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REVISED & UN-REVISED

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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, ಜೂನ್ — 2018

S. S. L. C. EXAMINATION, JUNE, 2018

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ದಿನಾಂಕ : 25. 06. 2018]

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Phy)**

Date : 25. 06. 2018]

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

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತಶಾಸ್ತ್ರ / Physics)

(ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus)

(ಪುನರಾವರ್ತಿತ ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / Private Repeater)

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

[ಗರಿಷ್ಠ ಅಂಕಗಳು : 100

[Max. Marks : 100

Qn. Nos.	Value Points	Total
2.	A source of sound moves towards a stationary observer and crosses the observer and moves forward. The observer in this situation feels as if the pitch of the sound is (A) increasing (B) decreasing (C) initially decreasing and increasing later (D) initially increasing and decreasing later. Ans. : (D) — initially increasing and decreasing later.	1
6.	In a transformer the product of current and voltage of primary coil is 440 W. If the secondary voltage is 220 V, then the current in the secondary coil is (A) 20 A (B) 2 A (C) 4 A (D) 2·2 A. Ans. : (B) — 2 A	1

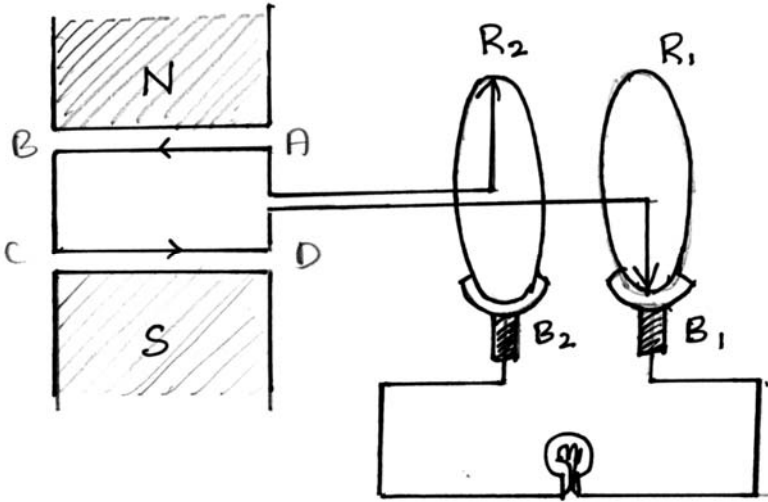
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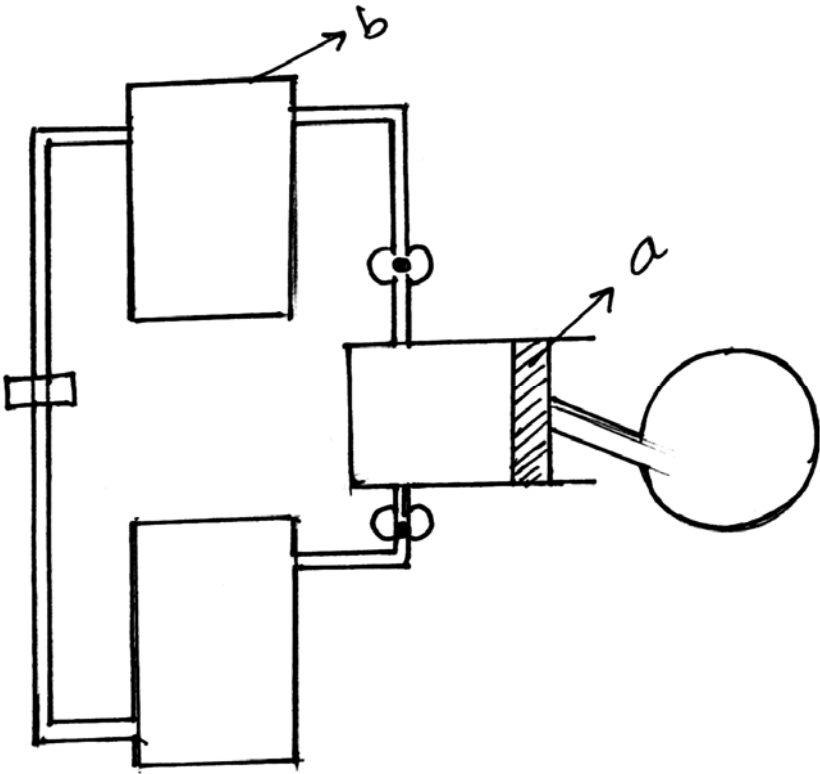
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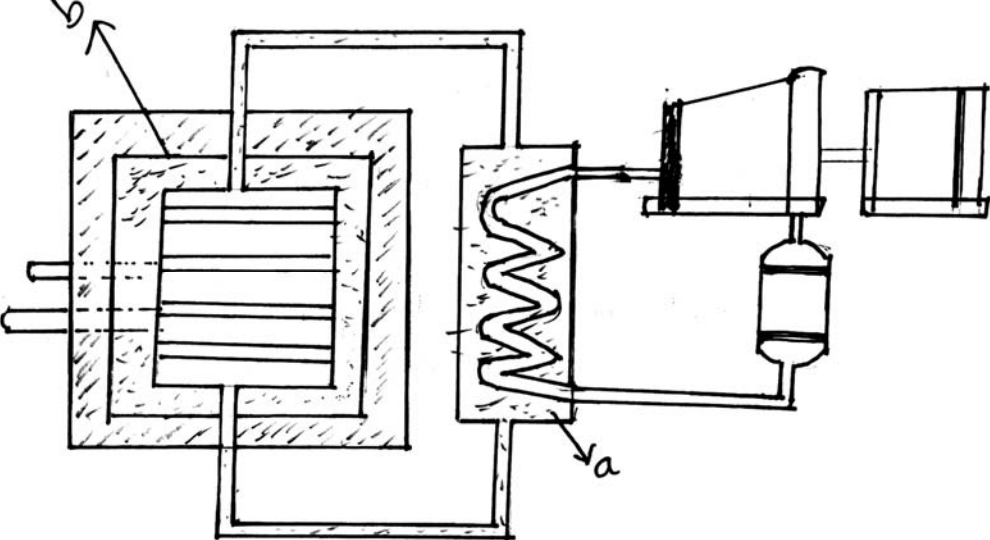
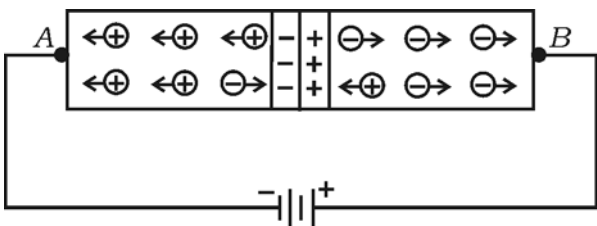
Qn. Nos.	Value Points	Total																
8.	<p>The correct statement with reference to wind energy and wave energy in the following is</p> <p>(A) Wind energy is more reliable than wave energy</p> <p>(B) The cost per unit for the conversion of wind energy into electrical energy is very high.</p> <p>(C) Fluctuation in the energy availability is lesser in wave energy than in wind energy</p> <p>(D) Wind energy turbines use specialised instruments when compared to wave energy converters.</p> <p>Ans. :</p> <p>(C) Fluctuation in the energy availability is lesser in wave energy than in wind energy</p>	1																
11.	<p>The parts of a vehicle/engine are given in Column-A and their related aspects are given in Column-B. Match them and write the answer along with its letters :</p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: center; width: 50%;">Column - A</th> <th style="text-align: center; width: 50%;">Column - B</th> </tr> </thead> <tbody> <tr> <td>(A) Carburettor</td> <td>(i) Remains closed in intake stroke and remains open in exhaust stroke</td> </tr> <tr> <td>(B) Crank shaft</td> <td>(ii) Petrol and air are mixed here</td> </tr> <tr> <td>(C) Spark plug</td> <td>(iii) Mixture of petrol and air is compressed here</td> </tr> <tr> <td>(D) Outlet valve</td> <td>(iv) Injects controlled quantity of fuel in the form of micelles into the engine</td> </tr> <tr> <td></td> <td>(v) Helps in igniting the petrol and air mixture</td> </tr> <tr> <td></td> <td>(vi) Remains open in intake stroke and remains closed in exhaust stroke</td> </tr> <tr> <td></td> <td>(vii) Converts linear motion into circular motion.</td> </tr> </tbody> </table> <p>Ans. :</p> <p>(A) — (ii) Petrol and air are mixed here</p> <p>(B) — (vii) Converts linear motion into circular motion</p> <p>(C) — (v) Helps in igniting the petrol and air mixture</p> <p>(D) — (i) Remains closed in intake stroke and remains open in exhaust stroke</p>	Column - A	Column - B	(A) Carburettor	(i) Remains closed in intake stroke and remains open in exhaust stroke	(B) Crank shaft	(ii) Petrol and air are mixed here	(C) Spark plug	(iii) Mixture of petrol and air is compressed here	(D) Outlet valve	(iv) Injects controlled quantity of fuel in the form of micelles into the engine		(v) Helps in igniting the petrol and air mixture		(vi) Remains open in intake stroke and remains closed in exhaust stroke		(vii) Converts linear motion into circular motion.	4
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13.	<p>Mention any two characteristics of Jatropha plant whose seeds are used for transesterification.</p> <p><i>Ans. :</i></p> <ul style="list-style-type: none"> i) Grows on any type of soil ii) Grows under any kind of agro-chemical condition iii) Can be propagated through seeds or stem cutting iv) Grows very fast. v) It is not grazed by animals even during periods of drought. <p style="text-align: right;">(Any two) $\frac{1}{2} + \frac{1}{2}$</p>	1
16.	<p>Name the device for obtaining high DC voltage from a low DC voltage source.</p> <p><i>Ans. :</i></p> <p>Induction coil.</p>	1
23.	<p>Write any two differences between transverse waves and longitudinal waves.</p> <p><i>Ans. :</i></p> <p><i>Transverse waves :</i></p> <ul style="list-style-type: none"> i) Vibration of particles is in a direction perpendicular to the direction of wave propagation. ii) Has crest and trough iii) Alternate crest and trough constitute a wave. <p><i>Eg. :</i> Electromagnetic radiation. Waves on water surface.</p> <p><i>Longitudinal waves :</i></p> <ul style="list-style-type: none"> i) Vibration of particles is along the direction of wave propagation. ii) Has compression and rarefaction. iii) Alternate compressions and rarefactions constitute a wave. <p><i>Eg. :</i> Vibration in gases. Oscillations of spring. Sound waves.</p> <p style="text-align: right;">(Any two) $1 + 1$</p>	2

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27.	<p>The ultrasonic waves sent from submarines A and B take 4s and 6s respectively to reach the iceberg C. If A, B and C are collinear and A and B are on the same side of C, then find the distance between A and B.</p> <p>[The speed of ultrasonic waves in water is 1.5 km/s]</p> <p>Ans. :</p> <p>Distance between A and C</p> $d = V \times t = 1.5 \times 4 = 6 \text{ km}$ <p>Distance between B and C</p> $d = V \times t = 1.5 \times 6 = 9 \text{ km}$ <p>Distance between A and B</p> $9 \text{ km} - 6 \text{ km} = 3 \text{ km}$ <p style="text-align: right;">Formula — $\frac{1}{2}$</p> <p style="text-align: right;">Distance $A \rightarrow C$ — $\frac{1}{2}$</p> <p style="text-align: right;">Distance $B \rightarrow C$ — $\frac{1}{2}$</p> <p style="text-align: right;">Distance $A \rightarrow B$ — $\frac{1}{2}$</p> <p style="text-align: right;">2</p> <p style="text-align: center;">or</p> <p>The time taken by ultraviolet ray to travel from B to A is</p> $6\text{s} - 4\text{s} = 2\text{s} \quad \frac{1}{2}$ <p>The distance between A and B</p> $d = V \times t \quad \frac{1}{2}$ $d = 1.5 \times 2 = 3 \text{ km} \quad 1$ <p style="text-align: right;">2</p>	

Qn. Nos.	Value Points	Total
29.	<p>Draw the diagram of an AC dynamo and label the following parts.</p> <p>(a) Slip rings</p> <p>(b) Brushes.</p> <p>Ans. :</p> <p>AC dynamo :</p>	
	 <p>a) Slip rings $\rightarrow R_1 R_2$</p> <p>b) Brushes $\rightarrow B_1 B_2$</p>	<p>$1 + \frac{1}{2} + \frac{1}{2}$</p> <p>2</p>
35.	<p>What is a solar cell ? Name the principle of its working.</p> <p>Ans. :</p> <p><i>Solar cell</i> : Device that converts solar energy into electrical energy.</p> <p><i>Principle</i> : Photovoltaic effect.</p>	<p>1 + 1</p> <p>2</p>
38.	<p>What is superconductivity ? Write the two uses of superconductors.</p> <p>Ans. :</p> <p><i>Superconductivity</i> :</p> <p>The phenomenon by which certain materials show almost zero resistance at a very low temperature.</p> <p>Uses :</p> <ul style="list-style-type: none"> i) In powerful electromagnets ii) In microwave devices iii) In magnetic resonance imaging (MRI) <p>(Any two)</p>	<p>$(1 + \frac{1}{2} + \frac{1}{2})$</p> <p>2</p>

Qn. Nos.	Value Points	Total
40.	<p>Draw the diagram showing the expansion stroke of a steam engine and label the following parts.</p> <p>(a) Piston</p> <p>(b) Boiler.</p> <p>Ans. :</p> <p>Steam engine :</p>  <p>a) Piston</p> <p>b) Boiler. $(1 + \frac{1}{2} + \frac{1}{2})$</p>	2
45.	<p>Draw the diagram of a nuclear power reactor and label the following parts.</p> <p>(a) Heat Exchanger</p> <p>(b) Reflector.</p>	

Qn. Nos.	Value Points	Total
	<p>Ans. :</p> <p>Nuclear power reactor :</p>  <p>a) The heat exchanger</p> <p>b) Reflector.</p> <p style="text-align: right;">(2 + $\frac{1}{2}$ + $\frac{1}{2}$)</p>	3
47.	<p>Observe the figure and answer the following questions :</p>  <p>(a) What type of bias is shown in the figure ?</p> <p>(b) What type of impurity is added to the side of the semiconductor connected to end A ?</p> <p>(c) What happens to the junction resistance, if the terminals of the battery are reversed ?</p> <p style="text-align: center;">OR</p> <p>(a) What type of extrinsic semiconductor is obtained if an element with atomic number 15 is doped with silicon ?</p>	

Qn. Nos.	Value Points	Total
	(b) What type of majority carriers are found in silicon if an element with atomic number 13 is added to it as an impurity ? (c) Why <i>p-n</i> junction is used in rectifying action ? Ans. : a) Reverse bias b) Trivalent impurity / Indium / Boron / Gallium / Aluminium. c) Junction resistance decreases. (1 + 1 + 1) OR a) <i>n</i> -type semi-conductor b) Holes c) They have the property of allowing electric current to pass through them in only one direction. (1 + 1 + 1)	3
50.	(a) Explain the formation of planetary nebula. (b) Some artificial satellites appear to be in the fixed positions relative to earth. Why ? What are these artificial satellites called ? Ans. : a) At the end of the red giant stage, ★ As the stars envelop expands their core contracts, the temperature increases ★ The temperature reaches to 10^8 K, helium is converted into carbon core ★ When all the helium gets converted to carbon the core cannot contract further ★ The outer envelop gets detached to form hydrogen clouds. ($4 \times \frac{1}{2}$) b) The period of revolution of them is equal to the period of rotation of the earth. Geo-stationary satellites. (1 + 1)	4