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 — 2016

S. S. L. C. EXAMINATION, MARCH/APRIL, 2016

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ದಿನಾಂಕ : 01. 04. 2016]   ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Phy)**

Date :   01. 04. 2016]   CODE NO. : **83-E (Phy)**

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತಶಾಸ್ತ್ರ / **Physics**)

(ಹೊಸ ಪಠ್ಯಕ್ರಮ / **New Syllabus**)

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

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / **English Version**)
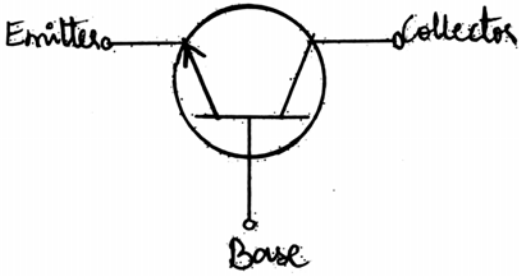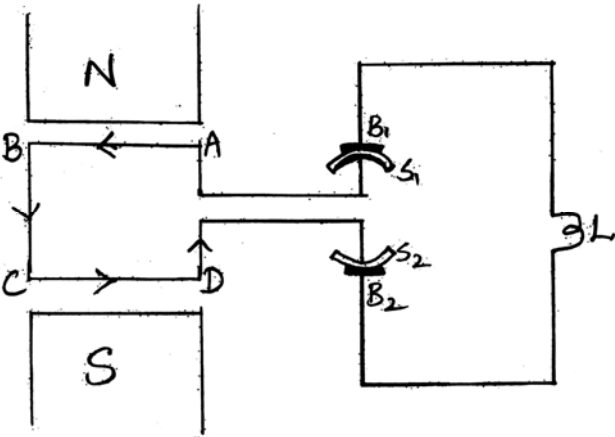
[ಪರಮಾವಧಿ ಅಂಕಗಳು : **100**

[**Max. Marks : 100**

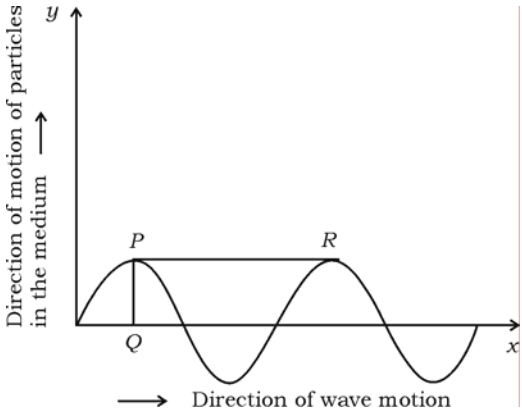| Qn. Nos.	Value Points	Total
1.	In Fleming's right hand rule middle finger indicates the direction of *Ans.* : (B) — induced electric current	1
2.	Identify one of the uses of solar heater in the following. *Ans.* : (C) — Desalination of marine water	1
6.	A domestic electrical appliance requires alternating current of 15 V. If 220 V of alternating current is supplied to the house, then the device that helps in the functioning of that electrical appliance is *Ans.* : (D) — step-down transformer.	1
9.	Find out the most efficient engine in the following. *Ans.* : (D) — an engine converts 60 KJ of heat energy into 24 KJ of work.	1

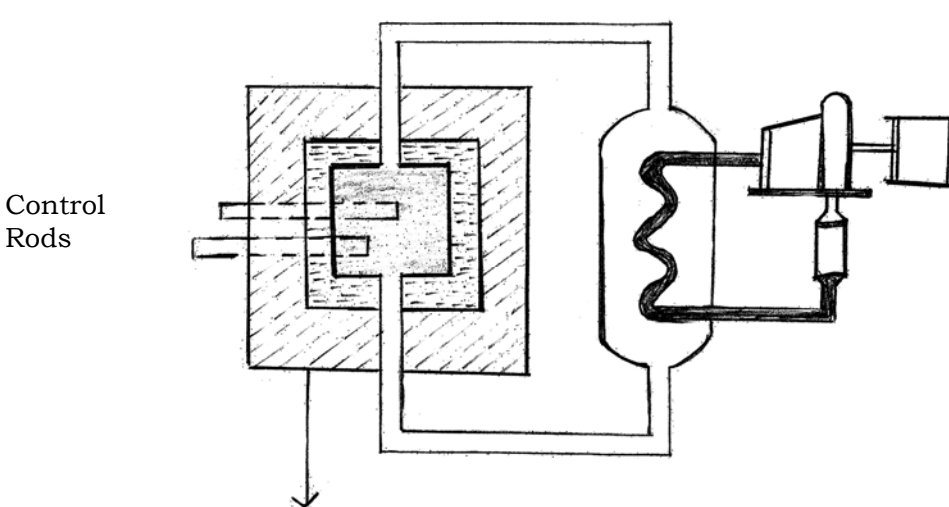| Qn. Nos.	Value Points	Total
12.	Write any two advantages of bio-energy. *Ans.* : a) Maintains unpolluted environment b) Reduces carbon dioxide content in the atmosphere c) Improves water retention capacity of the soil. (Any *two*) $\frac{1}{2} + \frac{1}{2}$	1
13.	What is red shift ? *Ans.* : When the source of light waves move away from the observer, the frequency of light appears to be less. $\frac{1}{2}$ The colour of light shifts to the red end of the spectrum. $\frac{1}{2}$	1
17.	Draw the circuit symbol of *n-p-n* transistor. *Ans.* : 	1
19.	Draw the diagram of a DC dynamo and label the following parts. (a) Split rings (b) Armature coil. *Ans.* : $ABCD \rightarrow$ Armature coil $S_1 S_2 \rightarrow$ Split rings.	2

Qn. Nos.	Value Points	Total
25.	What is forward biasing and reverse biasing of a diode ?	
	OR	
	What are extrinsic semiconductors ? Name the two types of extrinsic semiconductors.	
	Ans. :	
	When the positive terminal of the battery is connected to *p*-region and the negative terminal of the battery is connected to *n*-region of the junction diode, it is said to be forward biasing. 1	
	When the positive terminal of the battery is connected to *n*-region & the negative terminal is connected to *p*-region of the *p-n* junction it is said to be reverse biasing. 1	
	OR	
	The semiconductors which have the small traces of impurities [OR small traces of impurities are added to semiconductors] are called extrinsic semiconductors. 1	
	Two types are i) *n*-type semiconductor $\frac{1}{2}$	
	ii) *p*-type semiconductor $\frac{1}{2}$	2
30.	What are ultrasonic waves ? Write any two uses of ultrasonic waves in the field of medicine.	
	OR	
	What is an echo ? Name the two devices which work on the principle of echo of ultrasonic waves.	
	Ans. :	
	The sound waves having frequency more than 20000 Hz are called ultrasonic waves. 1	
	Applications in medical field.	
	They are used to	
	i) cure neuralgic & rheumatic pains	
	ii) break gall stones	
	iii) test internal organs	
	iv) bloodless surgery (any *two*) $\frac{1}{2} + \frac{1}{2}$	2
	OR	

Qn. Nos.	Value Points		Total
	The sound heard after reflection from a rigid surface is called echo.	1	
	Two devices i) Sonar		
	ii) Ultrasound scanner	1	2
33.	The graph of a wave motion is given below. Observe the graph and answer the following questions :		
	(a) What type of wave is represented in the graph ?		
	(b) What do *PQ* and *PR* indicate with respect to the wave ?		
	Ans. :		
	a) Transverse wave	1	
	b) $PQ \rightarrow$ amplitude of the wave	$\frac{1}{2}$	
	$PR \rightarrow$ wavelength	$\frac{1}{2}$	2
35.	Write the two differences between petrol engine and diesel engine.		
	Ans. :		
	Petrol engine	*Diesel engine*		
	★ Spark plug is required ★ Does not require spark plug	1	
	★ The compression ratio of ★ The compression ratio of air air & petrol is low and diesel is high	1	2
38.	Name the three types of galaxies. What is the name of the galaxy to which our solar system belongs ?		
	Ans. :		
	i) Elliptical galaxy	$\frac{1}{2}$	
	ii) Irregular galaxy	$\frac{1}{2}$	
	iii) Spiral galaxy	$\frac{1}{2}$	
	Milky way.	$\frac{1}{2}$	2

Qn. Nos.	Value Points	Total
40.	State Faraday's laws of electromagnetic induction. *Ans.* : First Law : The changing magnetic field linked with the conductor induces electromotive force in the conductor. 1 Second law : Induced *emf* is proportional to the rate of change of magnetic field linked with the conductor. 1	2
45.	Draw the diagram of a nuclear power plant and label the following parts. (a) Control rods (b) Radiation shield. *Ans.* : Control Rods Radiation Shield $2 + \frac{1}{2} + \frac{1}{2}$	3

48.	(a) Explain the expansion stroke of a petrol engine.
	(b) There is no spark plug in diesel engine. Why ?
	Ans. :
	a) Expansion stroke :
	     i) Both inlet valve and outlet valve are closed $\frac{1}{2}$
	     ii) Fuel burns quickly, and produces heat. $\frac{1}{2}$
	     iii) Gaseous products such as carbon dioxide, carbon monoxide and water vapour are formed along with carbon particles. $\frac{1}{2}$
	     iv) Gaseous products expand suddenly and piston is pushed outwards. $\frac{1}{2}$	

Qn. Nos.	Value Points	Total
	b) The compression ratio of air and fuel in diesel engine is 14 : 1 to 25 : 1. $\frac{1}{2}$ High temperature around 1000 K is produced inside the engine. The compression and heat generated is enough to ignite the fuel (diesel). Hence diesel engine does not require spark plug. $\frac{1}{2}$	3

50.	(a) Which stage is attained by the star after the steady state ? Explain that stage.
	
	 (b) State Hubble's law.
	
	 (c) A satellite is to be launched from the surface of the earth. Name the factors on which the escape velocity of the satellite depends.
	
	  OR
	 (a) "Multistage rockets reduce the fuel consumption." How ? Explain.
	
	 (b) Explain how a neutron star is formed.
	
	 (c) In which stage of the star, does nuclear fusion reaction begin ?
	
	 Ans. :
	
	 a) Red giant stage. $\frac{1}{2}$
	
	 The radiation pressure increases beyond the gravitational pull and the star begins to swell. $\frac{1}{2}$
	
	 Surface area of the star increases and the temperature decreases. $\frac{1}{2}$
	
	 Star emits low frequency radiation. The star becomes red in colour. $\frac{1}{2}$
	
	 b) Hubble's law : The velocity of recession of a celestial body is proportional to its distance from us. 1
	
	 c) Escape velocity depends on
	    i) Radius of the earth $\frac{1}{2}$
	    ii) Acceleration due to gravity. $\frac{1}{2}$
	
	  OR
		
		 4

Qn. Nos.		Value Points	Total
	a)	Multistage rocket on reaching a height of about 100 km gets rid of the first stage.	1
		The mass of the rocket is reduced. In each stage the load on the rocket is reduced and hence the consumption of fuel is less in multistage rockets.	1
	b)	The remnant of supernova sometimes condenses to a core composed of tightly packed neutrons. This super dense remnant of supernova is called neutron star.	1
	c)	Protostar.	1
			4