

QB365  
Model Question Paper - 2  
10th Standard CBSE

**Science**

Reg.No. : 





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Time : 02:00:00 Hrs

Total Marks : 100

**Section -A**

- 1) The unit of specific resistance is **1**  
(a) Ohm per meter (b) Ohm (c) Ohm per second (d) Ohm meter
- 2) Ohm's law is valid only when **1**  
(a) Graph between V and I is a straight line (b) Temperature increases (c) Temperature decreases  
(d) Temperature remains constant.
- 3) A current of 1 A is drawn by a filament of an electric bulb. Number of electrons passing through a cross section of the filament in 16 seconds would be roughly **1**  
(a)  $10^{20}$  (b)  $10^{16}$  (c)  $10^{18}$  (d)  $10^{23}$
- 4) In an electrical circuit two resistors of  $2\Omega$  and  $4\Omega$  respectively are connected in series to a 6 V battery. The heat dissipated by the  $4\Omega$  resistor in 5s will be **1**  
(a) 5 J (b) 10 J (c) 20 J (d) 30 J
- 5) Which of the following terms does not represent electrical power in a circuit? **1**  
(a)  $I^2R$  (b)  $IR^2$  (c) VI (d)  $V^2/R$
- 6) Which of the following property of a proton can change while it moves freely in a magnetic field ? **1**  
(a) mass (b) speed (c) velocity (d) momentum
- 7) The phenomenon of electromagnetic induction is **1**  
(a) the process of charging a body.  
(b) the process of generating magnetic field due to a current passing through a coil.  
(c) producing induced current in a coil due to relative motion between a magnet and the coil.  
(d) the process of rotating a coil of an electric motor.

- 8) For a current in a long straight solenoid N- and S- poles are created at the two ends. Among the following statements, the incorrect statement is 1
- (a) The field lines inside the solenoid are in the form of straight lines which indicates that the magnetic field is the same at all points inside the solenoid
- (b) The strong magnetic field produced inside the solenoid can be used to magnetise a piece of magnetic material like soft iron, when placed inside the coil.
- (c) The pattern of the magnetic field associated with the solenoid is different from the pattern of the magnetic field around a bar magnet.
- (d) The N- and S- Poles exchange position when the direction of current through the solenoid is reversed
- 9) Which of the following is a non-renewable source of energy 1
- (a) Wood (b) Sun (c) Fossil fuel (d) Wind
- 10) Fuel used in thermal power plant is 1
- (a) Water (b) Uranium (c) Biomass (d) Fossil fuels
- 11) The major problem in harnessing nuclear energy is how to? 1
- (a) Split nuclei (b) Sustain the reaction (c) Dispose off spent safely
- (d) Convert nuclear energy into electrical energy
- 12) Carbon exists in the atmosphere in the form of 1
- (a) carbon monoxide only (b) carbon monoxide in traces and carbon dioxide (c) carbon dioxide only
- (d) coal
- 13)  $CH_3 - CH_2 - OH \xrightarrow{\text{Alkaline } KMnO_4 + \text{Heat}} CH_3 - COOH$  1
- In the above given reaction, alkaline  $KMnO_4$  acts as
- (a) reducing agent (b) oxidising agent (c) catalyst (d) dehydrating agent
- 14) The soap molecule has a 1
- (a) hydrophilic head and a hydrophobic tail (b) hydrophobic head and a hydrophilic tail
- (c) hydrophobic head and a hydrophobic tail (d) hydrophilic head and a hydrophilic tail
- 15) The first member of alkyne homologous series is 1
- (a) Ethyne (b) Ethane (c) Propyne (d) Methane
- 16) The correct electron dot structure of a water molecule is 1
- (a)  (b)  (c)  (d) 
- 17) Upto which element, the Law of Octaves was found to be applicable 1
- (a) Oxygen (b) Calcium (c) Cobalt (d) Potassium
- 18) Which of the following statements about the Modern Periodic Table is correct: 1
- (a) It has 18 horizontal rows known as Periods (b) It has 7 vertical columns known as Periods
- (c) It has 18 vertical columns known as Groups (d) It has 7 horizontal rows known as Groups.
- 19) Which of the following elements would lose an electron easily? 1
- (a) Mg (b) Na (c) K (d) Ca

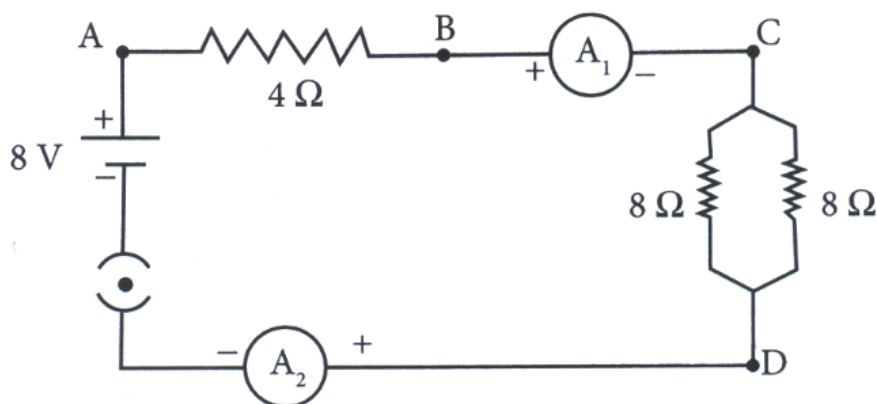
- 20) The element with atomic number 14 is hard and forms acidic oxide and a covalent halide. To which of the following categories does the element belong? 1
- (a) Metal (b) Metalloid (c) Non-metal (d) Left-hand side element

### Section - B

- 21) What does an electric current mean? 2
- 22) What is meant by saying that the potential difference between two points is 1 V? 2
- 23) On what factors does the resistance of a conductor depend? 2
- 24) Will current flow more easily through a thick wire or a thin wire of the same material, when connected to the same source? Why? 2
- 25) An electric lamp is marked 100 W, 220 V. It is used for 5 hours daily. Calculate. 2
- (i) its resistance while glowing
- (ii) energy consumed in kWh per day
- 26) An electric iron has a rating of 750 W, 220 V. Calculate 2
- (i) current passing through it, and
- (ii) its resistance, when in use
- 27) Why is the current constant in series connection of circuit? 2
- 28) Calculate the electric energy consumed by 120 W toaster in 20 minutes. 2
- 29) How has the traditional use of wind and water energy been modified for our convenience? 2
- 30) What are the limitations of energy that can be obtained from the oceans? 2
- 31) What are the advantages of nuclear energy? 2
- 32) Hydrogen has been used as a rocket fuel. Would you consider it a cleaner fuel than CNG? Why or why not? 2
- 33) How would you distinguish experimentally between an alcohol and a carboxylic acid? 2
- 34) What would be the electron dot structure of a molecule of sulphur which is made up of eight atoms sulphur? 2
- (Hint - the eight atoms of sulphur are joined together in the form of a ring.)
- 35) Draw the structure for the following compounds. 2
- (i) Ethanoic acid
- (ii) Bromopentane\*
- (iii) Butanone
- (iv) Hexanal
- \* Are structural isomers possible for bromopentane?
- 36) What is a homologous series? Explain with an example. 2
- 37) Besides gallium, which other elements have since been discovered that were left by Mendeleev in his Periodic Table? (any two) 2
- 38) How could the Modern Periodic Table remove various anomalies of Mendeleev's Periodic Table? 2
- 39) (a) Lithium, sodium, potassium are all metals that react with water to liberate hydrogen gas. Is there any similarity in the atoms of these elements? 2
- (b) Helium is an unreactive gas and neon is a gas of extremely low reactivity. What, if anything, do their atoms have in common?
- 40) In the Modern Periodic Table, which are the metals among the first ten elements? 2

### Section - C

- 41) State Ohm's law? How can it be verified experimentally? Does it hold good under all conditions? Comment 5
- 42) Find out the following in the electric circuit given in Figure 5
- (a) Effective resistance of two  $8\ \Omega$  resistors in the combination
  - (b) Current flowing through  $4\ \Omega$  resistor
  - (c) Potential difference across  $8\ \Omega$  resistance
  - (d) Power dissipated in  $4\ \Omega$  resistor
  - (e) Difference in ammeter readings, if any.



- 43) Describe the activity that shows that a current-carrying conductor experiences a force perpendicular to its length and the external magnetic field. How does Fleming's left-hand rule help us to find the direction of the force acting on the current carrying conductor? 5
- 44) Explain the phenomenon of electromagnetic induction. Describe an experiment to show that a current is set up in a closed loop when an external magnetic field passing through the loop increases or decreases. 5
- 45) (i) Distinguish between renewable and non-renewable sources of energy giving one example of each. 5  
(ii) Why is the use of wood as a fuel not advised although forests can be replenished?
- 46) a) Write the formula and draw electron dot structure of carbon tetrachloride? 5  
b) What is saponification? Write the reaction involved in this process.
- 47) Draw the possible isomers of the compound with molecular formula  $C_3H_6O$  and also give their electron dot structures. 5
- 48) (a) Why do we classify elements? 5  
(b) What were the two criteria used by Mendeleev in creating his Periodic Table?  
(c) Why did Mendeleev leave some gaps in his Periodic Table?  
(d) In Mendeleev's Periodic Table, why was there no mention of Noble gases like Helium, Neon and Argon?  
(e) Would you place the two isotopes of chlorine,  $Cl-35$  and  $Cl-37$  in different slots because of their different atomic masses or in the same slot because their chemical properties are the same? Justify your answer.

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