CCE PF

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]

Date : 01. 04. 2015]

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Phy)**

CODE NO. : 83-E (Phy)

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತಶಾಸ್ತ್ರ / **Physics**)

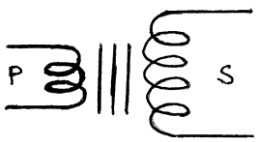
(ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus)

(ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / Private Fresh)

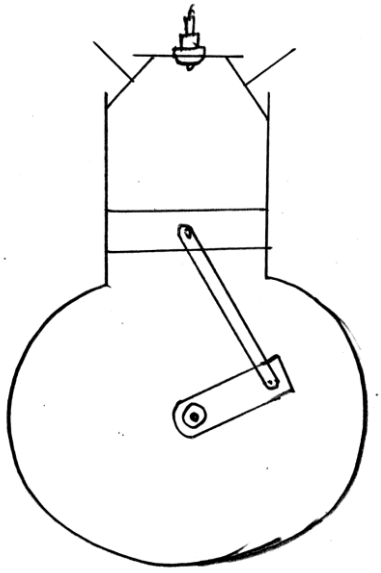
(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

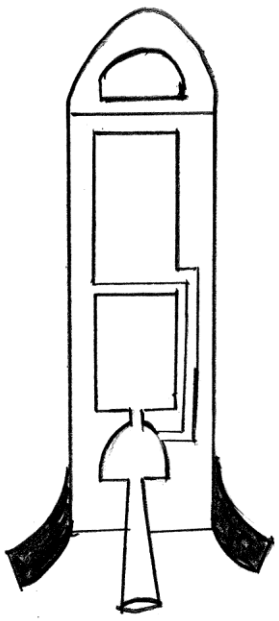
[ಪರಮಾವಧಿ ಅಂಕಗಳು : **100**

[Max. Marks : 100

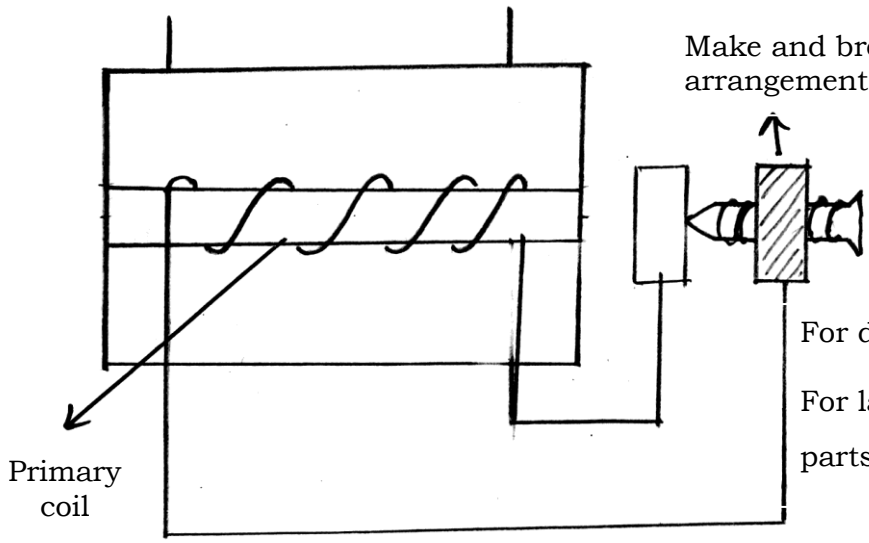
Qn. Nos.	Value Points	Total
1.	The correct equation of nuclear fusion reaction is *Ans.* : (C) — $_1H^2 + {}_1H^2 \rightarrow {}_2He^4 +$ Energy	1
3.	The minimum distance between the source of sound and the reflecting surface necessary to cause echo is *Ans.* : (B) — 17 m	1
6.	The transformer among the following in which output voltage is more than the input voltage is *Ans.* : (A) — 	1

Qn. Nos.	Value Points	Total
12.	What is a Solar Cell ? *Ans.* : The device that converts solar energy into electrical energy.	1
19.	Write the function of the following parts of nuclear reactor along with the material used in making it : (a) Control rod (b) Moderator. *Ans.* : a) *Control rod* : *Function* : Used to control the nuclear reaction. $\frac{1}{2}$ OR Used to control the number of neutrons causing fission reaction by absorbing neutrons. *Material used* : Cadmium / boron carbide. $\frac{1}{2}$ b) *Moderator* : *Function* : Used to slow down fast moving neutrons. $\frac{1}{2}$ *Material used* : Graphite / heavy water. $\frac{1}{2}$	2
23.	Calculate the period of a wave, which is having the wavelength 17 m and wave velocity 340 m/s. *Ans.* : Data : v = 340 m/s λ = 17 m $\frac{1}{2}$ $v = n\lambda$ (Or $v = f\lambda$) $340 = n \times 17$ $\therefore \quad n = \frac{340}{17} = 20$ 1 $\therefore$ Period = $\frac{1}{n} = \frac{1}{20}$ = 0·05 seconds. $\frac{1}{2}$	2

Qn. Nos.	Value Points	Total
24.	Steam engines of Indian railways are replaced with diesel engines. Justify this move with two scientific reasons. *Ans.* : ★ Efficiency of diesel engine is more. ★ Diesel engine is more economical. ★ Diesel engine can be started instantly. (any *two*) 1 + 1	2
26.	Draw the diagram of a petrol engine. *Ans.* : 	2
27.	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. *Ans.* : He will not be able to listen to the sound. 1 Due to Doppler effect the frequency of sound becomes less than 20 Hz which is not audible. 1	2

Qn. Nos.	Value Points	Total
35.	State Faraday's laws of electromagnetic induction. *Ans.* : *Ist Law* : Whenever a magnetic field linked with the conductor changes an e.m.f. will be induced in the conductor. 1 *IInd Law* : The magnitude of induced e.m.f. is directly proportional to the rate of change of magnetic field. 1	2
36.	Name four strokes of a petrol engine. *Ans.* : i) Intake stroke ii) Compression stroke iii) Power stroke iv) Exhaust stroke. $4 \times \frac{1}{2}$	2
37.	Draw the diagram of a single stage rocket. *Ans.* : 	2

Qn. Nos.	Value Points	Total
45.	What are extrinsic semiconductors ? Write two differences between the two types of extrinsic semiconductors. OR What is biasing a diode ? Write two differences between the two kinds of biasing. *Ans.* : Semi-conductors which are doped with trivalent or pentavalent dopants are called extrinsic semiconductor. 1 *n-type semiconductor* / *p-type semiconductor* 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 OR Applying external potential differences to a diode is called biasing diode. 1 *Forward biasing* / *Reverse biasing* a) Positive terminal of the battery is connected to the *p*-region of the diode and negative terminal is connected to the *n*-region / i) Positive terminal of the battery is connected to the *n*-region of the diode and negative terminal is connected to the *p*-region. 1 b) Offers low resistance for the flow of electric current / ii) Offers high resistance for the flow of electric current. 1 3 (Or any other suitable differenced)	

Qn. Nos.	Value Points	Total
46.	Draw the diagram of induction coil and label the following : (a) Primary coil (b) Make and break arrangement. *Ans.* :  For diagram 2 For labelling the parts $\frac{1}{2}+\frac{1}{2}$ 1	3
50.	What is Stellar evolution ? Explain the evolution of a star from its birth up to the red giant stage. OR State the principle of rocket. With respect to the launching of rocket, define orbital velocity and escape velocity. Write the relationship between them. *Ans.* : The process from birth to death of star is called stellar evolution. 1 ★ 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. $\frac{1}{2}$	

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