

ಕರ್ನಾಟಕ ಪ್ರೌಢ ಶಿಕ್ಷಣ ಪರೀಕ್ಷಾ ಮಂಡಳಿ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು - 560 003

KARNATAKA SECONDARY EDUCATION EXAMINATION BOARD, MALLESWARAM,
BANGALORE - 560 003

ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಪರೀಕ್ಷೆ, ಮಾರ್ಚ್ /ಏಪ್ರಿಲ್ - 2014

S. S. L. C. EXAMINATION, MARCH/APRIL, 2014

ಮಾದರಿ ಉತ್ತರಗಳು
MODEL ANSWERS

ದಿನಾಂಕ : 03. 04. 2014]

Date : 03. 04. 2014]

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E**

CODE NO. : **83-E**

ವಿಷಯ : ವಿಜ್ಞಾನ
Subject : SCIENCE

(ಭೌತಶಾಸ್ತ್ರ, ರಸಾಯನಶಾಸ್ತ್ರ ಮತ್ತು ಜೀವಶಾಸ್ತ್ರ)
(Physics, Chemistry & Biology)

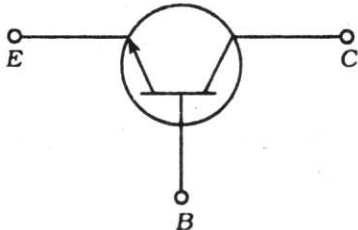
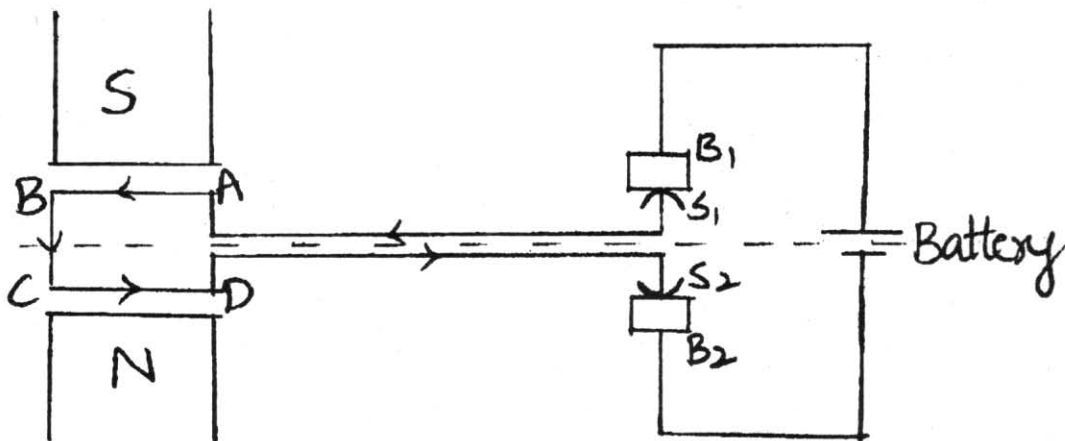
[ಪರಮಾವಧಿ ಅಂಕಗಳು : 100

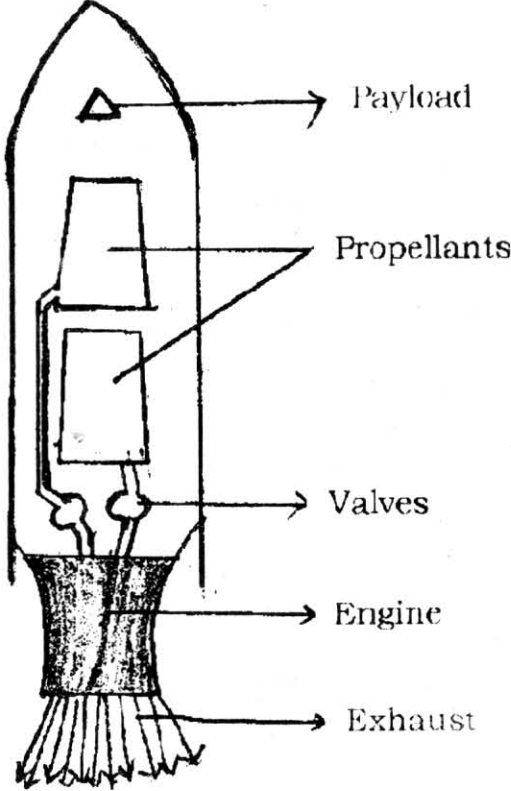
[Max. Marks : 100

(English Version)

Qn. Nos.	Ans. Key	Value Points	Marks Allotted
PART - A (Physics & Chemistry) (Marks : 65)			
1.	C	Sodium silicate	1
2.	D	solar cooker	1
3.	C	only B has acceleration	1
4.	A	I, III, II and IV	1
5.	D	Using water after washing vegetables for plants	1
6.	B	Alkenes	1
7.	A	P	1
8.	C	The listener is moving towards the source of sound.	1
9.	B	Four colleagues residing in the same colony travel to the office together by the same car.	1
10.	B	Antimony	1

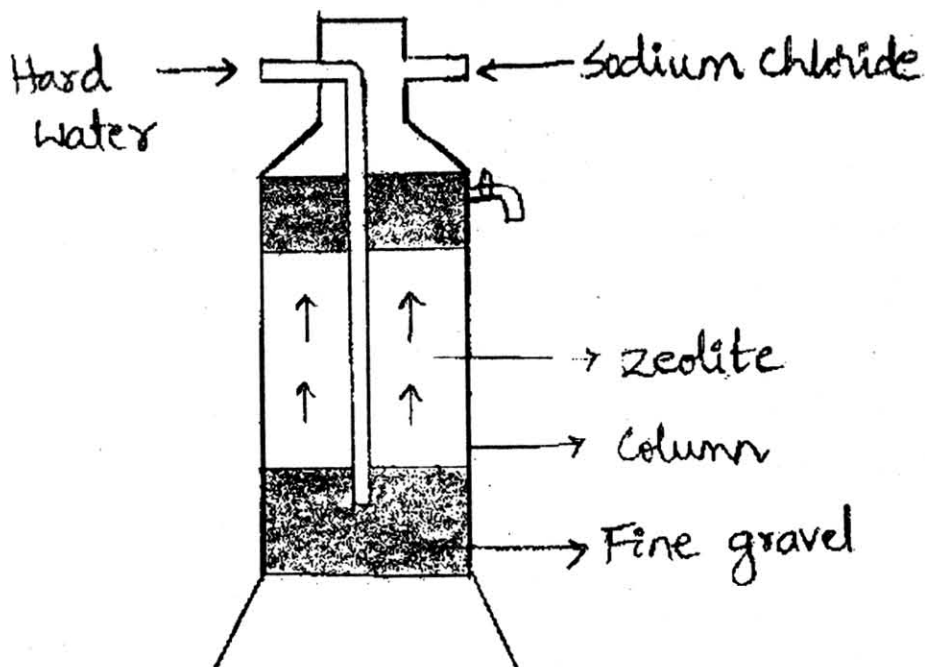
[Turn over

Qn. Nos.	Value Points	Marks Allotted
11.	Sonar	1
12.	Sun or solar energy	1
13.	Detector or Demodulator (any one)	1
14.	a) (iii) nuclear fuel b) (iv) acts as coolant c) (vi) absorbs neutrons d) (vii) stops radiation.	4 × 1 4
15.	<p style="text-align: center;">npn transistor</p> 	1
16.	To detect the leakage of the gas.	1
17.	The amount of energy radiated by the sun in all directions per second.	1
18.	<ul style="list-style-type: none"> ● Estimation of the age of fossils <p style="text-align: center;">Or</p> <ul style="list-style-type: none"> ● Estimation of the age of archaeological specimens 	1
19.	$\text{Zn} + 2\text{HNO}_3 \rightarrow \text{Zn} (\text{NO}_3)_2 + \text{H}_2 \uparrow$	1
20.	The radial force directed towards the centre, acting on a body in circular motion.	1
21.	 <p>ABCD — Coil S₁ S₂ — Split rings B₁ B₂ — Carbon brushes SN — Poles of a magnet.</p> <p style="text-align: right;">(any two parts)</p>	2

Qn. Nos.	Value Points	Marks Allotted	
22.	<p>The period of revolution of the satellite is same as that of period of rotation of the earth.</p> <p style="text-align: center;">OR</p> <p>An artificial satellite whose orbital velocity is 24 hours.</p> <p>Use : (any one)</p> <ul style="list-style-type: none"> * It is possible to connect any part of the world * Global telecommunication (live programmes are possible) * Weather forecasting. 	1	
23.	<p>Single stage rocket</p> <p>(Any two parts)</p> <div style="text-align: center;">  </div>	1	2
24.	<p>Use of Detergents :</p> <ul style="list-style-type: none"> ● Cleanse well even in hard water ● Save edible oils ● Cleanse well even in acidic medium. <p style="text-align: right;">(any two)</p>	2	2

Qn. Nos.	Value Points	Marks Allotted
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25.



Permutit column.

(Any two parts)

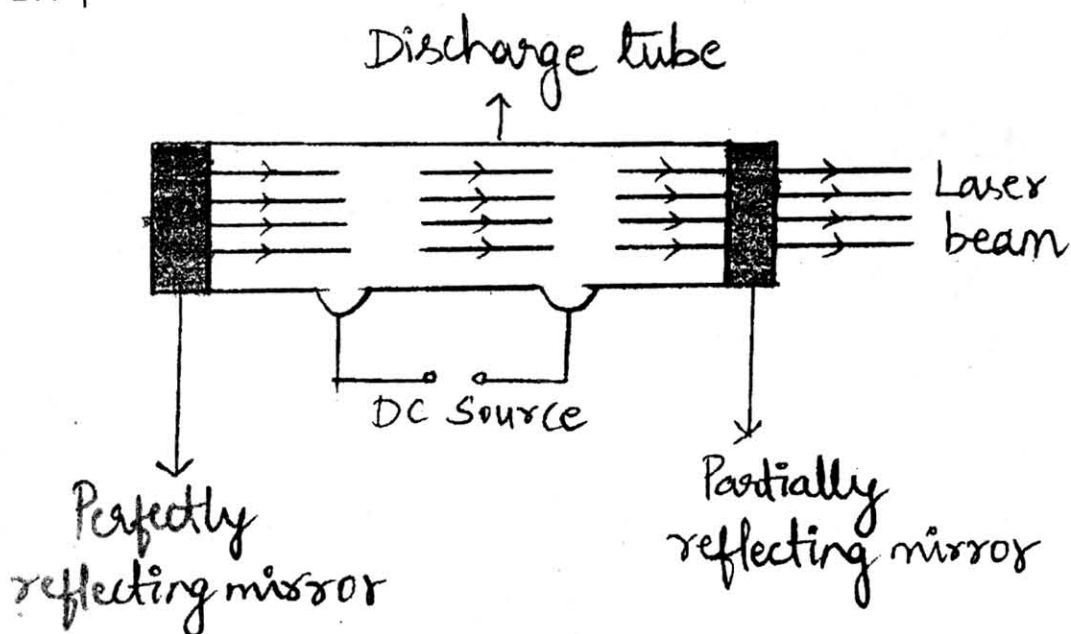
26.

The electromagnetic radiation B causes photoelectric effect in most number of metals.

Reason : The radiation B has least wavelength and hence has high frequency.

It causes photoelectric effect in many number of metals having different threshold frequencies.

27.



Helium-Neon Laser tube.

(Any two parts)

2

1

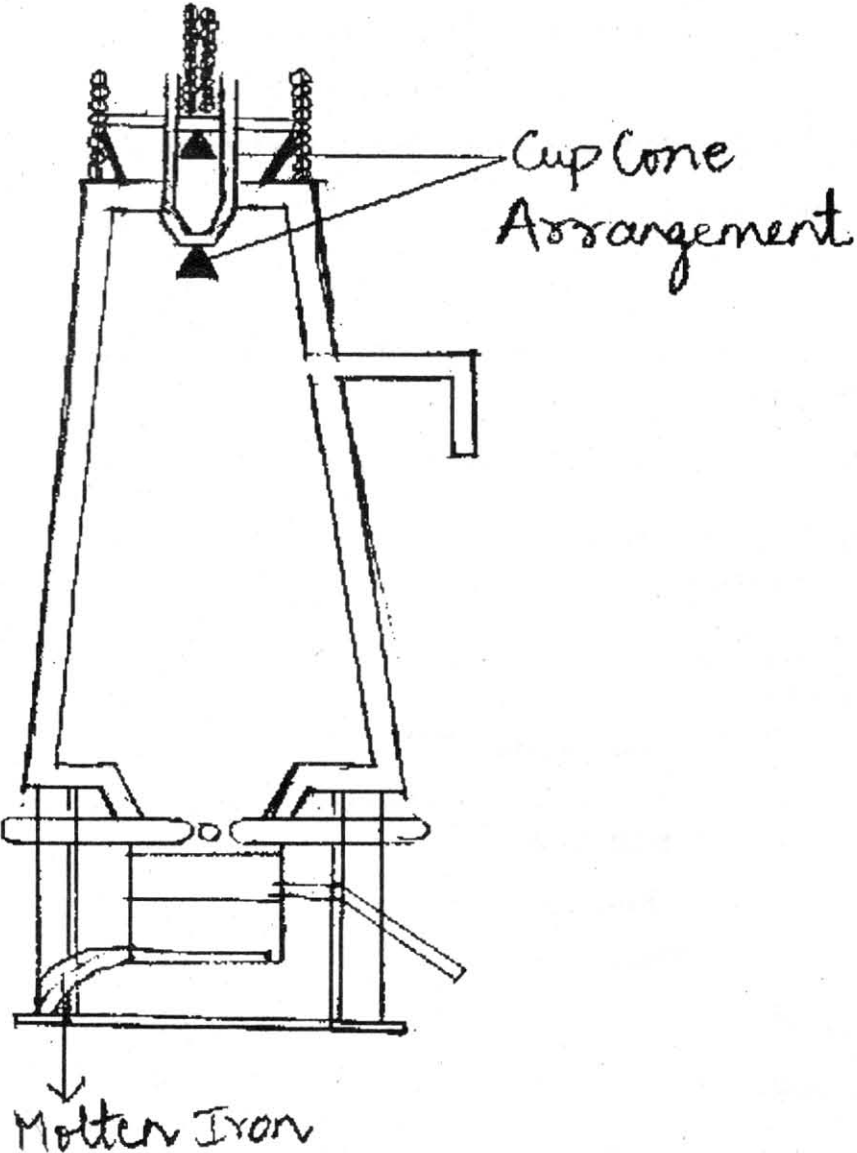
 $\frac{1}{2}$ $\frac{1}{2}$

2

2

Qn. Nos.	Value Points	Marks Allotted
28.	<p><i>First Law</i> : The changing magnetic field linked with a conductor induces an electromotive force in the conductor.</p>	1
	<p><i>Second Law</i> : The induced electromotive force is proportional to the rate of change of magnetic field linked with the conductor.</p>	1
29.	<p>The element X should have atomic number one less than its atomic number.</p>	
	<p>i) ${}_{81}Z^{206} \xrightarrow{-\beta} {}_{82}X^{206} + {}_{-1}e^0$</p> <p>The element Z should have atomic number 2 greater than Y and mass number 4 greater than Y.</p>	
	<p>ii) ${}_{83}Y^{210} \xrightarrow{-\alpha} {}_{81}Z^{206} + {}_2\text{He}^4$</p> <p>$\therefore$ The atomic mass of Y is 210 and atomic number is 83. (If first step is done correctly 1 mark and for the second step 1 mark)</p>	1 + 1 = 2
30.	<p>a) Acceleration due to gravity on the earth</p> $g_E = \frac{GM_E}{R_E^2}$ $g_M = \frac{GM_M}{(3R_E)^2}$ $\frac{g_M}{g_E} = \frac{\frac{GM_E}{9R_E^2}}{\frac{GM_E}{R_E^2}}$ $\frac{g_M}{g_E} = \frac{GM_E}{9R_E^2} \times \frac{R_E^2}{GM_E}$ $\frac{g_M}{g_E} = \frac{1}{9} \quad \therefore \frac{g_M}{g_E} = 1 : 9.$ <p>b) $\frac{g_M}{g_E} = \frac{1}{9} \quad \therefore g_M = 1.08 \text{ ms}^{-2}$</p> $g_M = \frac{g_E}{9}$ $g_M = \frac{9.8}{9}$ <p>Acceleration due to gravity on the planet M</p> $g_M = \frac{GM_M}{R_M^2}$ $\therefore R_M = 3R_E$ $\therefore M_E = M_M$ $\therefore M_E = M_M$	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>3</p>

Qn. Nos.	Value Points	Marks Allotted			
31.	<p>The molecular formula is C_4H_{10}.</p> $ \begin{array}{ccccccccccc} & & H & & H & & H & & H & & \\ & & & & & & & & & & \\ H & - & C & - & C & - & C & - & C & - & H \\ & & & & & & & & & & \\ & & H & & H & & H & & H & & \end{array} $ <p style="text-align: center;">n-butane</p> $ \begin{array}{ccccccc} & & & & H & & \\ & & & & & & \\ & & & & H - C - H & & \\ & & & & & & \\ H & & & & & & H \\ \diagdown & & & & & & / \\ H & - & C & - & C & - & C & - & H \\ / & & & & & & \diagdown & & \\ H & & & & H & & & & H \\ & & & & & & & & \\ & & & & H & & & & \end{array} $ <p style="text-align: center;">Iso-butane</p>	1			
		1			
32.	<p>a) Line emission spectrum.</p> <p>b) The scattered light contains the light of smaller and larger wavelengths in addition to the wavelength of incident light.</p> <p style="text-align: center;">OR</p> <p>The scattered light contains different colours in addition to that of the incident light.</p> <p><i>Application</i> : Used in the study of molecular structure.</p>	1	3		
		1			
		1			
33.	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>a) Thermoplastic</p> <p>* Lose their shape on heating. They can be moulded and remoulded by heating</p> <p>Ex : Polyvinyl chloride or polystyrene</p> </td> <td style="width: 50%; vertical-align: top;"> <p>Thermosetting Plastic</p> <p>* set on heating and become irreversibly hard on cooling.</p> <p>Ex : Bakelite or silicones or epoxy resins</p> </td> </tr> </table> <p>b) The monomer unit is Tetrafluoroethene.</p> <p>Uses : Parts of electrical devices</p> <p style="text-align: center;">OR</p> <p style="text-align: center;">Coating vessels</p>	<p>a) Thermoplastic</p> <p>* Lose their shape on heating. They can be moulded and remoulded by heating</p> <p>Ex : Polyvinyl chloride or polystyrene</p>	<p>Thermosetting Plastic</p> <p>* set on heating and become irreversibly hard on cooling.</p> <p>Ex : Bakelite or silicones or epoxy resins</p>	1	3
<p>a) Thermoplastic</p> <p>* Lose their shape on heating. They can be moulded and remoulded by heating</p> <p>Ex : Polyvinyl chloride or polystyrene</p>	<p>Thermosetting Plastic</p> <p>* set on heating and become irreversibly hard on cooling.</p> <p>Ex : Bakelite or silicones or epoxy resins</p>				
		2			
		$\frac{1}{2}$			
		$\frac{1}{2}$			

Qn. Nos.	Value Points	Marks Allotted
34.	 <p style="text-align: center;">Cup Cone Arrangement</p> <p style="text-align: center;">Molten Iron</p>	4
35.	<p>a) * Huge gaseous clouds contract due to gravity.</p> <p>* There will be increase in density and pressure. The cloud settles with a spherical mass at the centre of the cloud. Hydrogen core is formed.</p> <p>b) * White dwarf * Black dwarf</p> <p><i>White dwarf</i> : The star collapses under the action of gravity. The temperature increases and the core develops pressure. Shine due to their high temperature.</p> <p><i>Black dwarf</i> : The star loses its energy (internal) and temperature. The nuclear reactions stop.</p>	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ 1 1
		4

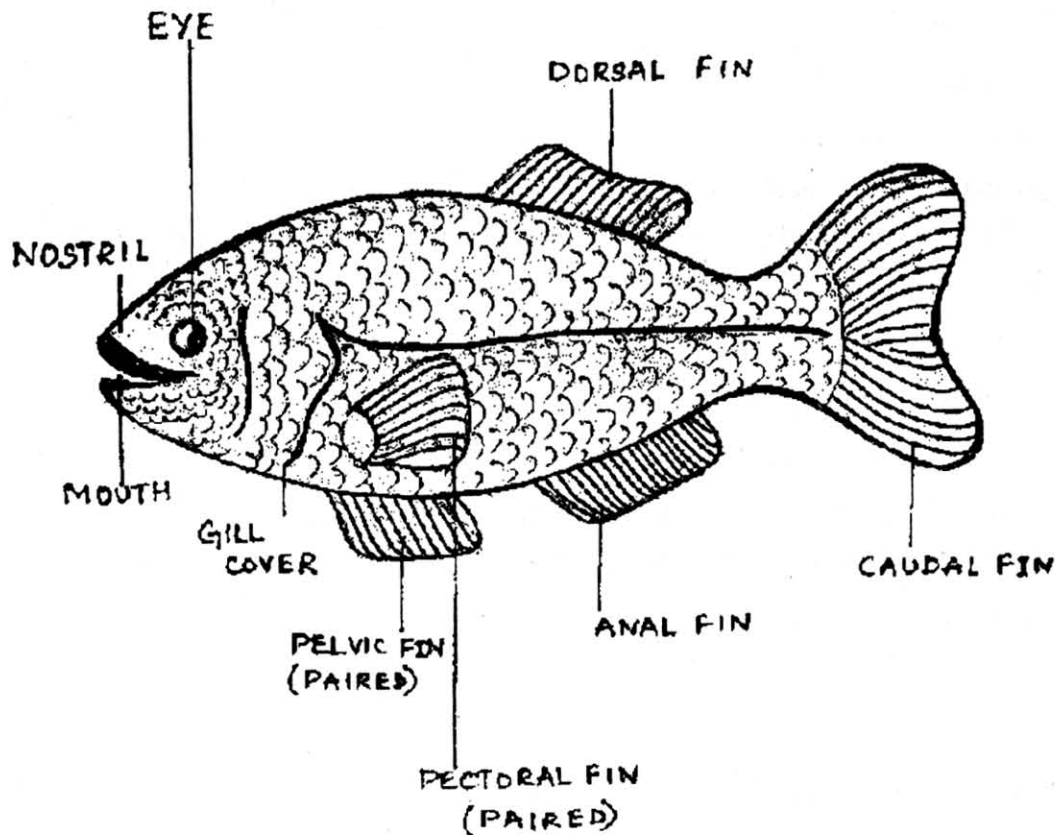
Qn. Nos.	Value Points	Marks Allotted	
36.	<i>Intake stroke</i> : The piston moves away from the cylinder head.	$\frac{1}{2}$	
*	Low pressure is created inside the cylinder and the inlet valve is opened.	$\frac{1}{2}$	
*	The fuel mixture from the carburettor enters the cylinder	$\frac{1}{2}$	
*	The outlet valve is closed.	$\frac{1}{2}$	
	<i>Power stroke</i> :		
*	The compressed mixture is ignited by the sparks produced by the spark plug.	$\frac{1}{2}$	
*	A lot of heat is produced by the combustion	$\frac{1}{2}$	
*	The products of combustion carbon dioxide and water vapour expand suddenly	$\frac{1}{2}$	
*	The piston is pushed with great force. Both inlet valve and outlet valve are closed.	$\frac{1}{2}$	4

Qn. Nos.	Ans. Key	Value Points	Marks Allotted	
		PART - B (Biology) (Marks : 35)		
37.	B	Mustard and beans	1	
38.	D	AGMARK	1	
39.	A	It increases the heartbeat	1	
40.	B	Recombinant DNA technology	1	
41.	C	Nerve	1	

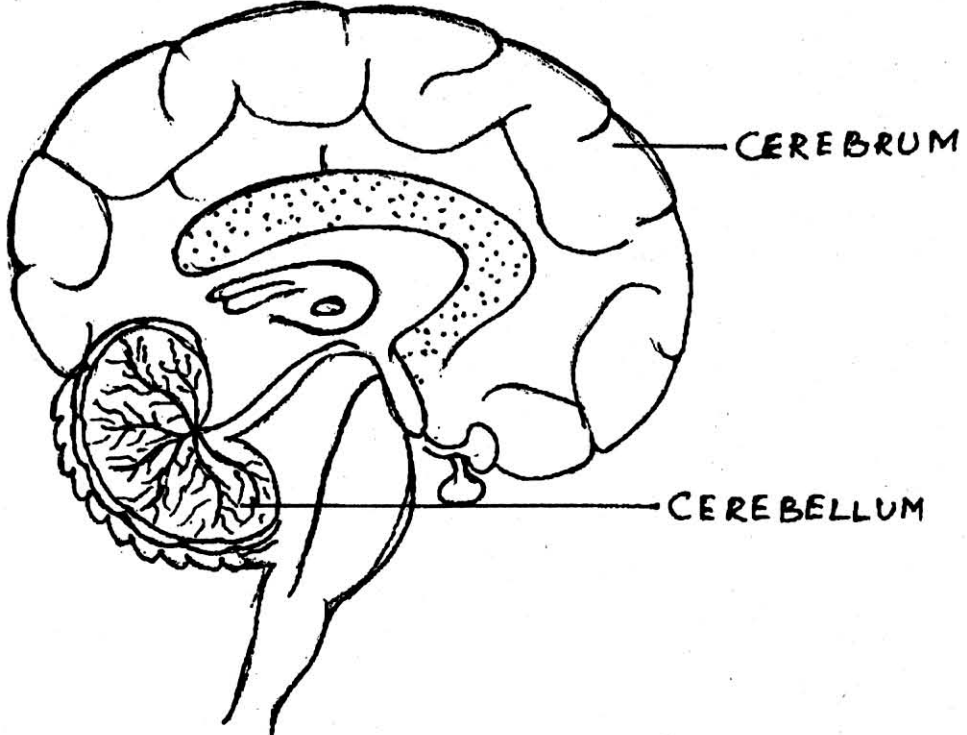
42.	a) — (iii)	excretion of water from kidneys, protruded jaws	1	
	b) — (v)	promotes growth, protruded tongue	1	
	c) — (vi)	controls the amount of salts in the bone, soft bones	1	
	d) — (i)	development of uterus, irregular menstrual cycle	1	4

Qn. Nos.	Value Points	Marks Allotted	
	Answer in <i>one</i> sentence :		
43.	i) Fore limbs have four digits	$\frac{1}{2}$	
	ii) Hind limbs have five digits.	$\frac{1}{2}$	1
44.	When the liver cells are damaged, bilirubin pigments increase in human blood.	1	
45.	i) Nutrients are absorbed from the soil.	$\frac{1}{2}$	
	ii) Carbon dioxide is recycled and enters the reservoir pool.	$\frac{1}{2}$	1
46.	i) The application of technology utilizing the characteristics of living organism to obtain useful products is termed as biotechnology.		
	ii) The science of applying biological processes is called biotechnology.		
	iii) The application of biological organisms, systems or processes to manufacturing and service industries is called biotechnology. (any one)	1	
	Answer in <i>two</i> or <i>three</i> sentences :		
47.	Take about 5 ml of cooking oil and add equal amount of concentrated Nitric acid to it and stir using a glass rod. If a reddish brown colour appears at the bottom of the test tube, then this confirms the presence of argemone oil in edible oil.	2	
48.	A bacterium does not have a nuclear membrane (prokaryote), whereas diatom has a nuclear membrane. (Eukaryote)	1	
		1	2
49.	The enzyme converts RNA to DNA which is similar to human DNA. So it will be difficult for WBC to identify. Hence there is no production of antibodies. Thus HIV positive is prone to AIDS.	1	
		1	2
50.	i) In gaseous cycles, the reservoir pool is mostly atmosphere or the hydrosphere.		
	ii) Gaseous cycles are perfect cycles		
	In sedimentary cycles, the reservoir pool is mostly lithosphere	1	
	Sedimentary cycles are imperfect cycles.	1	2

Qn. Nos.	Value Points	Marks Allotted
51.	i) Removal of toxic chemicals ii) Neutralization of acids and alkalis iii) Precipitation of metallic compounds iv) Reducing the temperature of waste water from power plant.	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ 2
52.	i) Deposition of lignin ii) Losing nucleus and protoplasm.	1 1 2
Answer the following questions : 2 × 3 = 6		
53.	Neuron consists of a cell body and an axon. A prominent nucleus in the cell body and short brush like structures arising from the cell body known as dendrite. The axon is a long extension of the cell body ending in a bunch of branches. The axon is covered by a fatty layer known as myelin sheath.	3
54.		



External Features of a Fish

Qn. Nos.	Value Points	Marks Allotted
55.	 <p data-bbox="356 1023 836 1072">Vertical section of human brain.</p>	4