

# SCIENCE AND TECHNOLOGY

## MODEL TEST PAPER-2

### Marking Scheme/Hints to Solutions

**Note : Any other relevant answer, not given here in but given by the candidates, be suitably awarded.**

Q.No.	Value points / key points	Marks allotted to each key point/Value point	Total Marks
<b>Section-A</b>			
1.	(d) Food poisoning	1	1
2.	(b) Female Aedes mosquito	1	1
3.	(b) Muscular force and gravitational force	1	1
4.	(d) rubbing of sand paper on sand paper	1	1
5.	(b) Total heat produced = amount of fuel* calorific value	1	1
6.	(d) It is incident normal to the surface	1	1
7.	(c) a parallel beam of light	1	1
8.	(c) the focal length of eye lens decreases.	1	1
9.	(b) greater than that of object B	1	1
10.	(a) Electrical conductivity	1	1
11.	(b) Nylon, Polyester, PVC	1	1
12.	(c) Hydra and Yeast	1	1

13.	(d) Elephant, human beings and cow	1	1
14.	(c) Testosterone from testes and estrogen from ovary	1	1
15.	(b) Menopause	1	1
16.	(c) During electrorefining of copper, impure copper is taken as cathode and pure copper as anode.	1	1
17.	(c) A is true but R is false.	1	1
18.	(d) A is false but R is true.	1	1
19.	(c) A is true but R is false.	1	1
20.	(d) A is false but R is true.	1	1

**Section-B**

21.	Gold < iron < magnesium < potassium	2	2
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**OR**

	(a) Sodium reacts very vigorously with water and the reaction produces a lot of heat due to which the evolved hydrogen catches fire.	1+1	
	(b) $\text{Na} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \text{H}_2$		
22.	* An empty paper cup burns quickly because the temperature of empty cup rises fast to catch fire.	1+1	2
	* In case of paper cup filled with water, the temperature does not rise that fast because water present absorbs the heat and the ignition temperature of the cup is not attained and it does not catch fire.		

23. (a) Because sound cannot travel through vacuum/ sound needs a medium to travel and there is nothing, no medium on moon through which sound can travel. 1 2
- (b) Bats produce ultrasonic sounds that cannot be heard by normal human ear./The frequency of sounds (screams) produced by bats is more than 20,000 Hz which does not lie in the audible range of human ears. 1
24. 

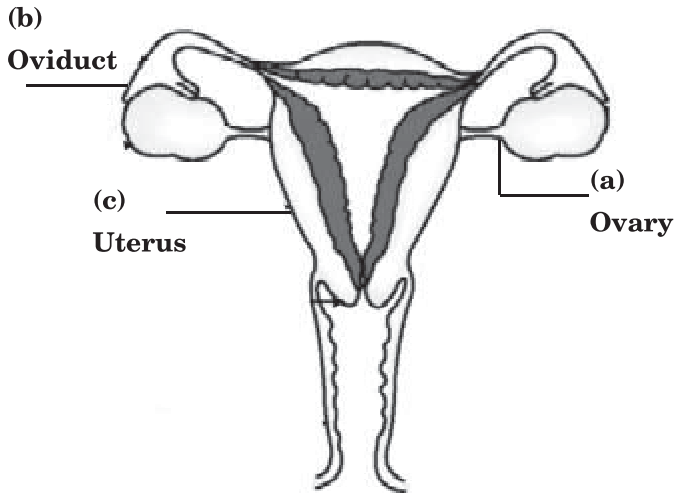
Plastic P	Plastic Q
They have a linear arrangement of monomers.	They have a cross linked arrangement of monomers.

 1
- Plastic P – polystyrene, polythene  
Plastic Q – Melamine, Bakelite 1
25. During fertilisation male and female gamete fuse to form zygote. Zygote contains the nuclear part of the sperm from father and of the egg from mother. 1 2
- It is for this reason that a child has some characteristics of the father and some characteristics of the mother. 1
26. Bathing daily, use of a proper soap, maintaining dental and oral care, care of eyes and ears. 1 2
- (any two)

### Section-C

27.	(a) Observations-		
	1. A coating of silver takes place on the copper strip.	1	
	2. There is change in color of solution / The transparent colour of silver nitrate solution changes into blue coloured solution of copper nitrate.		
	(b) Reaction (i) will not occur. because copper is less reactive than zinc so it cannot displace zinc from zinc sulphate.	1+1	3
28.	(a) The given element is Magnesium and white powder is Magnesium oxide.	$\frac{1}{2} + \frac{1}{2}$	3
	(b) (i) $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$		
	(ii) $\text{MgO} + \text{H}_2\text{O} \rightarrow \text{Mg}(\text{OH})_2$	1+1	
29.	(a) Use of Lubricants such as oil or grease reduces the friction between the two surfaces i.e. the axle and wheel. This helps in moving the bicycle more easily.	1	3
	(b) Due to this friction increases. This helps the players to get a better grip on the ground.	1	
	(c) As streamlined shape reduces friction (air resistance) and helps to acquire a faster speed.	1	
30.	(a) Myopia / Near-sightedness	1	3
	(b) Concave lens of appropriate focal length	1	
	(c) Far point will come nearer	1	

31.



Female Reproductive System

1+1+1

3

**Alternative answer for Visually Challenged Students in lieu of Q. No. 31**

- (a) Testes – Sperm formation
- (b) Uterus – Development of an embryo
- (c) Ovary – Produce egg

1+1+1

**OR**

Tadpole	Frog
has gills	has lungs
has tail	tail-less
cannot live on land	can live on land

1  
1  
1

(or any other relevant point)

32.

- (a) male – between 13-15 years  
female – 11-13 years of age
- (b) Puberty

2  
1

**Alternative answer for Visually Challenged Students in lieu of Q. No. 32**

	(i) Increase in height	1+1+1	
	(ii) Change in body shape		3
	(iii) Changes in the size of heart and lungs		
33.	1. Metals may get deposited at the electrode surface.	1	
	2. Gaseous bubbles may get formed near the electrodes.	1	3
	3. Change of colour of solution may occur due to dissolution of different ions.	1	

**Section-D**

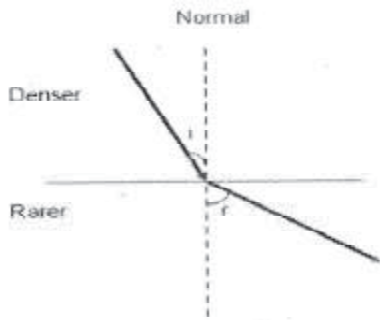
34.	(a) Liquified Petroleum Gas	1	
	(b) - Release low amount of pollutants	1	
	- No ash particles left over after burning.	1	
	- Eco friendly		
	(any two)		
	(c) (i) Asphalt		
	(ii) Paraffin wax	$\frac{1}{2}+\frac{1}{2}$	
	(iii) Lubricating oil		5
	(iv) Gasoline/Petrol	$\frac{1}{2}+\frac{1}{2}$	

**OR**

(a)	Due to its great commercial importance petroleum has often been called black gold.	1
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	(b) Products obtained through destructive distillation of coal.	1+1+1	
	(i) Coke – used as domestic as well as industrial fuel in stoves and furnaces.		
	(ii) Coal tar – used in manufacturing of perfumes, paints, drugs etc.		
	(iii) Coal gas – used as domestic fuel and industrial fuel.		
	(or any other relevant use)		
	(c) Dark coloured, viscous and foul smelling liquid. (any two)	1	
35.	(a) Refraction of light. Change in the speed of light as it goes from one medium to another.	2	5
	(b) (i) A ray of light bends towards the normal when it goes (obliquely) from an optically rarer to an optically denser medium.	2	
	(ii) A ray of light bends away from the normal when it goes (obliquely) from an optically denser to an optically rarer medium.		
	(c) The letters will appear to be raised in case of glass tumbler filled with water as well.	1	
	<b>OR</b>		
	(a) Medium 1 is optically denser than medium 2 because the angle of refraction is greater than angle of incidence which means the light ray goes from an optically denser to an optically rarer medium and so bends away from the normal.	2	
	(b) Angle of incidence = $0^\circ$ and angle of refraction = $0^\circ$ .	1	

(c)



2

(1½ marks for diagram and labelling and ½ mark for arrows)

36.

- (a) (i) mitochondria  
(ii) smooth endoplasmic reticulum  
(iii) rough endoplasmic reticulum  
(iv) plasma membrane

½+½+

½+½

(b)

RER	SER
Ribosomes are attached on surface.	Ribosomes are absent on surface.

1

- (c) The above cell is flexible. It is an animal cell with outer membrane as plasma membrane.

1+1

5

**Alternative answer for Visually Challenged Students in lieu of Q. 36**

(a)

Plant Cell	Animal Cell
Cell wall is present	Cell wall is absent
Plastids are present	Plastids are absent
One large vacuole is present	Vacuoles are absent or present only as small vacuoles.

1

1

1

(any other relevant point)



- |   |     |  |
|---|-----|--|
| (b) Cell wall provides rigidly, protection to the cell, it also gives definite shape, size and support to the cell. | 1+1 |  |
|---|-----|--|

(any two)

**OR**

- |  |     |  |
|--|-----|--|
| (a) Chloroplasts – have green pigment chlorophyll that helps in the process of photosynthesis. | ½+½ |  |
| (b) Mitochondria – responsible for cellular respiration and generating energy.                 | ½+½ |  |
| (c) Endoplasmic Reticulum – provides channels for transport of materials in a cell.            | ½+½ |  |
| (d) Golgi complex – involved in processing and packaging of material produced by the cell.     | ½+½ |  |
| (e) Ribosomes – helps in protein synthesis.  | ½+½ |  |

**Section-E**

- |     |   |     |   |
|-----|---|-----|---|
| 37. | (a) Atmospheric pressure is defined as the force per unit area, exerted by the weight of the air above the surface.   | 1×4 | 4 |
|     | (b) As we move towards higher altitudes, atmospheric pressure decreases as the height of the air column above us decreases, so less air is available. That’s why breathing becomes difficult. |     |   |
|     | (c) Because our internal body pressure, which is almost the same as the external atmospheric pressure, cancels the effect of the outside pressure and saves us from getting crushed under it. |     |   |
|     | (d) Practical applications of atmospheric pressure-   |     |   |
|     | (i) Helps to drink liquid with the help of straw.   |     |   |

	(ii) Helps to fill medicine/liquid inside the syringe/dropper.		
	(iii) Sticking of suction hook on the wall of a room. (any two)		
	(e) (i) Mountaineers carry oxygen cylinders with them.		
	(ii) Aircrafts have pressurised cabins. (any four to be attempted)		
38.	(a) The wire would become more hot in Blue Zone because blue zone is the hottest part of the candle flame.	$\frac{1}{2} + \frac{1}{2}$	4
	(b) When a match stick is brought near the other end of the glass tube it is observed that the wax vapors catch fire.	1	
	(c) Carbon dioxide and water vapours.	$\frac{1}{2} + \frac{1}{2}$	
	(d) Kerosene will catch fire instantly as it's ignition temperature is lesser than mustard oil.		
	(e) middle/yellow zone (any four to be attempted)	$\frac{1}{2} + \frac{1}{2}$	
39.	(a) Tuberculosis	1	
	(b) It is communicable disease because it can be transmitted from an infected person to healthy person.	1	4
	(c) (i) Covering the mouth and nose when coughing or sneezing.	1	
	(ii) Vaccination (any one point)		
	(d) Air	1	
	(e) Antibiotics (any four to be attempted)	1	