

**BHARATIYA VIDYA BHAVAN'S V.M.PUBLIC SCHOOL, VADODARA**  
**SESSION 2017-18**  
**Sample Paper 5**

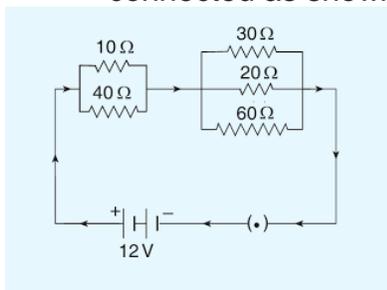
**Class : X**  
**Subject : Physics**

**Max Marks:50**  
**Time Allotted: 2 hrs**

Section A

Answer the following questions.

- Q1 Calculate the number of electrons constituting one coulomb of charge. (1)
- Q2 What is Tyndall Effect? (1)
- Q3. Can we keep an aqueous solution of ferrous sulphate in a vessel made of zinc?  
Explain (2)
- Q4 Draw the pattern of field lines due to a solenoid carry electric current. Mark the north and south poles in the diagram. (2)
- Q5. How do auxins promote the growth of a tendril around a support? (2)
- Q6 (a) Define one ohm. (3)
- (b) In the circuit diagram given below five resistances of  $10\Omega$ ,  $40\Omega$ ,  $30\Omega$ ,  $20\Omega$  and  $60\Omega$  are connected as shown to a 12V battery.



Calculate :

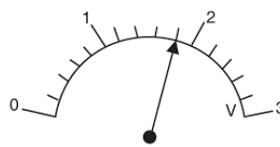
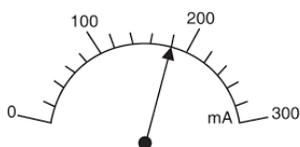
- (i) Total resistance in the circuit.
- (ii) Total current flowing in the circuit.
- Q7 Explain ocean thermal energy and how can it be harnessed. Mention any two limitations in obtaining the energy from the oceans. (3)
- Q8 a) What is atmospheric refraction? What causes atmospheric refraction? (3)
- b) Why do stars twinkle on a clear night?
- Q9. Two non-metal atoms combine with each other by the sharing of electrons to form a compound A. (3)
- i) What type of chemical bond is present in A?
- ii) State whether A will have high melting point and boiling point.
- iii) Will it be a good conductor of electricity or not?
- Q10. What do you understand by Dobereiner's triads? Give some examples to support it. (3)
- Q11. How did Mendeleev's periodic table in the discovery of new elements? (3)
- Q12. "A trait may be inherited, but may not be expressed". Justify this statement with the help of a suitable example. (3)
- Q13. Explain that it is a matter of chance whether a couple will give birth to a boy or a girl. (3)
- Q14. (i) What is fertilization? Distinguish between external fertilization and internal fertilization. (3)
- (ii) What is the site of fertilization in human beings
- Q15. Why are environmentalists insisting upon 'sustainable natural resource management'? Give any three reasons. (3)
- Q16a) Describe an experiment with a diagram to show that force is exerted on a current carrying conductor when placed perpendicular in a magnetic field.

- b) How will this force change if current in the conductor is increased ?  
 c) Name a device that uses the above principle. (5)
- Q17a) Two lenses have power of (i) +2D (ii) -4D. What is the nature and focal length of each lens ?  
 b) An object is kept at a distance of 100cm from each of above lenses. Calculate (i) image distance and (ii) magnification in each of the two cases. (5)
- Q18. a) An ore when treated with hydrochloric acid gives a smell of rotten eggs. What type of ore is this? How can it be concentrated? How can this metal be obtained from concentrated ore? (5)
- Q19. a) Which two metals do not corrode easily? (5)  
 b) Give an example in each case to support the following:  
 i) Corrosion of metal is a serious problem  
 ii) Corrosion of some metal is an advantage

### Section B

Q22 Explain the following

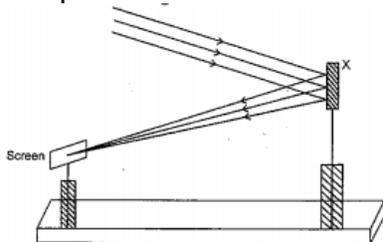
- (a) The current flowing through a resistor connected in an electric circuit and potential difference applied across its ends are shown in the figures below : (2)



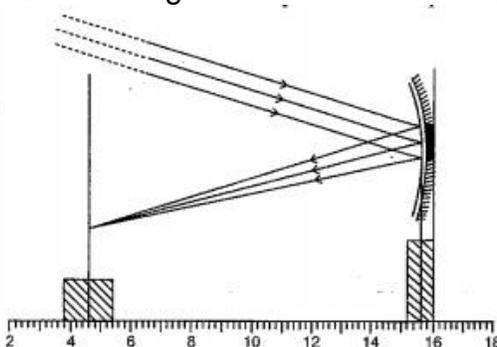
Find the resistance.

- (b) Why are the elements of electric heating devices such as electric iron made of an alloy rather than a pure metal ?

Q23 (a) A student determines the focal length of a device X by focusing the image of a far off object on the screen positioned as shown in the figure. Name the device X. (2)



- (b) Find the focal length of the concave mirror in the given experimental setup.



Q24. What do you understand by the term thermal decomposition? Write any one balanced chemical equation for thermal decomposition. (2)

Q25. What is a homologous series of compounds? List any two characteristics of a homologous series.

