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UNREVISED**

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

**KARNATAKA SECONDARY EDUCATION EXAMINATION BOARD, MALLESWARAM,
BANGALORE – 560 003**

ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಪರೀಕ್ಷೆ, ಸೆಪ್ಟೆಂಬರ್, 2020

S.S.L.C. EXAMINATION, SEPTEMBER, 2020

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ದಿನಾಂಕ : 28. 09. 2020]

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Phy)**

Date : 28. 09. 2020]

CODE NO. : **83-E (Phy)**

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತಶಾಸ್ತ್ರ / Physics)

(ಹಳೆ ಪಠ್ಯಕ್ರಮ / Old Syllabus)

(ಪುನರಾವರ್ತಿತ ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / Private Repeater)

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

[ಗರಿಷ್ಠ ಅಂಕಗಳು : 100

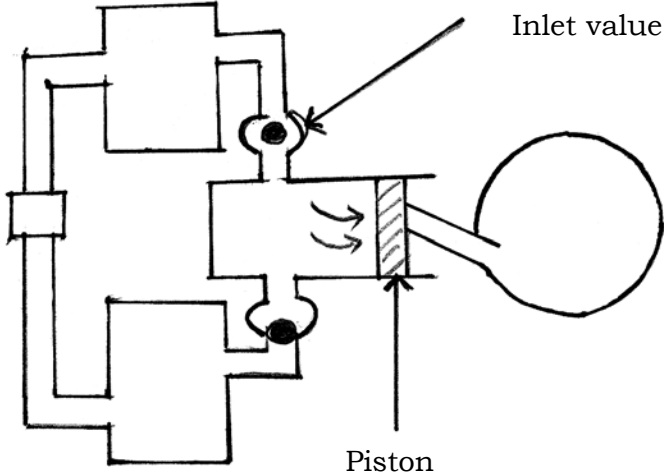
[Max. Marks : 100

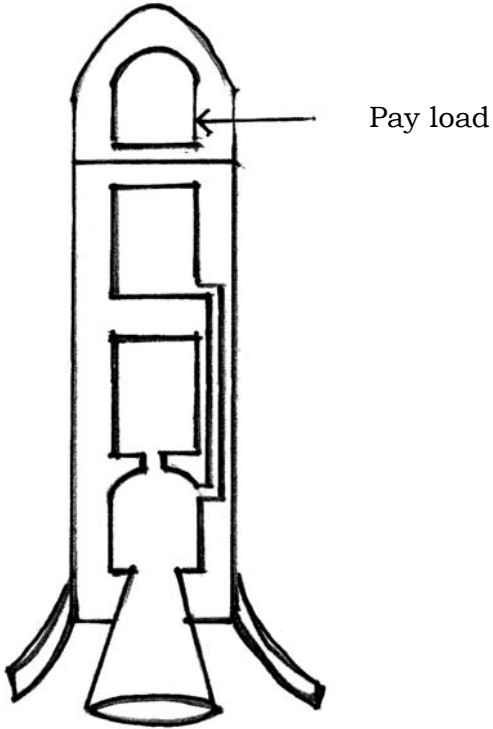
Qn. Nos.	Value Points	Total
2.	If the time period of a wave is increased by four times then its frequency (A) increases by 4 times (B) decreases by 4 times (C) increases by 2 times (D) decreases by 2 times. Ans. : (B) — decreases by 4 times	1
5.	Emitter segment in transistor is (A) lightly doped (B) moderately doped (C) heavily doped (D) a pure semiconductor. Ans. : (C) — Heavily doped	1

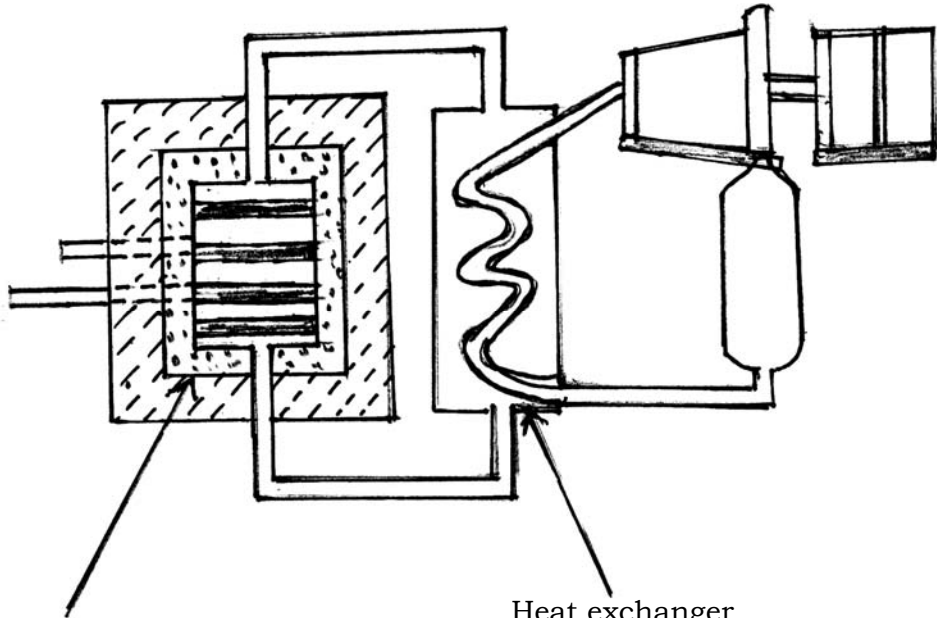
PR (D)-# 43048(MA) (PHY)

[Turn over

Qn. Nos.	Value Points	Total
15.	<p>The motion of simple pendulum is an example for simple harmonic motion. Why ?</p> <p>Ans. :</p> <p>i) Position of the bob repeats after regular interval.</p> <p>ii) On its own the direction and the acceleration varies leading to movement in the opposite direction. (Any one)</p>	1
21.	<p>What is efficiency of a heat engine ? Write the formula to calculate the efficiency of a heat engine.</p> <p style="text-align: center;">OR</p> <p>Write the stages involved in the working of a petrol engine.</p> <p>Ans. :</p> <p>i) The ratio of the actual work done to the heat energy consumed. 1</p> <p>ii) $\eta = \frac{W}{H} \times 100$ 1</p> <p style="text-align: center;">OR</p> <p>i) Intake stroke</p> <p>ii) compression stroke</p> <p>iii) Ignition stroke</p> <p>iv) Expansion stroke</p> <p>v) Exhaust stroke</p> <p style="text-align: right;">(Any four)</p>	2
24.	<p>What is solar cell ? Write any two uses of solar cell.</p> <p>Ans. :</p> <p>A device which converts solar energy to electrical energy. 1</p> <p>They are used in</p> <p>i) traffic signals</p> <p>ii) signal lights</p> <p>iii) lighting lamps</p> <p>iv) solar pumps</p> <p>v) artificial satellites</p> <p>vi) calculators. (Any four)</p>	2

Qn. Nos.	Value Points	Total								
27.	Draw the diagram showing the expansion stroke of a steam engine. Label the following parts : i) Piston ii) Inlet valve. Ans. :									
	<div style="text-align: center;">  </div> <div style="text-align: right; margin-top: 10px;"> Diagram — 1 Parts — $\frac{1}{2} + \frac{1}{2}$ </div>	2								
30.	SONAR placed in a ship is used to find out the depth of the sea at two different places. If the reflection of ultrasound waves are detected after 6 seconds in one place and after 4 seconds in another place, then find the ratio of the depth of the sea at these two places. Ans. : Depth of the sea in one place $d_1 = \frac{vt_1}{2} = \frac{6v}{2}$ $\frac{1}{2}$ Depth of the sea in another place $d_2 = \frac{vt_2}{2} = \frac{4u}{2}$ $\frac{1}{2}$ Ratio $\frac{d_1}{d_2} = \frac{3V}{2V} \Rightarrow 3 : 2$ or $2 : 3$. 1	2								
33.	Observe the following table : <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;"><i>Element</i></th> <th style="padding: 5px;"><i>P</i></th> <th style="padding: 5px;"><i>Q</i></th> <th style="padding: 5px;"><i>R</i></th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"><i>Atomic Number</i></td> <td style="padding: 5px; text-align: center;">13</td> <td style="padding: 5px; text-align: center;">14</td> <td style="padding: 5px; text-align: center;">15</td> </tr> </tbody> </table> Which elements do you choose from the table to prepare 'n' type of semiconductors ? Give scientific reason for your choice.	<i>Element</i>	<i>P</i>	<i>Q</i>	<i>R</i>	<i>Atomic Number</i>	13	14	15	
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Qn. Nos.	Value Points	Total
	<p><i>Ans. :</i></p> <p>i) Elements <i>Q</i> and <i>R</i> to be chosen. 1</p> <p>ii) <i>Q</i> is tetravalent or has valency 4. $\frac{1}{2}$</p> <p>iii) <i>R</i> is pentavalent or has valency 5. $\frac{1}{2}$</p>	2
36.	<p>Diesel engine does not require spark plug. Why ?</p> <p><i>Ans. :</i></p> <p>i) Compression ratio is 14 : 1 to 25 : 1. 1</p> <p>ii) Due to this compression high temperature of around 1000 K is produced in engine. 1</p>	2
39.	<p>Draw the diagram of single stage rocket and label payload.</p> <p><i>Ans. :</i></p> <div style="text-align: center;">  </div> <p>Diagram — $1\frac{1}{2}$</p> <p>Parts — $\frac{1}{2}$</p>	2

Qn. Nos.	Value Points	Total
42.	<p>In the experiment of electromagnetic induction, explain how induced <i>e.m.f.</i> can be increased in the coil.</p> <p>Ans. :</p> <p>i) Increase the number of turns of the coil</p> <p>ii) Increase the strength of the magnet</p> <p>iii) Increase the speed of the magnet</p> <p>iv) Decrease the area of the coil. (Any two)</p>	<p>1 + 1</p> <p>2</p>
47.	<p>Draw the diagram of a nuclear power reactor. Label the following parts :</p> <p>i) Reflector</p> <p>ii) Heat exchanger.</p> <p>Ans. :</p>  <p>Reflector</p> <p>Heat exchanger</p> <p>Diagram — 2</p> <p>Labelling — $\frac{1}{2} + \frac{1}{2}$</p>	<p>3</p>
50.	<p>a) Explain the principle of a transformer. What is the relationship between voltage of primary and secondary coils and their number of turns in a transformer ?</p>	

Qn. Nos.	Value Points	Total								
	<p>b) Name the types of transformer used to transport electricity to distant places and to distribute electricity for domestic use.</p> <p style="text-align: center;">OR</p> <p>a) Write any two differences between A.C. dynamo and D.C. dynamo.</p> <p>b) State Faraday's laws of electromagnetic induction.</p> <p>Ans. :</p> <p>a) Mutual induction 1 Induced <i>e.m.f.</i> in one coil due to change of current in neighbouring coil. 1 $\frac{V_s}{V_p} = \frac{N_s}{N_p}$ 1</p> <p>b) Transport electricity — step up transformer. $\frac{1}{2}$ Distribute electricity — step down transformer $\frac{1}{2}$</p> <p style="text-align: center;">OR</p> <p>a)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;"><i>A.C. dynamo</i></th> <th style="width: 50%; text-align: center;"><i>D.C. dynamo</i></th> </tr> </thead> <tbody> <tr> <td>1. It generates alternating current</td> <td>1. It generates direct current</td> </tr> <tr> <td>2. Change in the direction of induced current</td> <td>2. No change in the direction of induced current</td> </tr> <tr> <td>3. It consists of slip rings</td> <td>3. It consists of split rings.</td> </tr> </tbody> </table> <p style="text-align: right;">(Any two) 1 + 1</p> <p>b) Faradays laws of electromagnetic induction are</p> <p><i>Ist law</i> : Whenever a magnetic field linked with a conductor changes, an induced <i>e.m.f.</i> is generated in the conductor. 1</p> <p><i>IInd law</i> : The magnitude of induced <i>e.m.f.</i> is directly proportional to the rate of change of magnetic field linked with the conductor. 1</p>	<i>A.C. dynamo</i>	<i>D.C. dynamo</i>	1. It generates alternating current	1. It generates direct current	2. Change in the direction of induced current	2. No change in the direction of induced current	3. It consists of slip rings	3. It consists of split rings.	4
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