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, SEPTEMBER, 2020

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ದಿನಾಂಕ : 28. 09. 2020]

Date :   28. 09. 2020]

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Phy)**

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

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತಶಾಸ್ತ್ರ / **Physics**)

(ಹಳೆ ಪಠ್ಯಕ್ರಮ / **Old Syllabus**)

(ಪುನರಾವರ್ತಿತ ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / **Regular Repeater**)

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / **English Version**)

[ಗರಿಷ್ಠ ಅಂಕಗಳು : **80**

[Max. Marks : 80

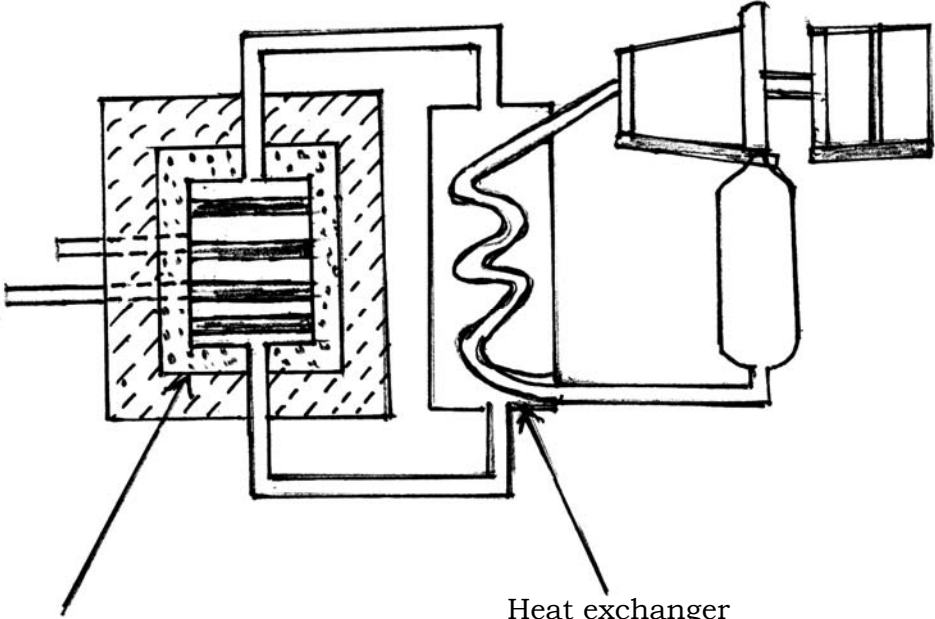| Qn. Nos.	Value Points	Total
2.	If the time period of a wave is increased by four times then its frequency (A) increases by 4 times (B) decreases by 4 times (C) increases by 2 times (D) decreases by 2 times. *Ans.* : (B) — decreases by 4 times	1
5.	Emitter segment in transistor is (A) lightly doped (B) moderately doped (C) heavily doped (D) a pure semiconductor. *Ans.* : (C) — Heavily doped	1

Qn. Nos.	Value Points	Total
8.	The type of waves used to detect vehicles crossing speed limit is (A) Radio waves (B) Ultraviolet waves (C) Ultrasonic waves (D) Audible sound waves. *Ans.* : (A) — Radio waves	 1

11.	The major characteristic in the evolution of stars is given in **Column-A**. Match them with the stages of star evolution given in **Column-B** and write the answers along with its letters :
	
	 Column - A *Column - B*
	
	 (A) Outer layers of the star swell (i) Protostar
	
	 (B) Aggregation of hydrogen gas at the centre (ii) Steady state
	
	 (C) Outward radiation pressure is equal to the inward gravitational pull (iii) Red giant
	
	 (D) The remnant of supernova explosion that has very high density and gravity (iv) White dwarf
	
	                              (v) Pulsar
	
	                              (vi) Black hole
	
	                              (vii) Quasar
	
	 Ans. :
	
	 (A) — (iii) Red giant 1
	
	 (B) — (i) Protostar 1
	
	 (C) — (ii) Steady state 1
	
	 (D) — (vi) Blackhole. 1
		
		4

Qn. Nos.	Value Points	Total
15.	The motion of simple pendulum is an example for simple harmonic motion. Why ? *Ans.* : i) Position of the bob repeats after regular interval. ii) On its own the direction and the acceleration varies leading to movement in the opposite direction. (Any *one*)	1
21.	What is efficiency of a heat engine ? Write the formula to calculate the efficiency of a heat engine. OR Write the stages involved in the working of a petrol engine. *Ans.* : i) The ratio of the actual work done to the heat energy consumed. 1 ii) $\eta = \dfrac{W}{H} \times 100$ 1 OR i) Intake stroke ii) compression stroke iii) Ignition stroke iv) Expansion stroke ⎫ Energy stroke v) Exhaust stroke ⎭ (Any *four*) $4 \times \frac{1}{2}$	2 2
24.	What is solar cell ? Write any two uses of solar cell. *Ans.* : A device which converts solar energy to electrical energy. 1 They are used in i) traffic signals ii) signal lights iii) lighting lamps iv) solar pumps v) artificial satellites vi) calculators. (Any *four*) $2 \times \frac{1}{2}$	2

Qn. Nos.	Value Points	Total
27.	Draw the diagram showing the expansion stroke of a steam engine. Label the following parts : i) Piston ii) Inlet valve. *Ans.* : Diagram — 1 Parts — $\frac{1}{2} + \frac{1}{2}$	2
30.	SONAR placed in a ship is used to find out the depth of the sea at two different places. If the reflection of ultrasound waves are detected after 6 seconds in one place and after 4 seconds in another place, then find the ratio of the depth of the sea at these two places. *Ans.* : Depth of the sea in one place $d_1 = \dfrac{vt_1}{2} = \dfrac{6v}{2}$ $\frac{1}{2}$ Depth of the sea in another place $d_2 = \dfrac{vt_2}{2} = \dfrac{4u}{2}$ $\frac{1}{2}$ Ratio $\dfrac{d_1}{d_2} = \dfrac{3V}{2V}$ $\Rightarrow$ 3 : 2 or 2 : 3. 1	2

Qn. Nos.	Value Points	Total
33.	Observe the following table :	

Element	P	Q	R
Atomic Number	13	14	15

Which elements do you choose from the table to prepare '*n*' type of semiconductors ? Give scientific reason for your choice.

Ans. :

i)   Elements *Q* and *R* to be chosen.   1

ii)   *Q* is tetravalent or has valency 4. $\frac{1}{2}$

iii)   *R* is pentavalent or has valency 5 $\frac{1}{2}$ 2

37.   Draw the diagram of a nuclear power reactor. Label the following parts :

i)   Reflector

ii)   Heat exchanger.

Ans. :

Heat exchanger

Reflector

Diagram —   2

Labelling — $\frac{1}{2}+\frac{1}{2}$ 3

Qn. Nos.	Value Points	Total
40.	a) Explain the principle of a transformer. What is the relationship between voltage of primary and secondary coils and their number of turns in a transformer ? b) Name the types of transformer used to transport electricity to distant places and to distribute electricity for domestic use. OR a) Write any two differences between A.C. dynamo and D.C. dynamo. b) State Faraday's laws of electromagnetic induction. *Ans.* : a) Mutual induction 1 Induced *e.m.f.* in one coil due to change of current in neighbouring coil. 1 $\dfrac{V_s}{V_p} = \dfrac{N_s}{N_p}$ 1 b) Transport electricity — step up transformer. $\frac{1}{2}$ Distribute electricity — step down transformer $\frac{1}{2}$ OR a)	4

a)

A.C. dynamo	*D.C. dynamo*
1. It generates alternating current	1. It generates direct current
2. Change in the direction of induced current	2. No change in the direction of induced current
3. It consists of slip rings	3. It consists of split rings.

<div align="right">(Any *two*)   1 + 1</div>

Qn. Nos.	Value Points	Total
b)	Faradays laws of electromagnetic induction are *Ist law* : Whenever a magnetic field linked with a conductor changes, an induced *e.m.f.* is generated in the conductor. 1 *IInd law* : The magnitude of induced *e.m.f.* is directly proportional to the rate of change of magnetic field linked with the conductor. 1	4