GIRI SIR'S CLASSES

HATIGAON, GUWAHATI

ASSERTION AND REASON TYPE - PHYSICS

CLASS 10 - SCIENCE

	Section A	
1	**Assertion (A):** When a concave mirror is held underwater, its focal length will increase. **Reason (R):** The focal length of a concave mirror is independent of the medium in which it is placed. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
2	**Assertion (A):** Light travels faster in air than in glass. **Reason (R):** Airis denser than glass. a) Both A and R are true and R is correct explanation of the assertion. b) Both A and R are true but R is not the correct explanation of the assertion. c) A is false but R is true. d) A is true but R is false.	
3	**Assertion (A):** Property of converging of a convergent lens does not remain same in all media. **Reason (R):** Property of lens whether the ray is diverging or converging is independent of the surrounding medium. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
4	**Assertion (A):** A ray incident along normal to the mirror retraces its path. **Reason (R):** In reflection, the angle of incidence is always equal to the angle of reflection.	

	a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
5	**Assertion (A):** For observing traffic at back, the driver mirror is a convex mirror. **Reason (R):** Aconvex mirror has a much larger field of view than a plane mirror. a) Both A and R are true and R is the correct explanation of the assertion. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
6	**Assertion (A):** A point object is placed at a distance of 26 cm from a convex mirror of focal length 26cm. The image will not form at infinity. **Reason (R):** For above - given system the equation $\frac{1}{u}+\frac{1}{v}=\frac{1}{f}$ gives v = ∞ a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
7	**Assertion (A):** The mirrors used in searchlights are concave spherical. **Reason (R):** In the concave spherical mirror the image formed is always virtual. a) Both A and R are true and R is the correct explanation of the assertion. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
8	**Assertion (A):** As light travels from one medium to another, the frequency of light does not change. **Reason (R):** Because frequency is the characteristic of source. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false.	

	d) A is false but R is true.	
9	**Assertion (A):** The image formed by a concave mirror is certainly real if the object is virtual. **Reason (R):** The image formed by a concave mirror is certainly virtual if the object is real. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
10	**Assertion (A):** Light rays retrace their path when their direction is reversed (Law of reversibility of light rays). **Reason (R):** For the refraction light, water is denser than air, but for the refraction of sound, water is rarer than air. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
11	**Assertion (A):** There exist two angles of incidence for the same magnitude of deviation (except minimum deviation) by a prism kept in the air. **Reason (R):** In a prism kept in air, a ray is incident on first surface .and emerges out of second surface. Now, if another ray is incident on second surface (or prism) along the previous emergent ray, then this ray emerges out of first surface along the previous incident ray. This phenomenon is called the principle of reversibility of light. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
12	**Assertion (A):** The image of a virtual object formed by a thin converging lens is always real. **Reason (R):** In the case of a thin lens, $\frac{1}{v}-\frac{1}{u}=\frac{1}{f}$. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false.	

	d) A is false but R is true.	
13	**Assertion (A):** A plane mirror neither converges parallel rays of light nor diverges them. **Reason (R):** The focal length of a plane mirror can be considered to be infinite. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
14	**Assertion (A):** In diffused reflection, a parallel beam of incident light is reflected in different direction. **Reason (R):** The diffused reflection of light is due to the failure of the laws of reflection. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
15	**Assertion (A):** A plane mirror may form a real image. **Reason (R):** Plane mirror forms a virtual image if the object is real. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
16	**Assertion (A):** If the rays are diverging after emerging from a lens; the lens must be concave. **Reason (R):** The convex lens can give diverging rays. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
17	**Assertion (A):** The size of the mirror affect the nature of the image. **Reason (R):** Small mirrors always form virtual images.	

	a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
18	**Assertion (A) :** When the object moves with a velocity of 2 m/s, its image in the plane mirror moves with the velocity of 4m/s. **Reason (R) :** The image formed by the plane mirror is as far behind the mirror as the object is in front of it. a) Both A and R are true and R is the correct explanation of the assertion. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
19	**Assertion (A):** Convex mirrors are used for rear view on vehicles. **Reason (R):** The size of the image formed by a convex mirror will be same. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
20	**Assertion (A):** It is impossible to see a virtual image. **Reason (R):** The rays that seen to emanate from a virtual image don't, in fact, emanates from the image. a) Both A and R are true and R is the correct explanation of the assertion. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
21	**Assertion (A):** The Sun appears flattened at sunrise and sunset. **Reason (R):** The apparent flattering of the Sun's disc at sunrise and sunset is due to atmospheric refraction. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false.	

	d) A is false but R is true.	
22	**Assertion (A):** The twinkling of stars is due to the fact that the refractive index of the earth's atmosphere fluctuates. **Reason (R):** When light propagates from one medium to another its direction of propagation changes. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
23	**Assertion (A):** A rainbow is sometimes seen in the sky in the rainy season only when the observer's back is towards the sun. **Reason (R):** Internal reflection in the water droplets cause dispersion and the final rays are in the backward direction. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
24	**Assertion (A):** Danger signals are red. **Reason (R):** Red colour has smallest wavelength. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
25	**Assertion (A):** A beam of white light gives a spectrum on passing through a hollow prism. **Reason (R):** Speed of light outside the prism is different as the speed of light inside the prism. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
26	**Assertion (A):** The rainbow is seen when the sun is behind the observer. **Reason (R):** Rainbow is produced due to dispersion of white light by small rain drops	

	hanging in the air after the rain. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
27	**Assertion (A):** White light is dispersed into its seven - color components by a prism. **Reason (R):** Different colors of light bend through different angles with respect to the incident ray as they pass through a prism. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
28	**Assertion (A):** Thin prisms do not deviate light much. **Reason (R):** Thin prism have small angle A and hence, D_m = [(μ - 1) A] , where μ is the refractive index of prism w.r.t. medium 1. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
29	**Assertion (A):** Secondary rainbow is fainter than a primary rainbow. **Reason (R):** Secondary rainbow formation is a three - step process and hence, the intensity of light is reduced at the second reflection inside the raindrop. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false.	

	d) A is false but R is true.	
30	**Assertion (A):** The phenomenon of scattering of light by the colloidal particles gives rise to the Tyndall effect. **Reason (R):** The colour of the scattered light depends on the size of the scattering particles. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
31	**Assertion (A):** The human eye works like a camera. **Reason (R):** The human eye's lens system forms an image on a light - sensitive screen called the retina. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
32	**Assertion (A):** There is no dispersion of light refracted through a rectangular glass slab. **Reason (R):** Dispersion of light is the phenomenon of splitting of a beam of white light into its constituents colours. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
33	**Assertion (A):** In the case of a rainbow, a light at the inner surface of the water drop gets internally reflected. **Reason (R):** The angle between the refracted ray and normal to the drop surface is greater than the critical angle. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
34	**Assertion (A):** Cataract causes partial or complete loss of vision. **Reason (R):** The eyeball is approximately elliptical shape.	

	a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
35	**Assertion (A):** The light of violet colour deviates the most and the light of red colour the least, while passing through a prism. **Reason (R):** For a prism material, refractive index is highest for red light and lowest for violet light. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
36	**Assertion (A):** Resistivity of the material may change with temperature. **Reason (R):** Resistivity is a material property & independent of temperature. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
37	**Assertion (A):** Silver is not used to make electric wires. **Reason (R):** Silver is a bad conductor. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
38	**Assertion (A):** Electric current starts flowing through a conductor. **Reason (R):** Due to the flow of electric charges in the conductor. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false.	

	d) A is false but R is true.	
39	**Assertion (A):** When a battery is short - circuited, the terminal voltage is zero. **Reason (R):** In the situation of a short - circuit, the current is zero. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
40	**Assertion (A):** Insulators do not allow the flow of current through themselves. **Reason (R):** They have no free - charge carriers. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
41	**Assertion (A):** A voltmeter and ammeter can be usedtogether to measure resistance but not power. **Reason (R):** Power is proportional to voltage and current. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
42	**Assertion (A):** The 200 W bulbs glow with more brightnessthan 100 W bulbs. **Reason (R):** A 100 W bulb has more resistance than 200 W bulb. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
43	**Assertion (A):** When the resistances are connected end - to - end consecutively, they are said to be in series. **Reason (R):** In case the total resistance is to be increased, then the individual resistances are connected in series. a) Both A and R are true and R is the correct explanation of A.	

	b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
44	**Assertion (A):** The resistivity of the conductor increases withthe increase of temperature. **Reason (R):** The resistivity is the reciprocal of the conductivity. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
45	**Assertion (A):** Resistance of 50 W bulb is greater thanthat of 100 W. **Reason (R):** Resistance of bulb is inversely proportional to rated power. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
46	**Assertion (A):** Alloys are used in making electric irons, toasters etc. **Reason (R):** Because the resistivity of alloys is lower than its constituent metals. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
47	**Assertion (A):** When the current through a bulb decreases by 0.5% the glow of the bulb decreases by 1%. **Reason (R):** Glow (Power) is directly proportional to the square of the current. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
48	**Assertion (A):** Voltmeter is always connected in parallel across the circuit while	

	measuring the potential difference. **Reason (R):** As the voltage in parallel circuits are measured to be the same. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
49	**Assertion (A):** The product of resistivity and conductivity of a conductor depends on the material of the conductor. **Reason (R):** Because each resistivity and conductivity depends on the material of the conductor. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
50	**Assertion (A):** A resistor of resistance R is connected to an ideal battery. If the value of R is decreased, the power dissipated in the circuit will increase. **Reason (R):** The power dissipated in the circuit will increase. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
51	**Assertion (A):** Wire A is thin in comparison to wire B of same material same length then resistance of wire A is greater than resistance of wire B. **Reason (R):** Resistivity of wire A is greater than resistance of wire B. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
52	**Assertion (A):** If 10 bulbs are connected in series and one bulb fused, then the remaining 9 bulbs will not work. **Reason (R):** Bulb of higher wattage will give less bright light.	

	a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
53	**Assertion (A):** Bulbs are filled with inactive nitrogen and argon gases. **Reason (R):** As there is a requirement of thermal isolation of the filament. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
54	**Assertion (A):** The electric bulbs glow immediately when the switch is on. **Reason (R):** The drift velocity of electrons in a metallic wire is very high. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
55	**Assertion (A):** Electric appliances with metallic body have three connections, whereas an electric bulb has a two - pin connection. **Reason (R):** Three - pin connections reduce the heating of connecting wires. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
56	**Assertion (A):** Force experienced by moving charge will be maximum if direction of velocity of charge is perpendicular to applied magnetic field. **Reason (R):** Force on moving charge is independent of direction of the applied magnetic field. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false.	

	d) A is false but R is true.	
57	**Assertion (A):** A current - carrying rod is suspended between U - shaped magnet, the rod deflects. **Reason (R):** A force is exerted on the rod due to magnetic field. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
58	**Assertion (A):** In Fleming's Left - Hand Rule, the direction of magnetic field, force and current are mutually perpendicular. **Reason (R):** Fleming's Left - hand Rule is applied to measure the induced current. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
59	**Assertion (A):** Magnetic field lines show the direction (at every point) along which a small magnetised needle aligns (at the point). **Reason (R):** Magnetic field lines certainly represent the direction of magnetic field, but not the direction of force, this is because force is always perpendicular to magnetic field B. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
60	**Assertion (A):** The direction of force is given by Flemings left hand rule. **Reason (R):** A magnetic field exert a force on a moving charge in the same direction as the direction of field itself. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
61	**Assertion (A):** Magnetic field lines never intersect. **Reason (R):** At a particular	

	point magnetic field has only one direction. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
62	**Assertion (A):** Safety fuses are made up of materials having a low melting point. **Reason (R):** Safety fuses should be resistant to electric current. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
63	**Assertion (A):** A compass needle is placed near a current - carrying wire. The deflection of the compass needle decreases when the compass needle is displaced away fromthe wire. **Reason (R):** Strength of a magnetic field decreases as one moves away from a current - carrying conductor. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
64	**Assertion (A):** Magnetic field interacts with a moving charge and not with a stationary charge. **Reason (R):** A moving charge produces a magnetic field. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
65	**Assertion (A):** The strength of the magnetic field produced at the centre of a current - carrying circular coil increases on increasing the radius of the circular coil. **Reason (R):** Magnetic field strength is inversely proportional to the radius of the circular coil. a) Both A and R are true and R is the correct explanation of A.	

	b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
66	**Assertion (A):** A fault occurred in the domestic lines, but all the equipment's are safe. **Reason (R):** Potential difference is only 220 V in our country in domestic lines. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
67	**Assertion (A):** Copper is used to make electric wires. **Reason (R):** Copper has very low electrical resistance. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
68	**Assertion (A):** Two magnetic field lines around a current carrying straight wire do not intersect each other. **Reason (R):** The magnitude of the magnetic field produced at a given point increases as the current through the wire increases. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
69	**Assertion (A):** Iron filings are kept near a magnet it gets arranged in a particular fashion. **Reason (R):** Magnetic field is a scalar quantity. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
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71	**Assertion (A):** The magnetic field produced by a current - carrying solenoid is independent of its length and cross - section area. **Reason (R):** The magnetic field inside the solenoid is uniform. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
72	**Assertion (A):** Electric appliances with metallic body have three connections, whereas an electric bulb has two pin connections. **Reason (R):** Three - pin connections reduce heating of connecting wires. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
73	**Assertion (A):** The magnetic field intensity at the centre of a circular coil carrying current changes, if the current through the coil is doubled. **Reason (R):** The magnetic field intensity is dependent on current in conductor. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
74	**Assertion (A):** Deflection of the iron filings changes when current in the conductor varies. **Reason (R):** Magnitude of the magnetic field does not change with the magnitude of current.	

	a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
75	**Assertion (A):** In a conductor, free electrons keep on moving but no magnetic force acts on a conductor in a magnetic field. **Reason (R):** Force on free electrons due to magnetic field always acts perpendicular to its direction of motion. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	