

CCE RF

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(Phy)**

Date : 01. 04. 2015]

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

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತಶಾಸ್ತ್ರ / Physics)

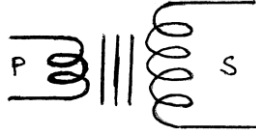
(ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus)

(ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / Regular Fresh)

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

[ಪರಮಾವಧಿ ಅಂಕಗಳು : 80

[Max. Marks : 80

Qn. Nos.	Value Points	Total
1.	The correct equation of nuclear fusion reaction is Ans. : (C) — ${}_1\text{H}^2 + {}_1\text{H}^2 \rightarrow {}_2\text{He}^4 + \text{Energy}$	1
3.	The minimum distance between the source of sound and the reflecting surface necessary to cause echo is Ans. : (B) — 17 m	1
6.	The transformer among the following in which output voltage is more than the input voltage is Ans. : (A) — 	1

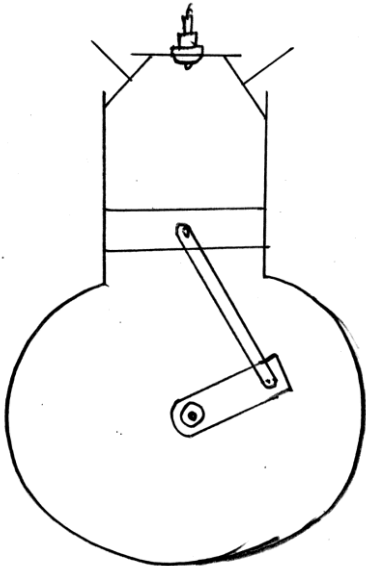
★★★

RF-1024

★★★

[Turn over

Qn. Nos.	Value Points	Total
12.	<p>What is a Solar Cell ?</p> <p><i>Ans. :</i> The device that converts solar energy into electrical energy.</p>	1
23.	<p>Calculate the period of a wave, which is having the wavelength 17 m and wave velocity 340 m/s.</p> <p><i>Ans. :</i></p> <p>Data : $v = 340 \text{ m/s}$</p> <p>$\lambda = 17 \text{ m}$</p> <p>$v = n\lambda$ (or $v = f\lambda$)</p> <p>$340 = n \times 17$</p> <p>$\therefore n = \frac{340}{17} = 20 \text{ hertz}$</p> <p>$\therefore \text{Period} = \frac{1}{n} = \frac{1}{20} = 0.05 \text{ second.}$</p>	<p>$\frac{1}{2}$</p> <p>1</p> <p>$\frac{1}{2}$</p> <p>2</p>
24.	<p>Steam engines of Indian railways are replaced with diesel engines. Justify this move with two scientific reasons.</p> <p><i>Ans. :</i></p> <p>★ Efficiency of diesel engine is more.</p> <p>★ Diesel engine is more economical.</p> <p>★ Diesel engine can be started instantly. (any two)</p>	<p>1 + 1</p> <p>2</p>

Qn. Nos.	Value Points	Total
26.	<p>Draw the diagram of a petrol engine.</p> <p>Ans. :</p> 	2
27.	<p>Imagine that a listener who is at rest is listening to the sound of frequency 20 Hz produced by a stationary source. If the source starts moving away from the listener, will the listener be able to hear the sound ? Justify your answer.</p> <p>Ans. :</p> <p>He will not be able to listen to the sound.</p> <p>Due to Doppler effect the frequency of sound becomes less than 20 Hz which is not audible.</p>	<p>1</p> <p>1</p> <p>2</p>

Qn. Nos.	Value Points	Total									
35.	<p>What are extrinsic semiconductors ? Write two differences between the two types of extrinsic semiconductors.</p> <p style="text-align: center;">OR</p> <p>What is biasing a diode ? Write two differences between the two kinds of biasing.</p> <p>Ans. :</p> <p>Semi-conductors which are doped with trivalent or pentavalent dopants are called extrinsic semiconductor.</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center;"><i>n-type semiconductor</i></td> <td style="width: 50%; text-align: center;"><i>p-type semiconductor</i></td> <td></td> </tr> <tr> <td>a) Doped with pentavalent dopants</td> <td>i) Doped with trivalent dopants</td> <td style="text-align: right;">1</td> </tr> <tr> <td>b) Electrons are majority charge carriers and holes are minority charge carriers</td> <td>ii) holes are majority charge carriers and electrons are minority charge carriers</td> <td style="text-align: right;">1</td> </tr> </table> <p style="text-align: center;">OR</p>	<i>n-type semiconductor</i>	<i>p-type semiconductor</i>		a) Doped with pentavalent dopants	i) Doped with trivalent dopants	1	b) Electrons are majority charge carriers and holes are minority charge carriers	ii) holes are majority charge carriers and electrons are minority charge carriers	1	3
<i>n-type semiconductor</i>	<i>p-type semiconductor</i>										
a) Doped with pentavalent dopants	i) Doped with trivalent dopants	1									
b) Electrons are majority charge carriers and holes are minority charge carriers	ii) holes are majority charge carriers and electrons are minority charge carriers	1									

Qn. Nos.	Value Points	Total
	<p>Applying external potential differences to a diode is called biasing diode.</p> <p style="text-align: center;"><i>Forward biasing</i> <i>Reverse biasing</i></p> <p>a) Positive terminal of the battery is connected to the <i>p</i>-region of the diode and negative terminal is connected to the <i>n</i>-region</p> <p>b) Offers low resistance for the flow of electric current (Or any other suitable difference)</p> <p>i) Positive terminal of the battery is connected to the <i>n</i>-region of the diode and negative terminal is connected to the <i>p</i>-region.</p> <p>ii) Offers high resistance for the flow of electric current.</p>	<p style="text-align: right;">1</p> <p style="text-align: right;">1</p> <p style="text-align: right;">1</p> <p style="text-align: right;">3</p>
<p>36.</p> <p>(a) Primary coil</p> <p>(b) Make and break arrangement.</p>	<p>Draw the diagram of induction coil and label the following :</p>	
<p>Ans. :</p>	<div style="text-align: center;"> </div>	<p style="text-align: right;">2</p> <p style="text-align: right;">1</p> <hr/> <p style="text-align: right;">3</p>

Qn. Nos.	Value Points	Total
40.	<p>What is Stellar evolution ? Explain the evolution of a star from its birth up to the red giant stage.</p> <p style="text-align: center;">OR</p> <p>State the principle of rocket. With respect to the launching of rocket, define orbital velocity and escape velocity. Write the relationship between them.</p> <p>Ans. :</p> <p>The process from birth to death of star is called stellar evolution. 1</p> <ul style="list-style-type: none"> ★ Gaseous clouds in the space contract due to gravity $\frac{1}{2}$ ★ About 99% of the gas accumulates in the form of a sphere. This is called protostar. $\frac{1}{2}$ ★ The temperature and pressure rise at the core of the protostar. When the temperature reaches about 10 million K, hydrogen undergoes fusion reaction and releases energy. $\frac{1}{2}$ ★ When the outward pressure due to release of energy balances gravitational pull, the star is said to be in steady state. $\frac{1}{2}$ ★ The outward pressure due to radiation exceeds gravitational pull, now the outer envelope of the star starts expanding. $\frac{1}{2}$ ★ Due to the expansion of outer layer, the temperature of star decreases and the colour changes to red. This is called red giant. $\frac{1}{2}$ <p style="text-align: center;">OR</p>	4



Qn. Nos.	Value Points	Total
	<p><i>Principle of rocket :</i></p> <p>The total momentum of the system is conserved when the net external force acting on the system is zero. 1</p> <p><i>Orbital velocity :</i> Velocity of the object (satellite / rocket) along the circular path around the earth is orbital velocity. 1</p> <p><i>Escape velocity :</i> The minimum velocity with which a body (rocket) must be projected, so that it escapes from the earth's gravitational field. 1</p> $v_e = \sqrt{2} v_o$ 1	4