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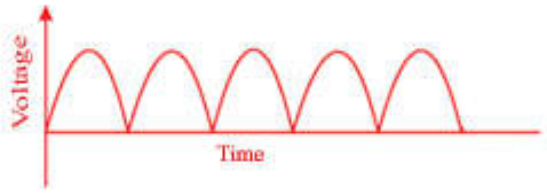
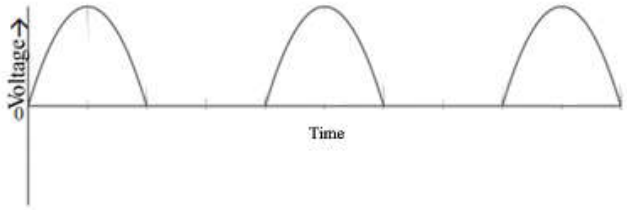
SSLC EXAMINATION, MARCH-2019

PHYSICS

Time: $1^{1/2}$ Hours Total Score : 40

Qn No	INDICATORS	MARK
	SECTION - A	
1	f α $\frac{1}{\lambda}$.(frequency is inversely proportional to the wavelength for a wave at constant speed as wavelength increases, frequency decreases.)	1
2	Red	1
3	To measure the electrical energy consumed in kilowatt hour.	1
4	Increase of green house gases like CO_2, CFC, Methane,due to infrared radiation etc,	
5	Green	1
	SECTION B	
6	<table><tr><td>Longitudinal wave</td><td>Transverse wave</td></tr><tr><td>Particles vibrate in a direction parallel to the direction of propagation of the wave</td><td>Formed on the surface of solids and liquids</td></tr><tr><td>Compressions and rarefactions are formed.</td><td>Crests and troughs are formed</td></tr></table>	2
7	a. Heating coils are made up of materials having high resistivity and high melting point b. In the incandescent lamps, vaporization of filaments can be reduced by using inert gases or nitrogen at low pressure	1 1
8	a. The length and thickness of the earth pin is more than that of other pins b. Metallic part (metal body) of the instrument.	1 1
9	a. When propylene glycol is added to water the boiling point increases to 129^0C. This mixture can absorbs more amount of heat from the engine. This property is made use of it in using coolants. b. The latent heat of vaporization of water is 226 x 10^4 J/kg. 1 kg of steam contains a quantity of 226 x 10^4 J of heat energy. The heat energy contained in steam is more than that in boiling water of same temperature. So the blister caused by the steam is said to be more severe than that caused by boiling water.	1 1
10	a. Methane b. • The advantage of LNG, is that natural gas can be liquefied and transported to long distances conveniently. • It can again be converted into gaseous form at atmospheric temperature and distributed through pipe lines. (any one)	1 1
	SECTION C	
11	a. Bulb A. Here the DC source is used in the circuit. The DC current can't produce a back emf in the coil and so there is no decrease in the effective voltage. b. Bulb A – No change in the brightness Bulb B – The intensity of light is further decreases. (The permeability of soft iron is high. When the soft iron piece is inserted	2 1 1

	to the coil, the magnetic flux linked with the coil passes through the soft iron and the magnetic flux linked with the coil increases.Thus the induced emf (back emf) increases, which opposes the applied current and reduces the effective voltage)	
12	a. $N_p = 800$ $N_s = 80$ $V_p = 240$ V $\frac{Ns}{Np} = \frac{Vs}{Vp} = \frac{80}{800} = \frac{Vs}{240}$ $V_s = \frac{240 \times 80}{800} = 24$ V b. In secondary coil of the transformer. It is a step down transformer.	2 1
13	a. Star connection b. 400 V c. Because the potential difference between the earth and the neutral line is zero. So there is now flow of electric current through the person.	1 1 1
14	a. Beaker, Water, Sodium thiosulphate, Hydrochloric acid, Torch b. Water is taken in a beaker. Allow light from a torch to fall on the water from one side of the beaker. The light emerging from the beaker is focused on a white screen. Sodium thiosulphate is dissolved in water in the beaker. Add one or two drops of hydrochloric acid to the water in the beaker. Observe the gradual change in the colour of light in the solution and on the screen.	1 2
15	a. X – Violet b. Two times c. When the person seen from an aeroplane (aircraft), the rainbow appears as a circle.	1 1 1
	SECTION D	
16	a. Echo is the phenomenon of hearing a sound by reflection from a surface or obstacle, after hearing the original sound. Reverberation is the persistence of sound as a result of multiple reflection. b. $d = \frac{V \times t}{2}$ $= \frac{1500 \times 6}{2} = 4500$ m. c. 17 m.	1 2 1
17	a. P = 920 W ,V=230 V P = VI $I = \frac{P}{V} = \frac{920}{230} = 4A$ b. H = VIt = 230 x 4x 5x 60 = 276000J c. By changing the voltage the device.	1 2 1
18	a. The latent heat of fusion of ice is very high. So more heat is needed to it to change it in to water. In order to melt 1 kg of ice,the quantity of heat energy required is 335 x 103 J. The required heat should be obtained from the surroundings. When ice begins to melt surrounding temperature decreases. So enough temperature will not get for further melting. Hence the Glaciers will not melt as a whole at the same time. b. When ice melts the potential energy of the molecules of ice increases. When a solid is changing into a liquid the entire heat energy absorbed is spent to separate the molecules. A change of state occurs because the molecules are moving apart. In other words there is an increase in the potential energy of the molecules.	2 2

19	a. Diode b.  c.  When the component Q (one diode) is removed from the circuit, the circuit (circuit of full wave rectifier) is changes into a half wave rectifier.	1 1 2
20	a. Hydrogen is the fuel with highest calorific value. • But it is highly inflammable and explosive substance. • It is difficult to store and transport it. • High rate of ignition and it is difficult to store. • Electrolysis of water is an expensive process as it requires a lot of electricity. b. In rockets, space ships, fuel cells etc(any one) c. • Should be easily available. • Should be of low cost. • Should cause minimum atmospheric pollution on combustion. • A liquid fuel must not evaporate quickly at ordinary temperatures. • Easy to store and transport. • Convenient to handle. • Moderate rate of combustion. • High calorific value. • Proper ignition temperature. (any four)	1 1 2

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