

**RR+PR**

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 — 2015

**S. S. L. C. EXAMINATION, MARCH/APRIL, 2015**

ಮಾದರಿ ಉತ್ತರಗಳು

**MODEL ANSWERS**

ದಿನಾಂಕ : 01. 04. 2015 ]

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E**

Date : 01. 04. 2015 ]

CODE No. : **83-E**

ವಿಷಯ : ವಿಜ್ಞಾನ

**Subject : SCIENCE**

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

( ಹಳೆ ಪಠ್ಯಕ್ರಮ / Old Syllabus )

( ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ + ಪುನರಾವರ್ತಿತ ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / Regular Repeater + Private Repeater )

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version )

[ ಪರಮಾವಧಿ ಅಂಕಗಳು : 100

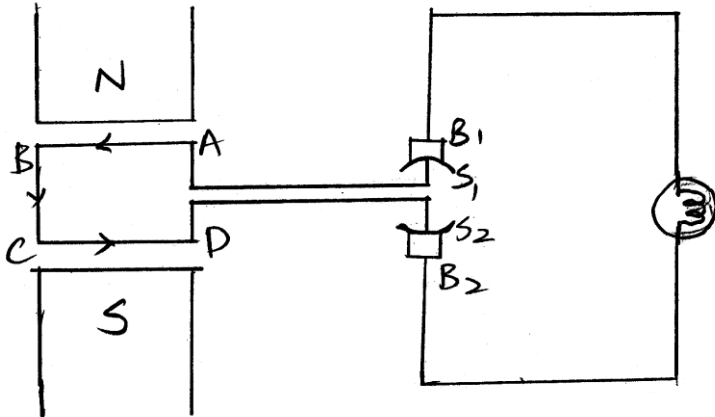
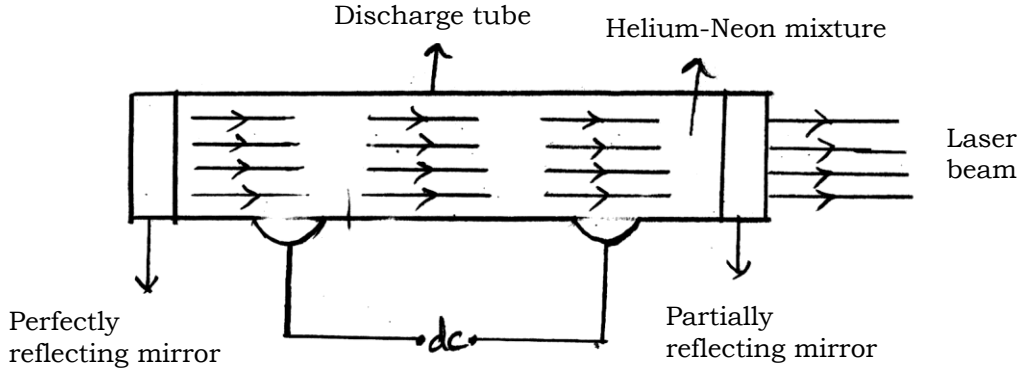
[ Max. Marks : 100

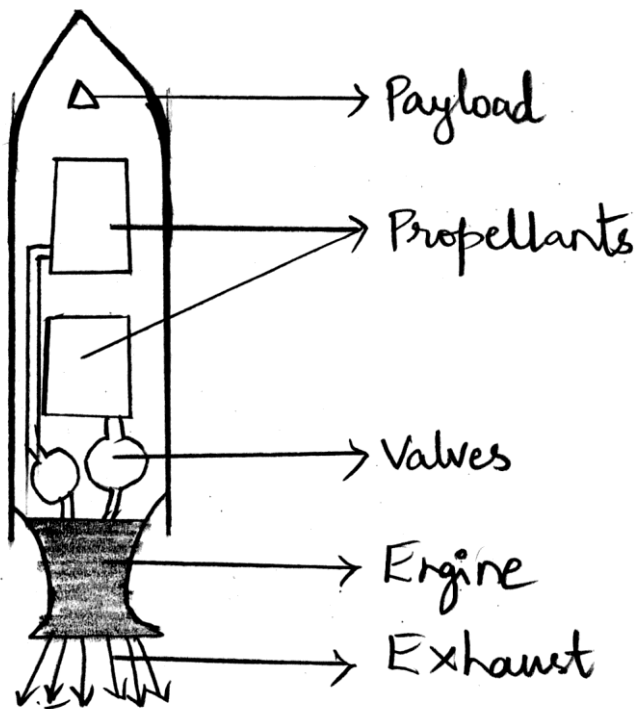
Qn. Nos.	Value Points	Total
	<b>Part - A</b> <b>( Physics &amp; Chemistry )</b> <b>Marks : 65</b>	
1.	A — $1s^2, 2s^2 2p^6, 3s^2 3p^2$	1
2.	C — gain necessary centripetal force	1
3.	D — Nuclear energy	1
4.	A — brass	1
5.	B — Using fluorescent tubelights	1
6.	B — thermonuclear fusion reaction	1
7.	A — Magnesium	1
8.	B — Doppler effect	1
9.	B — Antimony	1
10.	D — $C_2H_6$ .	1

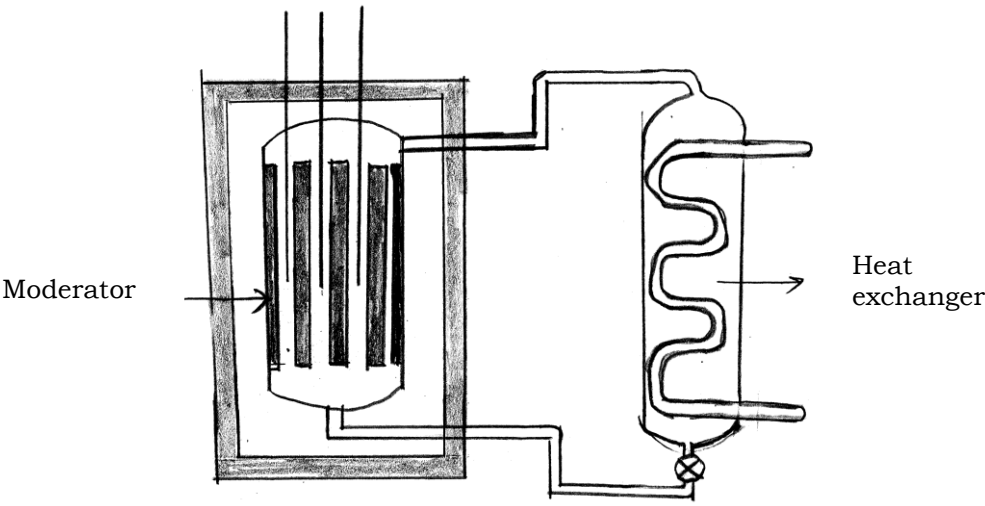
**RR+PR-512**

[ Turn over

Qn. Nos.	Value Points	Total
11.	solar cell / photo cell	1
12.	base	1
13.	radar gun	1
14.	a) — (iv) C <sub>6</sub> H <sub>6</sub>	1
	b) — (ii) C <sub>3</sub> H <sub>4</sub>	1
	c) — (v) C <sub>4</sub> H <sub>8</sub>	1
	d) — (i) C <sub>4</sub> H <sub>10</sub> .	1
15.	Mg + 2HCl → MgCl <sub>2</sub> + H <sub>2</sub> ↑	4
16.	Heating of alkanes at a very high temperature in the absence of oxygen to decompose them to produce hydrocarbons of shorter chain length is called cracking.	1
17.	The time taken by the radioactive element to get reduced to half its initial amount is the half life period of that element.	1
18.	Circular motion with constant speed is called uniform circular motion.	1
19.	★ Converts AC to DC	
	★ Used in voltage regulating systems.	1
20.	Magnitude	1
21.	The phenomenon by which radioactivity is induced in an element is called induced radioactivity.	1
	When aluminium is bombarded by alpha particles, it produces radio-phosphorus.	1
	OR	
	${}_{13}\text{Al}^{27} + {}_2\text{He}^4 \rightarrow {}_{15}\text{P}^{30} + {}_0n^1$	

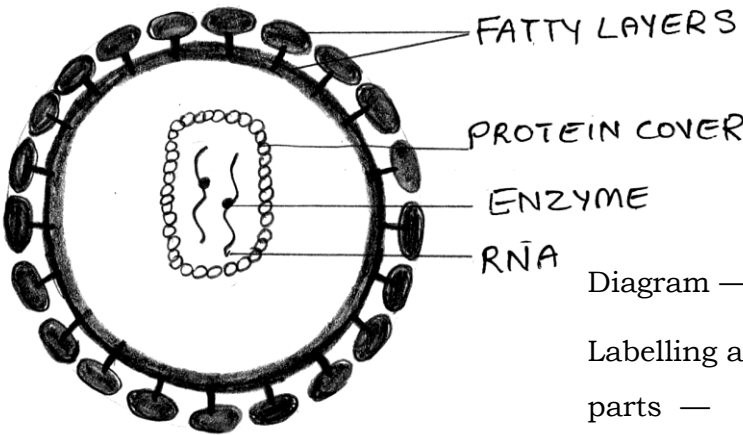
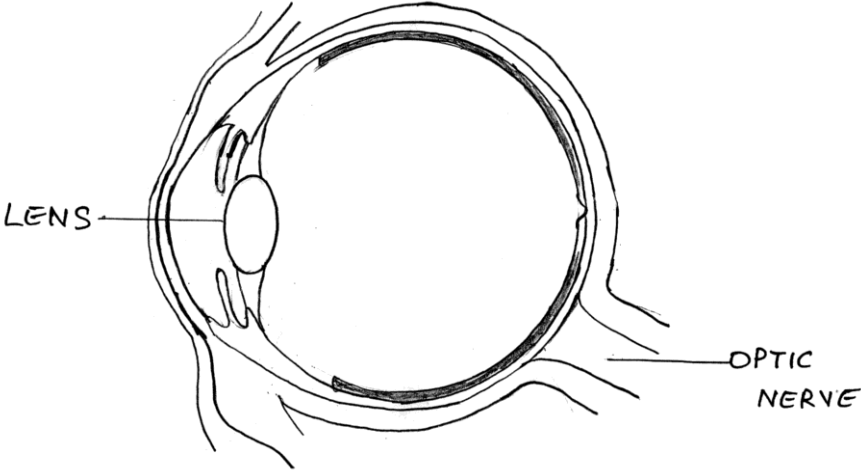
Qn. Nos.	Value Points	Total									
22.	 <p> <i>N, S</i> → Magnetic poles  <i>ABCD</i> → Armature                      Load  <i>S<sub>1</sub>S<sub>2</sub></i> → Split rings  <i>B<sub>1</sub>B<sub>2</sub></i> → Carbon brushes.                 </p>	2									
23.	<p>The special type of fuels which contain both fuel and oxidants and used for rockets are called propellants.</p> <p>Propellants contain oxidants, which provide oxygen to the fuel and help them in burning even in vacuum.</p>	1 1									
24.	<ul style="list-style-type: none"> <li>★ Collection and use of roof water</li> <li>★ Improved methods of farming / irrigation</li> <li>★ Development of crop breeds that consume less water</li> <li>★ Preventing pollution of water</li> <li>★ Conserving and recharging ground water</li> <li>★ Conservation of soil.</li> </ul> <p style="text-align: right;">( any four ) <math>4 \times \frac{1}{2}</math></p>	2									
25.	 <p>                     Discharge tube      Helium-Neon mixture                      Laser beam                      Perfectly reflecting mirror      Partially reflecting mirror                      dc                 </p>	2									
26.	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center;"><i>AC Dynamo</i></td> <td style="text-align: center;"><i>DC Dynamo</i></td> <td></td> </tr> <tr> <td>★ Produces alternating current</td> <td>★ Produces direct current</td> <td style="text-align: right;">1</td> </tr> <tr> <td>★ It has two slip-rings</td> <td>★ It has two split-rings</td> <td style="text-align: right;">1</td> </tr> </table>	<i>AC Dynamo</i>	<i>DC Dynamo</i>		★ Produces alternating current	★ Produces direct current	1	★ It has two slip-rings	★ It has two split-rings	1	2
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★ Produces alternating current	★ Produces direct current	1									
★ It has two slip-rings	★ It has two split-rings	1									

Qn. Nos.	Value Points	Total
27.		2
28.	<ul style="list-style-type: none"> <li>★ Detergents are non-biodegradable but soaps are biodegradable. 1</li> <li>★ Detergents pollute water &amp; soil ; but soaps do not pollute water and soil. 1</li> </ul>	2
29.	<p>Eye surgery → directionality of laser 1</p> <p>Industries → high power density of laser. 1</p>	2
30.	<p>The process in which two or more molecules of a simple compound unite together to form a new compound is called polymerisation. 1</p> <ul style="list-style-type: none"> <li>★ Addition polymers : <i>Ex</i> : Polythene <math>\frac{1}{2} + \frac{1}{2}</math></li> <li>★ Condensation polymers : <i>Ex</i> : Nylon. <math>\frac{1}{2} + \frac{1}{2}</math></li> </ul>	3
31.	<p>Raman Effect : When a beam of monochromatic light is passed through the transparent material, scattered light obtained contains higher and lower frequencies along with incident frequency. 1</p>	1

Qn. Nos.	Value Points	Total			
	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center; vertical-align: top;"> <p><i>Raman Effect</i></p> <ul style="list-style-type: none"> <li>★ Monochromatic light is passed through transparent material</li> <li>★ Scattered light contains higher and lower frequency light in addition to incident light's frequency ( incoherent scattering )</li> </ul> </td> <td style="text-align: center; vertical-align: top;"> <p><i>Rayleigh Scattering</i></p> <ul style="list-style-type: none"> <li>★ A beam of light is passed through homogeneous transparent medium</li> <li>★ The frequency of incident light and scattered light is same ( coherent scattering )</li> </ul> </td> <td style="vertical-align: top; text-align: center;"> <p>1</p> <p>1</p> </td> </tr> </table>	<p><i>Raman Effect</i></p> <ul style="list-style-type: none"> <li>★ Monochromatic light is passed through transparent material</li> <li>★ Scattered light contains higher and lower frequency light in addition to incident light's frequency ( incoherent scattering )</li> </ul>	<p><i>Rayleigh Scattering</i></p> <ul style="list-style-type: none"> <li>★ A beam of light is passed through homogeneous transparent medium</li> <li>★ The frequency of incident light and scattered light is same ( coherent scattering )</li> </ul>	<p>1</p> <p>1</p>	<p>3</p>
<p><i>Raman Effect</i></p> <ul style="list-style-type: none"> <li>★ Monochromatic light is passed through transparent material</li> <li>★ Scattered light contains higher and lower frequency light in addition to incident light's frequency ( incoherent scattering )</li> </ul>	<p><i>Rayleigh Scattering</i></p> <ul style="list-style-type: none"> <li>★ A beam of light is passed through homogeneous transparent medium</li> <li>★ The frequency of incident light and scattered light is same ( coherent scattering )</li> </ul>	<p>1</p> <p>1</p>			
<p>32.</p>	 <p>The diagram shows a cross-section of a nuclear reactor. On the left, a rectangular container labeled 'Moderator' contains several vertical fuel rods. On the right, a vertical cylindrical vessel labeled 'Heat exchanger' contains a coiled pipe. A pipe connects the bottom of the moderator to the top of the heat exchanger, and another pipe connects the top of the heat exchanger back to the bottom of the moderator, forming a closed loop. A small circle with an 'X' is at the bottom of the heat exchanger, likely representing a pump.</p>	<p>3</p>			
<p>33.</p>	<p>a) Every particle in the universe attracts every other particle with a force that is proportional to the product of their masses and inversely proportional to the square of the distance between them. <span style="float: right;">1</span></p> <p>b) <math>F = \frac{GM_1M_2}{d^2}</math> <span style="float: right;">1</span></p> <p><math>d = 2d, F_2 = \frac{GM_1M_2}{(2d)^2}</math></p> <p><math>F_2 = \frac{GM_1M_2}{4d^2}</math> <span style="float: right;"><math>\frac{1}{2}</math></span></p> <p><math>\frac{F_1}{F_2} = \frac{GM_1M_2}{d^2} \times \frac{4d^2}{GM_1M_2}</math></p> <p><math>\frac{F_1}{F_2} = \frac{4}{1}</math></p> <p><math>F_2 = \frac{F_1}{4} \Rightarrow</math> When the distance between the two bodies is increased by two times the gravitational force decreases by 4 times. <span style="float: right;"><math>\frac{1}{2}</math></span></p>	<p>3</p>			

Qn. Nos.	Value Points	Total
34.	<p>a) A huge group of stars held together by gravitational force is called a galaxy. <math>\frac{1}{2}</math></p> <p>Three types of galaxies are</p> <ul style="list-style-type: none"> <li>★ spiral <math>\frac{1}{2}</math></li> <li>★ elliptical <math>\frac{1}{2}</math></li> <li>★ irregular <math>\frac{1}{2}</math></li> </ul> <p>b) ★ less temperature 1</p> <ul style="list-style-type: none"> <li>★ The energy from the interior is prevented from reaching photosphere in the region of sun spots. 1</li> </ul>	4
35.		4
36.	<p>a) Efficiency of an engine = <math>\frac{\text{Work done}}{\text{Energy supplied}} \times 100</math> 1</p> <p>b) ★ They are smaller in size and hence can be used for motor vehicles.</p> <ul style="list-style-type: none"> <li>★ They can be started instantaneously</li> <li>★ They have high efficiency</li> <li>★ The risk of explosion of cylinder is very less. ( any three ) <math>3 \times 1</math></li> </ul>	4
<p><b>Part - B</b>  <b>( Biology )</b>  <b>Marks : 35</b></p>		
37.	B — Thyroxine	1
38.	B — Aves	1
39.	A — Phycoerythrin	1
40.	C — two	1
41.	D — Respiration, Photosynthesis	1

Qn. Nos.	Value Points	Total
42.	a) — (v) flat cells, oesophagus b) — (i) elongated cells, larynx c) — (ii) ciliated cells, small intestine d) — (vi) cube shaped cells, salivary gland	1 1 1 1 4
43.	Rods are sensitive to dim light but cannot distinguish colours. ( Or cones cannot distinguish colours in dim light )	1
44.	The process of lowering the nutritive value of food, either by removing a vital component or by adding substances of inferior quality, is called food adulteration.	1
45.	Pinna is made of cartilage. Cartilage is elastic and flexible.	1
46.	Fibres are flexible.	1
47.	★ Exoskeleton of horny scales ★ Skin is dry ★ Internal fertilization ★ Both the limbs are pentadactyl. ( any two )	2 × 1
48.	★ Date of manufacture ★ Date of expiry ★ Weight ★ Ingredients ★ FPO, stamp. ( any four )	4 × $\frac{1}{2}$
49.	★ Trees absorb carbon dioxide from the atmosphere for photosynthesis. ★ Trees regulate water cycle. ( any other suitable answer )	2
50.	★ Human health may be upset ★ May upset the delicate balance existing in nature.	2
51.	<i>Reservoir pool :</i> ★ movement of chemical substances is slow ★ involves non-living components ★ involves atmosphere, hydrosphere and lithosphere. <i>Exchange pool :</i> ★ movement of chemical substances is rapid ★ involves living components ★ involves biosphere. ( any two differences )	2

Qn. Nos.	Value Points	Total
52.	<ul style="list-style-type: none"> <li>★ Monocot leaf has parallel venation and has less of collenchyma.</li> <li>★ Dicot leaf has reticulate venation and has more of collenchyma.</li> </ul>	2
53.	<p>The sound waves directed by the pinna to the tympanum, through the auditory canal make the tympanum to vibrate.</p> <p>These vibrations are carried to the internal ear through the chain of bones in the middle ear.</p> <p>The vibrations are further carried to the organ of Corti through perilymph and endolymph.</p> <p>These wave impulses are picked up by receptors in the organ of Corti and are carried through auditory nerve to the cerebrum which interprets the sound.</p>	3
54.	<div style="text-align: center;">  </div> <p style="text-align: right;">Diagram — 2</p> <p style="text-align: right;">Labelling any two parts — <math>\frac{1}{2} + \frac{1}{2}</math></p>	3
55.	<div style="text-align: center;">  </div>	4