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SSLC EXAMINATION, MARCH-2024

Time: 1 ½ Hours **PHYSICS** **Total Score: 40**

QN	INDICATORS	Marks
	Answer any 4 questions from 1 to 5. Each carry 1 score	
1	Solar energy or wind energy or biomass etc.	1
2	myopia	1
3	Nuclear fission	1
4	Focal length, f = $\frac{1}{P} = \frac{1}{2} = 0.5m$ *or* $50cm$	1
5	Potential difference, V = $\frac{W}{Q} = \frac{12}{3} = 4V$	1
	Answer any 4 questions from 5 to 10. Each carry 2 score	
6	(a) Fleming's left hand rule Hold the fore finger, the middle finger, and the thumb in mutually perpendicular direction. If the fore finger indicates the direction of magnetic field and the middle finger the direction of current, then the thumb will indicate the direction of motion of the conductor. (b) • Reverse the direction of current in the conductor • Change the magnetic polarity of u-shaped magnet	1 1
7	(a) Maxwells right hand thumb rule Imagine if you are holding a current carrying conductor with the right hand in such a way that the thumb points in the direction of current. The direction in which the other fingers encircle the conductor gives the direction of magnetic field Or Right hand screw rule (b) Any two • By increasing the current flowing through the conductor • By increasing the number of turns of the coil in the case of solenoid • By using soft iron core • By increasing the thickness of the conductor	1 1
8	(a) • Sound energy • The diaphragm vibrates • The coil vibrates in the magnetic field • Electric signals (b) Electromagnetic induction	2

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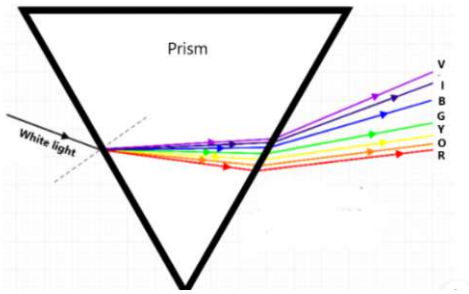
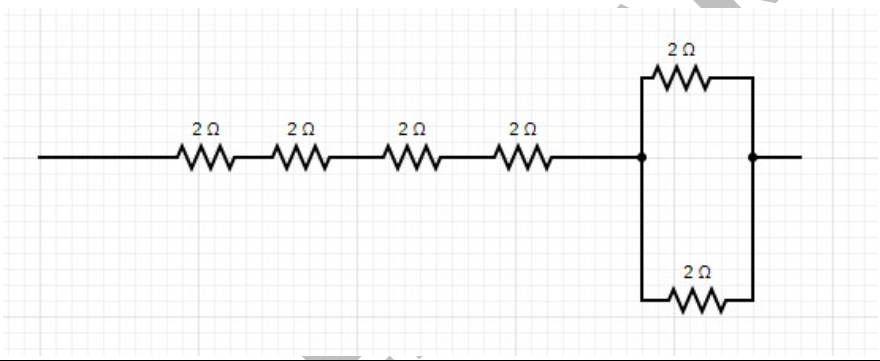
9		2
10	• Tungsten • High resistivity • High melting point • High ductility • Ability to emit white light in white hot condition.	1 1
	Answer any 4 questions from 11 to 15. Each carry 3 score	
11	(a) A six number of 2 Ω resistors are required (4 in series and 2 in parallel) (b) 	1 2
12	(a) no, I do not agree with the statement Magnetic field develop around both solenoid but a varying magnetic field is produced around the second coil (b) circuit -2 back emf due to self-induction the change in magnetic flux due to the flow of an AC in a solenoid generate back emf in the same solenoid in a direction opposite to that applied to it. This phenomenon is known as self-induction	1 2
13		

A Mirror	B Characteristics of virtual image	C Use
Concave mirror	Always forms enlarged image	Used by dentist
Convex mirror	Always forms a diminished image	Used as a rear view mirror in vehicle
Plane mirror	The size of image and size of object are equal	To see the face

1
1
1

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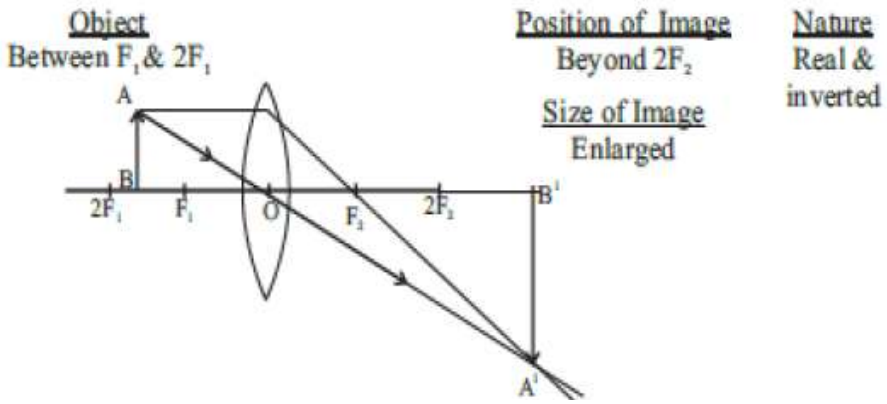
14	(a)  (b) Characteristics of image: real, inverted, enlarged, and formed beyond 2F	2 1
15	(a) Calorific value The amount of heat liberated by the complete combustion of 1 Kg of fuel is its calorific value. Its unit is kilojoules/ kilogram (KJ/Kg) (b) (any two) • The solid fuels must be dry • Liquid fuel must be evaporated quickly • The ignition temperature should be attained • Sufficient oxygen must be available for burning (c) Characteristics of a good fuel (any two) • It is highly explosive in nature • It is difficult to store and transport hydrogen fuel • Should be easily available • Should be of low cost • Should have high calorific values • Should cause minimum atmospheric pollution on combustion • Should be easily storable • A liquid fuel does not evaporate quickly at ordinary temperatures.	1 1 1
	Answer any 4 questions from 16 to 20. Each carry 4 score	
16	(a) Current, I= $\frac{voltage}{resistance} = \frac{230}{460} = \frac{1}{2} = 0.5A$ (b) Rated power of the device, P= $\frac{V^2}{R} = \frac{230^2}{460} = 115W$ (c) Heat developed, H= P× $t = 115 \times 600 = 69000J$ *or* $69KJ$	1 1 2
17	(a) Primary coil is made up of thick copper wire thick copper wires are used in a transformer where current flow is higher so it may be led to the melting of wire, to reduce this the thickness of the coil increased. (b) When an AC voltage is applied to the primary coil, it creates a varying magnetic field in the core. The magnetic field induces an AC voltage in the secondary coil due to mutual induction.	2 2
18	(a) The negative sign indicate that the image is real and inverted (b) Distance of object, u= -40cm	1

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	Magnification, m= -4 Distance of image, v =? m = $-\frac{v}{u}$, v = $-u \times m$= -(-40× -4) = $-160cm$ (c) Focal length, f = $\frac{uv}{u+v} = \frac{-40\times-160}{-40+(-160)} = \frac{6400}{-200} = -32cm$	1 2
19	(a) When a ray of light passes from denser medium to rarer medium, the angle of incidence at which angle of refraction becomes 90^0 is called critical angle (b) The ray undergoes total internal reflection (c) Total internal reflection When a ray of light passes from denser medium to rarer medium at an angle of incidence greater than critical angle of the medium then the ray is reflected to the same medium without undergoing refraction	1 1 2
20	(a) Newton's colour disk, When rotated at very high speed appears as white disk. Due to persistence of vision of eye (b) During sun rise and sun set, light reaching us from the horizon must travel long distance through the atmosphere. During this long journey colours of shorter wavelength would be almost fully lost due to scattering. Then the redlight which undergoes less scattering decides the colour of horizon that is why sun appear to be red (c) When sunlight passes through atmosphere, rays of light are reflected by tiny particles of atmosphere as a result the lower wave length colours such as violet, indigo, blue will have higher rate of scattering and they will spread in the sky, so sky appears as blue (d) When ray of light pass through a colloidal fluid or suspension tiny particles get illuminated due to scattering, because of this path of light is visible this phenomenon is Tyndall effect. due to tyndall effect. In the misty morning the path of smog is visible	1 1 1 1

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