**CCE PR**

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

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

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**S. S. L. C. EXAMINATION, JUNE, 2017**

ಮಾದರಿ ಉತ್ತರಗಳು

# MODEL ANSWERS

ದಿನಾಂಕ : 21. 06. 2017 ] ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Phy)**

Date : 21. 06. 2017 ] **CODE NO. : 83-E (Phy)**

## ವಿಷಯ : ವಿಜ್ಞಾನ

## Subject : SCIENCE

( ಭೌತಶಾಸ್ತ್ರ / **Physics** )

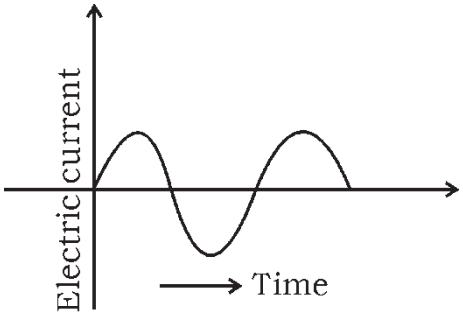
**( ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus )**

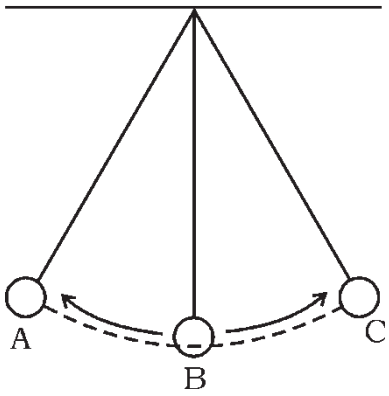
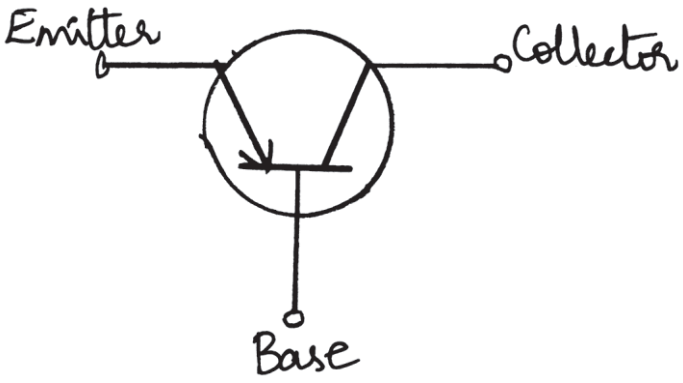
**( ಪುನರಾವರ್ತಿತ ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / Private Repeater )**

**(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version )**

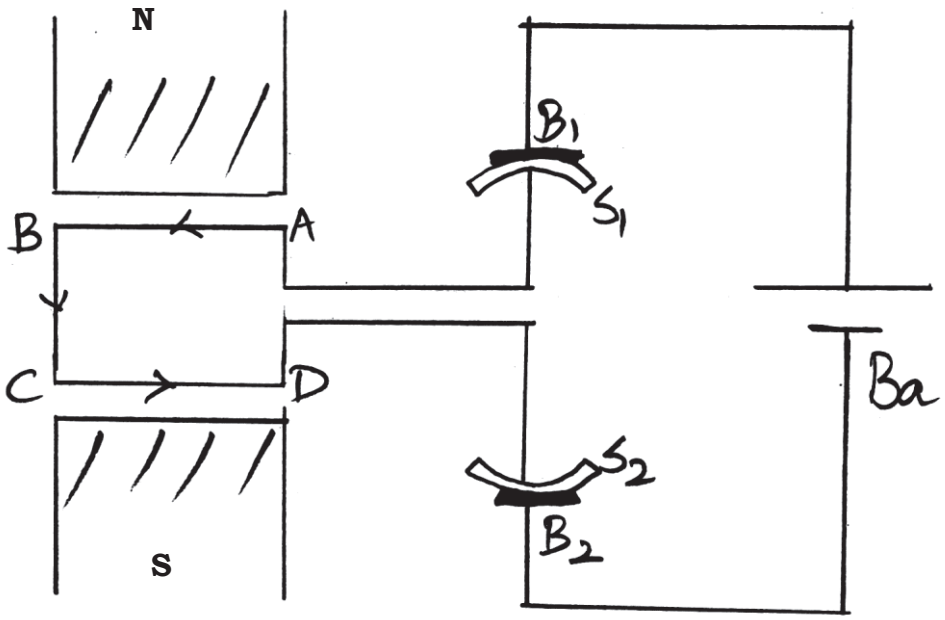
**[ ಗರಿಷ್ಠ ಅಂಕಗಳು : 100**

**[ Max. Marks : 100**

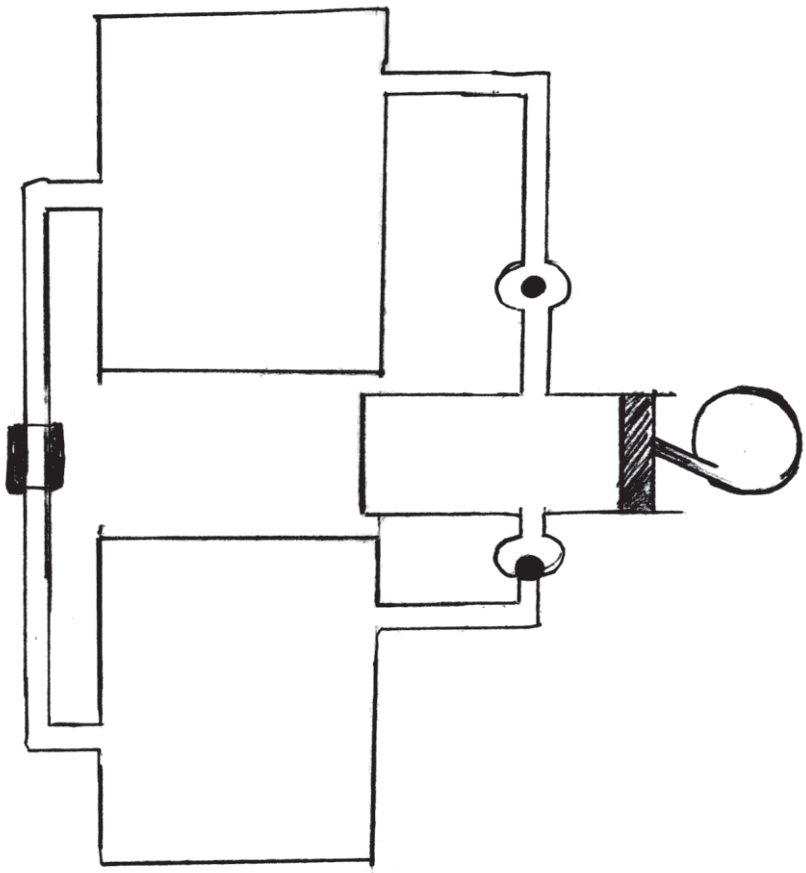
| Qn. Nos. | Value Points | Total |
|---|---|---|
| 2. | When the source of the sound is moving away from the observer, the observer feels the sound to be of lower frequency because,<br>*Ans.* : (C) the waves behind the source of sound are farther apart | 1 |
| 6. | Identify the graph of alternating current in the following :<br>  <br><br>*Ans.* : (A) | 1 |

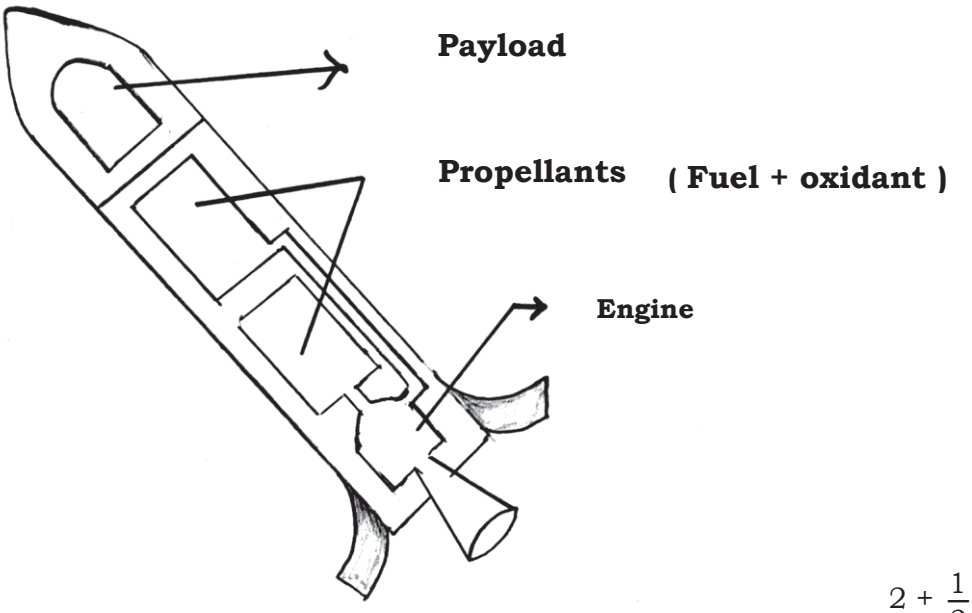
| Qn. Nos. | Value Points | Total |
|---|---|---|
| 8. | The main feature of the red giant stage of a star is<br>*Ans.* : (D) the star swells, loss of radiation takes place, the temperature decreases | 1 |
| 10. | The motion of a simple pendulum is shown in the figure. Identify the correct statement related to this figure.<br>  <br><br>*Ans.* : (C) The pendulum has maximum potential energy at the points *A* and *C* | 1 |
| 13. | What are mechanical waves ?<br>*Ans.* : Waves passes through matter.<br>*OR*<br>The waves which require a material medium for their propagation. | 1 |
| 16. | Draw the circuit symbol of *p-n-p* transistor.<br>*Ans.* :<br>  <br> | 1 |

| Qn. Nos. | Value Points | Total |
|---|---|---|
| 17. | If an A.C. source of 220 volts has to be stepped down to 10 volts, then calculate the turns ratio of the primary coil and secondary coil.<br>*Ans.* : $\frac{V_S}{V_P} = \frac{N_S}{N_P}$ *OR* $\frac{V_P}{V_S} = \frac{N_P}{N_S}$ $\frac{1}{2}$<br>$\frac{10}{220} = \frac{N_S}{N_P}$ $\frac{220}{10} = \frac{N_P}{N_S}$<br>$N_P : N_S = 22 : 1$ $\frac{1}{2}$ | 1 |
| 24. | Mention the differences between *n*-type and *p*-type semiconductors.<br>*OR*<br>Mention the differences between intrinsic semiconductors and extrinsic semiconductors.<br>*Ans.* :<br>*n-type semiconductors* / *p-type semiconductors*<br>★ They are obtained by adding pentavalent impurities like Sb and As / ★ They are obtained by adding trivalent impurities like gallium and Indium. 1<br>★ Electrons are more in number. / ★ Holes are more in number. 1<br>★ Conduction takes place by majority charge carrier electrons & minority charge carrier holes. / ★ Conduction takes place by majority charge carrier holes & minority charge carrier electrons.<br>( Any two )<br>*OR* | 2 |

| Qn. Nos. | Value Points | Total |
|---|---|---|
| | *Intrinsic semiconductors* / *Extrinsic semiconductors*<br>★ They are the crystals of pure elements like germanium and silicon. / ★ They are obtained by adding impurities in small quantities to pure semi-conductors. — 1<br>★ The number of electrons is equal to the number of holes. / ★ The numbers of electrons and holes are not equal. — 1 | 2 |
| 27. | Draw the diagram of a D.C. motor.<br>*Ans.* :<br>  <br> | 2 |
| 28. | Explain the working of SONAR.<br>*OR*<br>Explain the working of an ultrasound scanner.<br>*Ans.* :<br>Sonar consists of a transmitter and a detector. The transmitter produces and transmits ultrasonic waves. $\frac{1}{2}$ | 2 |

| Qn. Nos. | Value Points | Total |
|---|---|---|
| | Ultrasonic waves travel through water until they strike an object and reflected. $\frac{1}{2}$<br>The detector senses then and converts them into electrical signals. $\frac{1}{2}$<br>The distance of the object is calculated by recording the time interval between transmission & reception. OR $d = \frac{V \times t}{2}$ $\frac{1}{2}$<br>*OR*<br>★ Lubricating jelly is put on the skin to make the probe and the body in contact. $\frac{1}{2}$<br>★ The probe is connected by the wire to the ultrasound machine & monitor. $\frac{1}{2}$<br>★ The ultrasound bounces back from the different organs of the body, when they are sent from the probe. $\frac{1}{2}$<br>★ This is detected by the probe and sent to the ultrasound machine & the picture is displayed in the monitor. $\frac{1}{2}$ | 2<br>2 |
| 31. | Name the reaction that causes enormous amount of energy in the sun. Mention the two uses of solar cells.<br>*Ans.* :<br>Thermonuclear fusion reaction. 1<br>Solar cells are used in . traffic signals $\frac{1}{2}$<br>. streetlights $\frac{1}{2}$<br>. pumping water<br>( Any two ) | 2 |

| Qn. Nos. | Value Points | Total |
|---|---|---|
| 35. | Draw the diagram showing the expansion stroke of a steam engine.<br>*Ans.* :<br>  | 2 |
| 39. | Explain the supernova stage of a star.<br>*Ans.* : The carbon nuclei produced during the fusion of helium forms carbon cores in the stars having 5 times more massive than sun after the red giant stage. 1<br>Oxygen core is formed. Fusion reaction continues and iron is formed at the centre. At this stage, the star explodes and this phenomenon is called supernova. 1 | 2 |
| 44. | Which is the heavily doped segment of a transistor ? Mention its function.<br>*Ans.* :<br>Emitter 1<br>Supplies large number of charges. 1 | 2 |

| Qn. Nos. | Value Points | Total |
|---|---|---|
| 45. | Draw the diagram of a single stage rocket and label the parts.<br>*Ans.* :<br>  <br><br>$2 + \frac{1}{2} + \frac{1}{2}$ | 3 |
| 47. | (a) The element uranium which is used in the nuclear power reactor is enriched. Why ?<br>(b) Explain the function of control rods and moderator in a nuclear power reactor.<br>*OR*<br>(a) $_{92}U^{235} + {}_0n^1 \rightarrow {}_{56}Ba^{142} + {}_{36}Kr^{91} + 3\,{}_0n^1$ + Energy.<br>This reaction is called nuclear fission reaction. What is the reason ?<br>(b) List the effects of harmful radiations arising from the nuclear power reactor. Explain the measure to get protection from these radiations.<br>*Ans.* :<br>(a) Naturally occurring uranium contains very less amount of fissionable uranium ($_{92}U^{235}$) $\frac{1}{2}$<br>This uranium is enriched to make it fissionable in nuclear power reactor. $\frac{1}{2}$<br>(b) Control rods absorb neutrons. $\frac{1}{2}$<br>Nuclear reactors can also be shut off by inserting the rods sufficiently deep. $\frac{1}{2}$<br>Moderator slows down neutrons emitted in the fission process. 1<br>*OR* | 3 |

| Qn. Nos. | Value Points | Total |
|---|---|---|
| | (a) The heavy element Uranium is hit by neutron in this reaction. $\frac{1}{2}$<br><br>It is split into two medium sized ( lighter ) elements. Hence this reaction is a nuclear fission reaction. $\frac{1}{2}$<br>(b) ★ It may cause cancer. $\frac{1}{2}$<br>★ It causes mutation in the living cells. $\frac{1}{2}$<br><br>Covering nuclear power reactors by thick wall of concrete which has thick layers of lead. $\frac{1}{2}$<br><br>The radioactive matter is impregnated in glass slabs and kept in steel containers and disposed in deep sea. $\frac{1}{2}$ | 3 |
| 50. | (a) Explain the expansion stroke and exhaust stroke of a petrol engine.<br>(b) Name the stroke of a diesel engine in which diesel in the form of micelles is injected into the cylinder.<br>*Ans. :*<br>(a) *Expansion stroke.*<br>★ The fuel burns quickly producing heat. $\frac{1}{2}$<br>★ Gaseous products such as carbon dioxide, carbon monoxide and water vapour are formed. $\frac{1}{2}$<br>★ The gaseous products expand suddenly. $\frac{1}{2}$<br>★ Piston is pushed outwards with great force. $\frac{1}{2}$<br><br>*Exhaust stroke :*<br>★ The outlet valve opens. Piston moves back. $\frac{1}{2}$<br><br>★ The products of combustion gases are pushed out of the cylinder through the exhaust valve. $\frac{1}{2}$<br><br>(b) Compression stroke. 1 | 4 |