P and Q (B) Only Q and R
(C) Only P and R (D) All P, Q, and R

17. The signal light for danger are red in colour. Which of the following principle/principles is/are used in it?
P. The red coloured light scatters least by fog or smoke.
Q. The wavelength of red coloured light is about 1.8 times more than that of blue colour.
(A) P only (B) P and Q both (C) Q only (D) None of P or Q

18. Figure given below shows three different mirrors X, Y, and '1. alongwith reflected rays. Find out the correct use of the mirror.



(X) (Y) (Z)

Mirror → / Options ↓	X	Y	Z
A	Dressing table	Side glass in vehicles	Doctor's use
B	Side glass in vehicles	Doctor's use	Dressing table
C	Doctor's use in vehicles	Dressing table	Side glass
D	Doctor's use	Side glass in vehicles	Dressing table

19. Ramesh is sitting on the last bench in class-10. He can read whatever is written by the teacher on the black board, but he cannot read clearly from the text book. So, which of the following statement is true regarding his eyes?

(A) There is defect in his retina.

(B) His eye lens cannot become thin as required.

(C) His eye lens cannot become thick as required.

(D) A milky and cloudy layer is formed on the eye lens.

20. We sometimes see rainbow in monsoon season. Which of the fact is not correct about rainbow.

(A) Dispersion of incident light first, then reflection internally and finally retraction causes rainbow.

(B) Water droplets act like small prisms.

(C) Sometimes there is formation of two rainbows in the sky.

(D) Rainbow is formed in the direction of the sun.

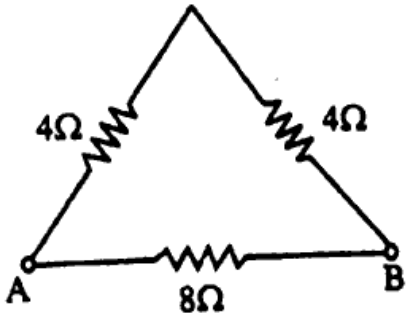
21. In Section A defects of eye are given, in Section B effects arising due to defects are given and in section C remedies are given using lense are given. Find the correct pair.

Section A	Section B	Section C
1. Myopia	(x) Focal length increases	(a) bifocal lens
2. Hyper metropia	(y) Focal length decreases	(b) Concave lens
3. Presbyopia	(z) Power of accommodation decreases	(c) Convex lons

(A) (1 - y - b), (2 - x - c), (3 - z - a) (B) (1 - z - b), (2 - z - b), (3 - y - b)

(C) (1 - x - a), (2 - y - c), (3 - x - a) (D) (1 - y - a), (2 - x - a), (3 - z - c)

22. Two resistors of 4 Ω and one resistor of 8 Ω are connected in the circuit as shown below. What will be the equivalent resistance between points A and B in the circuit?

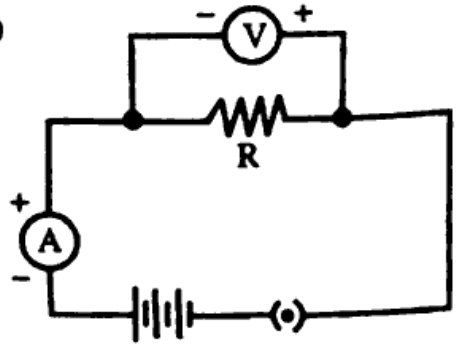


Options :

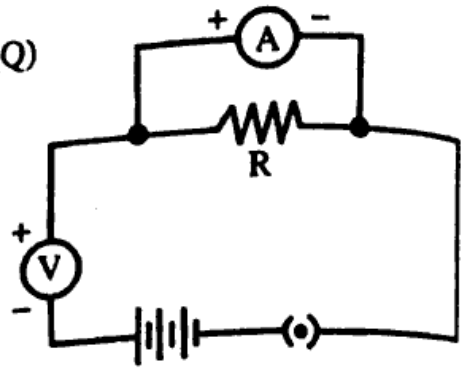
(A) 8 Ω (B) 16 Ω (C) 1 Ω (D) 4 Ω

23. "In the definite physical situation the electric current flowing through the conductor is directly proportional to the potential difference applied across it". To verify this law, in which of the following circuit diagram are ammeter and voltmeter connected correctly?

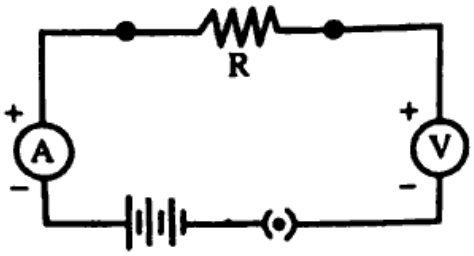
(P)



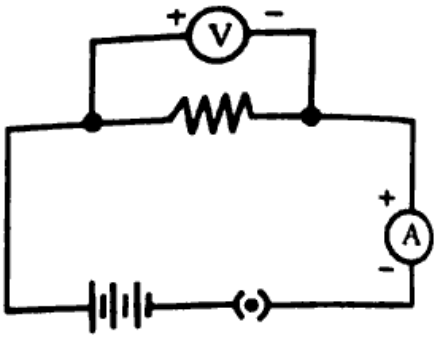
(Q)



(R)



(S)



Options :

(A) (P) (B) (R) (C) (Q) (D) (S)

24. Which is the correct option for the given statement A and statement B.

Statement A : The current flowing through each resistor is same when connected in series.

Statement B : The voltage drop across each resistor remains the same when connected in parallel.

(A) Statement A is wrong but B is true. (B) Statement A and B both are wrong.

(C) Statement A and B both are correct (D) Statement A is correct but B is wrong.

25. With respect to direction of electric current in a conducting wire, which of the following is true.

(A) In the direction of negatively charged particles but opposite to the positively charged particles.

(B) In direction of motion of electron.

(C) Opposite to the direction of motion of electron.

(D) In the direction opposite to the motion of positively charged particles.

26. Current is flowing through a conductor and creates a magnetic field. Assume that this is the only source of the magnetic field. Reversing a current in a straight conductor with no change to the magnitude (ampere value) will cause a _____ .

(A) reduction in the magnetic field.

(B) disappearance of the magnetic field.

(C) reversal of the direction of the magnetic field.

(D) reversal and reduction of the magnetic field.

27. From which of the following case, the induced current in the loop will not be obtained?

(A) The loop is moved in the direction of the magnet.

(B) The loop and magnet are moved in the opposite direction with the same speed.

(C) The magnet is moved in the direction of the loop.

(D) The loop and magnet are moved in one direction with the same speed.

28. Solar system comprises of the sun, its planets, their satellites, asteroids and meteors. Which of the following is not a member of solar system.

(A) Sun (B) Asteroids (C) Shooting stars (D) Artificial satellites

29. Which of the following is true in case of bar magnet and magnetic field lines produced around it?

(A) Magnetic field lines intersect each other at 90° angle.

(B) The tangent drawn at any point of a magnetic field line shows the direction of magnetic field at that point.

(C) The magnetic field is a scalar quantity.

(D) The region in which the field lines are at close distance has a weak magnetic field.

30. An imaginary sphere covering the sky with the earth at its centre is known as the celestial sphere. The ecliptic of the celestial sphere is divided to 27 equal parts, which are known as _____ .

(A) Zodiac sign (B) Akash ganga (C) Nakshatra (D) Pulsar

31. Which satellite is launched by India for Direct to Home T.V. transmission?

(A) IRS – P (B) INSAT – 4A (C) INSAT-1 (D) CARTOSAT

32. Some stars appear red in colour and some blue in colour. Which one of the statement is true?

(A) Star with blue colour has more temperature than red colour star.

(B) Temperature of blue colour star is less than red colour star.

(C) There is no relation between colour of the star and temperature.

(D) Blue colour star and red colour star has equal temperature.

33. The following table lists the pH values of some acids and bases.

Solutions	pH
hydrochloric acid	1
milk	6
pure water	7
baking soda	9
sodium hydroxide	14

What would happen to the pH of an acid and a base when each is diluted (pure distilled water is added to it)?

(A) On dilution, the pH of an acid and base will both decrease.

(B) On dilution, the pH of an acid will increase and that of a base will decrease.

(C) On dilution, the pH of an acid and base will both increase.

(D) On dilution, the pH of an acid will decrease and that of a base will increase.

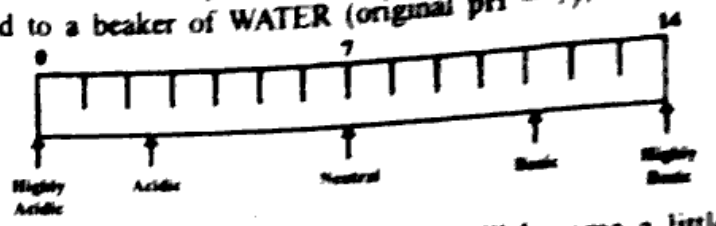
34. 3 litre aqueous solution is prepared by dissolving 4.9 gram H_2SO_4 in water. To calculate pH of this solution, there is need to calculate moles of H_2SO_4. Which of the following formula you would use?

(A) Mole of $H_2SO_4 = \frac{\text{Molecular mass}}{\text{litre}}$ (B) Mole of $H_2SO_4 = \frac{\text{weight of substance}}{\text{molecular mass}}$

(C) Mole of $H_2SO_4 = \frac{\text{Molecular mass}}{\text{weight of substance}}$ (D) Mole of $H_2SO_4 = \frac{\text{weight of substance}}{\text{litre}}$

35. Which of the following substance enters our body when red ant bites us?
(A) Melittin (B) Calcium Formate
(C) Formic acid (D) Magnesium hydroxide

36. Some substances are acidic while others are basic. A scale called the pH scale is used to measure the extent of acidity. What will happen to the pH of the solution if a little ACID is added to a beaker of WATER (original pH = 7)?



(A) It will become a little less than 7. (B) It will become a little more than 7.
(C) It will remain 7. (D) It will become 0.

37. Rods of carbon and copper are hammered simultaneously. Which property of carbon is responsible for carbon rod breaking down to pieces?
(A) Ductility (B) Malleability (C) Elasticity (D) Brittle

38. In the table given below is the composition of a few alloys. Based on this table answer the question.

Name of alloy	Elements in the alloy
Bronze	Cu and Zn
Brass	Sn and Cu
Pewter	Pb, Sb, Sn, Cu
Steel	Fe, Cr, Mn, C

Which of these metal alloys does not contain copper?
(A) Brass (B) Pewter (C) Bronze (D) Steel

39. Which of the following statement is incorrect?
(A) Corrosion of iron takes place by contact with air and water.
(B) The method to convert carbonate containing ore to metal oxide is called calcination.
(C) The Melting point and boiling point of metals are low.
(D) The displacement of less active metal from their solution takes place by more active metal.

40. Make the correct pairs for the following given X and Y. X contains substance and Y has method of manufacture.

X	Y
1. Extraction of Sulphur	p. Contact process
2. Production of Nitric acid	q. Fransch method
3. Production of Sulphuric acid	r. Haber's process
4. Production of Ammonia gas	s. Ostwald's process

(A) (1 - s), (2 - r), (3 - q), (4 - p) (B) (1 - r), (2 - q), (3 - s), (4 - p)
(C) (1 - q), (2 - s), (3 - p), (4 (4 - r) (D) (1 - s), (2 - q), (3 - r), (4 - p)

41. Ammonia is filled in weather balloons that work at very high altitudes, because it is
(A) a neutral gas (B) a compound of nitrogen
(C) lighter than air (D) liquificd at low temperatures

42. Physical properties of a substance are given below.
p → it is colour less

Q → has intense smell

R → It's aqueous solution possesses basic property.

Which of the above physical properties are correct for sulphur dioxide?

(A) Only P and Q (B) P, Q and R (C) Only Q and R (D) Only R

43. During fractional distillation of petroleum, different fractions are obtained. 'their name, no. of carbon atoms, temperature range at which it is obtained and their use are given below. There is error in one of the alternative. In which alternative there is error?

(A) Petrol, C_5 to to C_{10}, 303 K to 393 K, fuel in vehicles.

(B) Diesel, C_{15} to to C_{18} 533 K to 613 K, fuel in vehicles and generators.

(C) Neptha, C_8 to C_{10}, 393 K to 453 K, solvent in petrochemicals.

(D) Libricating Oil, C_8 to to C_{12}, , 400 K, fuel in high speed vehicles.

44. Chemical equations of preparing some substances are given below. Which of the given chemical equation is for the preparation of Ethyne?

(1) $CH_3COONa + CaO \xrightarrow{\Delta} CH_4 + Na_2CO_3$

+

NaOH

(2) $CaC_2 + 2H_2O \longrightarrow HC \equiv CH + Ca(OH)_2$

(3) $CH_3CH_2OH \xrightarrow[[H_2SO_4]]{443\ K} CH_2 = CH_2 + H_2O$

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

45. Which statement is wrong for Anthracite?

(A) It is matured form of mineral coal

(B) When burns produces smoke or smell.

(C) Its heat energy is about 33 kJ gram–'.

(D) It contains small amount of volatile matter and moisture.

46. Water gas is miture of which two gases?

(A) Carbon dioxide and hydrogen (B) Carbon monoxide and hydrogen

(C) Carbon and hydrogen (D) Ammonia and hydrogen

47. In section A there are some organic compounds and in Section B their uses are mentioned. Match the correct options.

Section A	Section B
1. Ethanol	(a) Nail polish remover
2. Formalin	(b) To have sour taste in food
3. Acetone	(c) In fragrant materials like perfumes
4. Ethanoic Acid	(d) To Preserve dead bodies.

(A) (1 - c), (2 - d), (3 - a), (4 - b) (B) (1 - a), (2 - d), (3 - c), (4 - b)

(C) (1 - b), (2 - a), (3 - d), (4 - c) (D) (1 - d), (2 - c), (3 - b), (4 - a)

48. The atom or the group of atoms by which the characteristic reactions of organic compounds are determined, that atom or group of atoms is called _____ .

(A) Hydrocarbon (B) Functional group (C) Atom (D) Compound

49. Which polymer is used in non - stick cooking vessels?

(A) Polythene (B) Isoprene (C) Teflon (D) Neoprene

50. Stomach is very important organ in the digestive system. The food is churned in stomach for nearly three hours. What can be found in stomach from the given?

(A) amylase, gastric juice, intestinal juice.

(B) dil. hydrochloric acid, pepsinogen and mucus.

(C) bile, alkaline salts, Trypsin. (D) villi, lipase, and Trypsin.