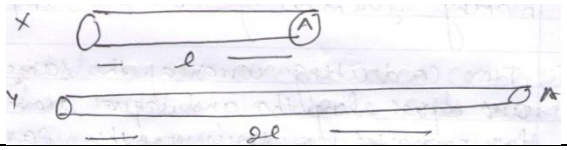
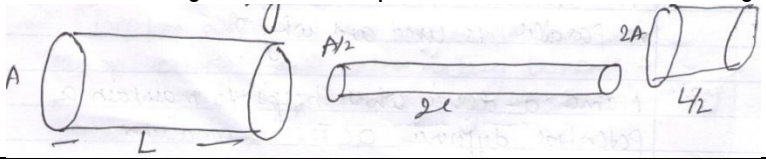
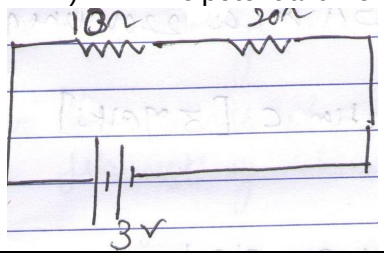
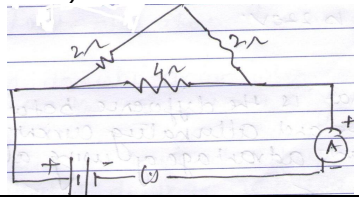
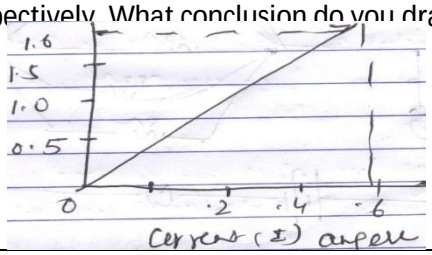
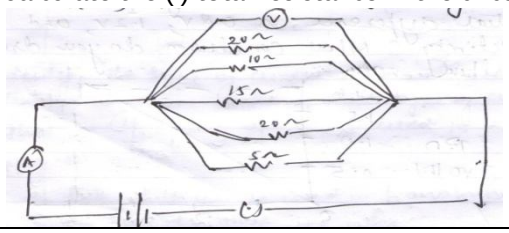
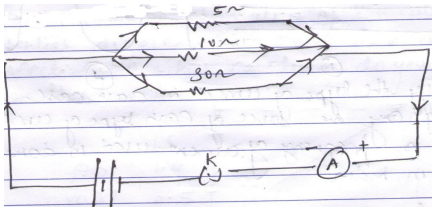
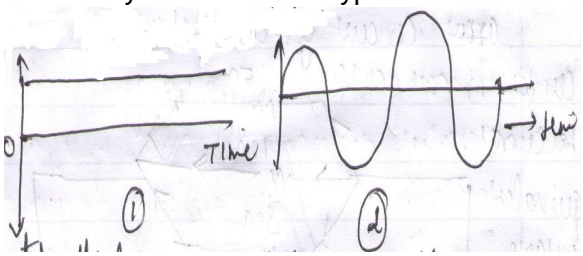
THE ASIAN SCHOOL, DEHRADUN

Test Paper Session 2017-18

CLASS 10 SUBJECT Physics Chapter-1 Electricity

Q1.	How is ammeter connected in a circuit to measure current flowing through it?	1
Q2.	An electric fan or motor becomes hot when continuously used for long time, why?	1
Q3.	Write the SI unit of Resistivity.	1
Q4.	Mention two reasons why tungsten is used for making filaments of electric lamps.	1
Q5.	Two conducting wires of the same material and equal lengths and equal diameters are first connected in series another parallel in a circuit across the same potential difference. Then find the ratio of heat produced in two combinations.	1
Q6.	Name the type of current supplied by cell or battery.	1
Q7.	Why does the cord of an electric heater not glow while the heating element does.	1
Q8.	In domestic circuit which combination series or parallel is used and why?	1
Q9.	Name a device which helps to maintain a potential difference across a conductor .	1
Q10.	Why are cells of electric toasters and electric iron made of an alloy rather than pure metal?	1
Q11.	On which facto does the resistance of a conductor depend.	2
Q12.	Out of the two wires 'X' and 'Y' shown below. Which one has greater resistance? Justify your answer. 	2
Q13.	A piece of wire of resistance 20Ω is drawn out so that its length is increased to twice its original length. Calculate the resistance in new situation.	2
Q14.	The figure below shows three cylindrical copper conductors along their faces areas and lengths. Discuss I which geometrical shape the resistance will be the highest. 	2
Q15.	The resistance of a wire of 0.01 cm resistance is 10 Ω. If resistivity of the material of wire is 50×10^{-8} Ωm, find the length of the wire.	2
Q16.	Study the following electric circuit and find the : i) Current flowing in the circuit. ii) The potential difference across 10 Ω resistor. 	2
Q17.	How can three resistors of resistances 2 Ω, 3 Ω and 6 Ω be connected to give a total has a resistance of : i) 1 Ω ii) 4 Ω	2
Q18.	i) What are the disadvantages of resistance connected in series circuit? ii) Find the resistance between A and B in the following network. 	2

Q19.	What is cost of running an A.C with average power of 1000w for 8 hours for 30 days? The cost of electric energy is Rs 4.70 per kwh.	2
Q20.	How many 176 Ω resistor (in parallel) are required to carry 5aA on a 220 V line.	2
Q21	A hot plate of an electric oven connected to 220V line has two resistance coils A and B, each of 24Ω resistances which may be used separately, in series or in parallel. What are the currents in the these cases?	3
Q22	Find the minimum, rating of fuse that can be safely used on a line on which two 1.1kw. Electric geysers are to run simultaneously. The supply voltage is 220V.	3
Q23	Explain what is the differences between a direct current and alternating current. Write one important advantage of using alternating current.	3
Q24	An air conditioner of 2kw is used in an electric circuit having a fuse of 10A rating. If the potential difference of the supply is 220V, will the fuse be able to with stand when the air conditioner is switched on? Justify your answer.	3
Q25	Distinguish between Resistance and resistivity. Explain how saving electricity is important at individual level and as national level.	3
Q26	Suppose the ammeter or voltmeter you are using in ohms experiment do not have +ve and –ve terminal markings how will you use such ammeter or voltmeter in the circuit?	3
Q27	What would be the values of V/I ratios when the potential difference is 0.8v, 1.2v and 1.5v respectively. What conclusion do you draw from them values. 	3
Q28	What is meant by electric current? Name and define its SI unit. In a conductor, electrons are flowing from B to A. What is the direction of conventional current? Give justification for your answer. A steady current of 1A flows through a conductor. Calculate the number of electrons that flow through any section of the conductors for 1 second. (Charge on electron = 1.602×10^{-19} c)	3
Q29	The resistance of a wire of 0.01 cm radius of 5Ω. If resistivity of the material of wire is 50×10^{-8} ohm. Find the length of the wire them.	3
Q30	In the circuit diagram given below five resistance of 5Ω, 20, 15 Ω , 20 Ω and 10 Ω are connected as given in figure to a 6 Ω battery. Calculate the (i) total resistance in the circuit. (ii) Total current flowing in the circuit. 	3
Q31	a) Define power what is SI unit of power? b) How and on what factors the heat product in the conductor depends.	5
Q32	a) Name two appliance each in which heating effect in (a) desirable (b) not desirable b) How is resistance affected if length of a conductor is tripled and thickness is made one – third?	5

Q33	Two wires 'X' and 'Y' are of equal length and have equal resistance if the resistivity of 'X' is more than that of 'Y'. Which wire is thicker and why? For the electric circuit given below :  i) Current in each resistors ii) Total Current in the circuit iii) Equivalent resistance of the circuit.	5
Q34	An electric oven of 2kw power rating is operated in a domestic circuit of 220v that has current rating of 5A. What results do you expect? Explain.	5
Q35	a) Why is the series arrangement not used for domestic circuits? b) Why are copper and aluminum wires usually played for electricity transmission.	5
Q36	a) List two difference features between the resistance and resistivity of a conductor. A wire is stretched so that its length becomes 6/5 times of its original length. If its original resistance is 25 Ω. Find its new resistances and resistivity.	5
Q37	Define the term 'Coloumb' ii) State the relationship between electric current and the charge moving through a conductor and time of flow. (iii) Calculate the charge passing through an electric bulb in 20 minutes if the value of current is 200mA.	5
Q38	In our daily life we use two types of electric circuit whose current times graph are given below :  a) Identify the type of current in each case. b) Identify any one source of each type of current. c) What is frequency of current used is domestic supply in India. d) Out of two which are used in transmission of electric power over long distance and why?	5
Q39	Prove that for electric circuit having three resistances of R_1 R_2 and R_3 i) $\frac{1}{R_P} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ ii) $R_s = R_1 + R_2 + R_3$	5
Q40	State Joule's law of heating and prove that : a) $H = VIt$ b) $H = I^2Rt$	5

THE ASIAN SCHOOL, DEHRADUN

Test Paper Session 2017-18

CLASS 10 SUBJECT Physics Chapter-2 (Magnetic Effect of Electric Current)

Q1.	State any two properties of magnetic field lines.	1
Q2.	Why does a compass needle get deflected when brought near a bar magnet?	1
Q3.	State and explain maxwell's right-hand thumb rule.	1
Q4.	State the form of magnetic field lines around a straight current carrying conduction.	1
Q5.	Name one device which works on the magnetic effect of current.	1
Q6.	List the properties of magnetic lines of forces.	1
Q7.	Why don't two magnetic lines of forces intersect with each other?	1
Q8.	The magnetic field in a given region is uniform. Draw a diagram to represent it.	2
Q9.	What is the principle of an electric motor?	2
Q10.	What is the role of the split ring in an electric motor?	2
Q11.	State different ways to induce current in a coil.	2
Q12.	State the principle of an electric generator.	2
Q13.	When does an electric short circuit occur?	2
Q14.	Name some devices in which electric motors are used.	2
Q15.	List three sources of magnetic fields.	2
Q16.	Name two safety measures commonly used in electric circuits and appliances.	3
Q17.	Two circular coils A and B are placed close to each other. If the current in coil A is changed, will some current be induced in the coil B? Give reason for your answer.	3
Q18.	a) In a dc motor, why must the current to the coil be reversed twice during each rotation? b) What device reverses the current?	3
Q19.	What is an electromagnet? Describe the construction and working of an electromagnet with the help of a labelled diagram.	3
Q20.	a) Write some of the important uses of electromagnet. b) Explain why, the core of an electromagnet should be of soft iron and not of steel.	5
Q21	Explain why, a freely suspended magnet always points in the north-south direction.	5
Q22	What are the special features of commercial electric motors?	5
Q23	State an important advantage of alternating current over direct current.	5
Q24	A circuit has a fuse of 5A. What is the maximum no. of 100W (220V) bulbs that can be safely used in the circuit?	5
Q25	What precautions should be taken to avoid overloading of domestic electric circuits?	5

THE ASIAN SCHOOL, DEHRADUN

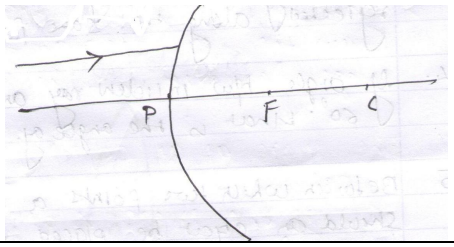
Test Paper Session 2017-18

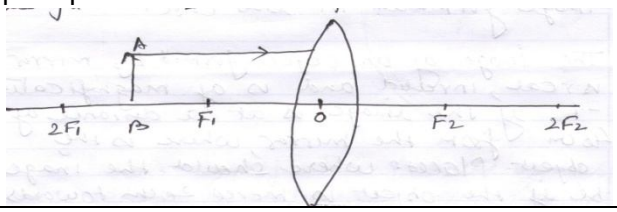
CLASS 10 SUBJECT Physics Chapter-3 (Sources of Energy)

Q1.	Why is LPG considered as good fuel?	1
Q2.	What is the main constituent of Petroleum gas and natural gas?	1
Q3.	State one important use of CNG.	1
Q4.	Name the product of petroleum that is used to drive heavy vehicles.	1
Q5.	What are the characteristics of an ideal fuel?	2
Q6.	State advantages and disadvantages of using solar cells.	2
Q7.	What is the difference between a thermal power plant and a hydropower plant?	2
Q8.	What is biogas? Name the major component of biogas.	3
Q9.	Explain how, geothermal energy is used to generate electricity.	3
Q10.	Differentiate between nucleus fission and nuclear fusion.	3
Q11.	What steps would you suggest to reduce energy consumption?	3
Q12.	What is hydroelectricity? Explain the basic principle of generation of hydroelectricity with the help of a labelled diagram.	5
Q13.	Describe construction and working of a biogas plant with the help of a labelled diagram.	5
Q14.	a) What are the environmental consequences of the increasing demand for energy? b) Give the names of two energy sources that you would consider to be exhaustible. Give reasons for your choices.	5
Q15.	a) What are the limitations of energy that can be obtained from the oceans? b) How has the traditional use of wind and water energy been modified for one convenience?	5

THE ASIAN SCHOOL, DEHRADUN

CLASS 10 SUBJECT Physics Chapter-4(Light Reflection and Refraction)

Q1.	Define the principal focus of a concave mirror.	1
Q2.	What is the magnification of images formed by plane mirrors and why?	1
Q3.	Why a ray of light passing through the centre of curvature of concave mirror gets reflection along the same path? Explain.	1
Q4.	If angle between incident ray and reflected ray is 60^0. What is the angle of incidence?	1
Q5.	Between which two points a concave mirror should an object be placed to obtain an image of magnification of -3?	1
Q6.	Define one dipole of power of lens.	1
Q7.	What is speed of blue light travelling in vaccum?	1
Q8.	What type of lenses and of what focal length would you prefer to use to which reading small letters in the dictionary.	1
Q9.	A spherical mirrors and thin spherical lens have each a focal length of -15 cm. What is type of mirror and lens?	1
Q10.	A lens of focal length 'f' is cut into two equal parts without offering the curvature. What will be focal length of two pieces?	1
Q11.	A concave mirror produces three times minified real image of an object placed at 10 cm in front of it. Where is the image located?	2
Q12.	A ray of light is incident on a convex mirror as shown. Redraw the diagram and complete the path of this ray after reflection from the mirror. Make the angle of incidence and angle of reflection on it. 	2
Q13.	The linear magnification produced by a spherical mirror is -1/5. Analysing this value, state : a) The type of spherical mirror. b) Position of object with respect to pole of the mirror. Draw the ray diagram to justify your answer.	2
Q14.	Name the type of mirror used in the following situations: a) Head light of car b) Side/ rear- view c) Mirror of a vehicle	2
Q15.	Rohit placed a pencil perpendicular to the principal axis in-front of a converging mirror of focal length 30cm. The image formed is twice the size of the pencil. Calculate the distance of the object from the mirror.	2
Q16	A spherical mirror produces on image of magnification –1 on a screen placed at a distance of 50cm from the mirror. a) What is the focal length of the mirror? b) Draw the ray diagram to show the image formation in this case.	2
Q17	The image of an object formed by mirror is real, inverted and is of magnification -1. If the image is at a distance of 40cm from the mirror, where is the object Placed? Where should the image be if the object is moved 20 cm towards the mirror? State the reason and also draw the ray diagram for the new position of the object to justify your answer.	2
Q18	The refractive indices of glass and water with respect to air are 3/2 and 4/3 respectively. If speed of light in glass is $2X\ 10^8$ m/s. Find the speed of light in water.	2

Q19	State giving reason in each case, how the speed of red light compares with the speed of blue light (i) vaccum (ii) glass	2
Q20	A ray of light incident an rectangular glass slab inversed in any medium emerges parallel to itself. Draw a labelled diagram to justify this statement.	2
Q21	In a ray diagram AB is an object placed in front of a convex lens L, F_1 and F_2 are its face F_1O F_2 is principal axis. 	3
Q22	The image of a candle flame placed at a distance of 30cm from a spherical lens is formed on a screen placed at a distance of 60cm from the lens. Identify the type of lens and calculate its focal length. If the height of the flame is 2.4cm. find the height of its image.	3
Q23	An object 5 cm in length is held 25 cm away from a converging lens of focal length 10cm. Draw a ray diagram and find the position, size and the nature of the image formed.	3
Q24	The power of a combination of two lenses X and Y is 4D. If the focal length of X is 12cm (i) calculate the focal length of lens Y (ii) Determine the nature of lens Y.	3
Q25	a) Define power of lens. The power of lens is +2D. b) Find the focal length of the lens in Metre. c) Name the kind of lens. Explain with the help of figure whether this lens will be converge or a diverge of a beam of light.	3
Q26	A 0.5 cm tall object is placed perpendicular to the principal axis of convex lens of focal length of 20cm. The distance of the object from the lens is 20cm. find the position, the size and nature of image formed.	3
Q27	How is optical density related to refraction index? Which medium has higher and lowest optical density respectively and why?	3
Q28	Define absolute refractive index. Mention its unit can the value of absolute refractive index be smaller than 1? Justify your answer.	3
Q29	Refractive index of diamond with respect to glass is 1.6 and absolute refractive index of glass is 1.5. Find out the absolute refractive index of diamond.	3
Q30	A doctor has prescribed a corrective lens of power +1.5D. Find the focal length of the lens is the prescribed lens diverging or Converging.	3
Q31	Prove that $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$ for mirror.	3
Q32	Prove that $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ for lens	3
Q33	Draw a ray diagram for following and show the formation of images in case of concave mirror when the object is placed. a) Between pole and focal point b) At the centric of curvature	3

THE ASIAN SCHOOL, DEHRADUN

Test Paper Session 2017-18

CLASS 10 SUBJECT Physics Chapter-5 (Human Eye and Colourful World)

Q1.	What is the name of : a) The curved, transparent front surface of the eye? b) The light- sensitive layer in the eye?	1
Q2.	Where is the image formed in a human eye?	1
Q3.	Name that part of the eye which is equivalent to the photographic film in a camera.	1
Q4.	Name two types of cells in the retina of an eye which respond to light.	1
Q5.	What is the range of vision of a normal human eyes?	1
Q6.	What change is made in the eyes to enable it to focus on object situated at different distance? Illustrate your answer with the help of diagram.	2
Q7.	How is the amount of light entering the eye controlled?	2
Q8.	Why does it take some time to see object in a dim room when you enter the room from bright sunshine outside?	2
Q9.	Name the defect the vision in which the eye lens loses its power of accommodation due to old age.	2
Q10.	Name the defect of vision which make the eye lens cloudlip resulting in blurred vision.	2
Q11.	What is the other name of old age hypermetropia?	2
Q12.	Name any two defect of vision which can be corrected by any type of spectator lenses.	2
Q13.	a) What happens when a ray of ordinary light is passed through a triangular glass prism? b) What will happen if another similar glass prism is placed upside down behind the first prism?	3
Q14	What is meant by dispersion of while light? Describe the formation of rainbow in the sky with the help of a diagram?	3
Q15	Make two diagrams to explain refraction and dispersion.	3
Q16	Which is refracted most by a prism: red light or violet light? Explain why?	3
Q17	a) What is atmospheric refraction? What causes of atmospheric refraction? b) Why do stars twinkle on a clear night?	3
Q18	Why do stars seem higher than they actually are? Illustrate your answer with the help of a diagram.	5
Q19	a) Out of blue light and red light, which one is scattered more easily? b) Which component of sunlight is scattered away when the sun appears red at sunrise or, sunset?	5
Q20	Why does the sun appear red at sunrise and at sunset?	5
Q21	a) What are the far point and near point of the human eye with normal vision? b) What is meant by the power of accommodation of the eye?	5
Q22	Why is a normal eye not able to see clearly the objects placed closer than 25 cm?	5