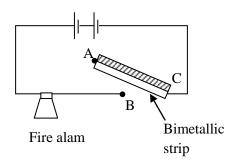
Ś	NALANDA V Nalanda Vidyalaya – Colombo 10 Vidyalaya NALANDA VIL TILITIK Unit Test Project				
	Grade 11 Science Unit : 09 - Heat				
<u>MCQ Questions</u>					
(1)	 Some statements about the transmission of heat are given below. A → Conduction of heat is the transmission of heat in a particular direction through particles without a movement of the particle from place to place. B → Convection of heat is the transmission of heat with the movements of particles. C → Radiation of heat is the transmission of heat from place to place with the involvement of particles in a medium. 				
	Which of the above statements are correct, i) A and B ii) B and C iii) A and C iv) A, B and C				
(2)	When the following reaction was performed with 8g of NaOH 14 kJ of heat energy was released. $NaOH_{(aq)} + HNO_{3(aq)} \longrightarrow NaNO_{3(aq)} + H_2O_{(l)}$ If 0.5 mol NaOH was used for the above reaction the amount of heat released will be, (Na - 23, O = 16, H - 1)				
	i) 0.7 kJ ii) 70 kJ iii) 35 kJ iv) 7 kJ				
(3)	What will be the amount of heat released when 200 g of brass pan cooled from 80 °C to 30 °C. (Specific heat capacity of brass – 380 Jkg ⁻¹ °C ⁻¹) i) $\frac{200}{1000} \times 380 \times 80$ J ii) $\frac{200}{1000} \times 380 \times 50$ J iii) $\frac{200}{1000} \times 380 \times 30$ J iv) $200 \times 380 \times 50$ J				
(4)	What is the average body temperature of a healthy person in Kelvin?i) 37ii) 98iii) 273iv) 310				
(5)	 In order to make a mercury thermometer which will measure smaller changes in temperature accurately. i) Decrease the volume of the mercury bulb. ii) Put the degree marking further apart. iii) Decrease the diameter of the capillary tube. iv) Leave the capillary tube open to air. 				

(6)	Which of the following quantities is measured using the unit Jkg ⁻¹ K ⁻¹ ?i) temperatureii) heat capacity					
	iii) specific heat capacity iv) energy					
(7)	How much energy is required to raise the temperature of 21 g of water by 20 K if the speci thermal capacity of water is 4 200 $Jkg^{-1} K^{-1}$.					
	i) 10 J ii) 40 J iii) 441 J iv) 1764 J					
(8)	Convection occurs in,					
	i) liquids only ii) gases only iii) liquids and gases iv) solids and liquids					
(9)	In which of the following processes is most of the thermal energy transferred from its source by radiation?i) Boiling water in a kettle.					
	ii) Baking a loaf of bread.					
	iii) Heating a room by means of hot water pipes.iv) Cooking rice using an electric cooker.					
(10)	The specific thermal capacity of metal block depends on,					
	i) Mass of the block.					
	ii) Volume of the block.					
	iii) Temperature of the block.					
	iv) None of the above.					
	Structured Essay Questions					
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(1)	A set up used in house to heat water using solar power is shown below.					
	Solar panel Black surface Nater tank					
	i) What is the type of heat energy transferring methods are used in the following instances.					
	a) Transfer of heat from sun to the solar panel.					
	, I					
	b) Transfer of heat from heater to water in tank.					

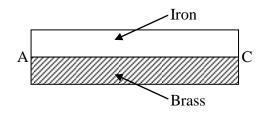
, 51	tate th	ne advantage of hav	ing blackened surface behind the solar panel	el.		
iii) W	/hat i	s the most suitable	tube X or Y to take hot water out of the tan	k.		
iv) G	Give a reason of your answer in (iii).					
v) Tl	he tul	be of the setup mad	e of copper, why copper is more suitable th	an Aluminium?		
		inutes the temperatu	ure of 5 kg of water increased by 40 °C. (Sp Calculate heat absorbed by water in 5 minut	pecific heat capacity of		
vii)Define the "specific heat capacity"						
•••						
A) i)			y is needed for each of the following? al capacities given in the table.			
A) i)			al capacities given in the table.			
A) i)		e the specific therm Substance				
A) i)		e the specific therm	al capacities given in the table. Specific thermal capacity $(Jkg^{-1} \circ C^{-1})$			
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/	c) To heat a 50 kg concrete in a storage heater from 20 °C to 60 °C?		
	 d) To heat 2 kg of water in a copper kettle of mass 0.8 kg from 25 °C to the boiling point. 		
B) i)	State the following temperatures in the Kelvin scale.		
	i) 600 °C –		
	ii) 37 °C –		
ii)	State the following temperatures in the Celcius scale.		
	i) - 180 K		
	ii) – 4 K –		
	Essay Questions		
 (1) A) i) It is required to design a solar panel in which 250 g of water will be heated from 10 to 30 °C each day. A panel of 1m² absorbs 5, 000, 000 J of radiant energy each day. (Specific heat capacity of water is 4 200 Jkg⁻¹ K⁻¹) Calculate, a) the required rise in temperature each day. b) the energy that will be absorbed each day. 			
	c) the required surface area of the solar panel.		
ii)	A solar panel said to be more environmentally friendly. Explain briefly what is meant by environmentally friendly?		
B) He	ot drinks can be kept in a vaccum flask.		
p	The diagram shows a cross section of this type of flask.		
	i) Why does the inner flask have silvery		
	 vacual vacual surface? ii) Polythene is used to hold the inner flask in position. Why polythene is chosen? iii) Why it is important to keep the lid on this flask when it is filled with hot liquid? 		
iv) This can be equally be used to keep cold thing cold. Briefly explain how this happens?		

- (2) Illustrated here is a rough sketch of a fire alarm system connected in a factory.
 - a) Have a high melting point is a property that should be possessed by a material with the outer covering of fire alarm. State one another property that is should possess.
 - b) Very often the heating coil of heat generating equipments are made of an alloy called "nichrome". Name the two metals used to prepare the alloy.



c) The bimetallic strip indicated by AC in the above figure is made by riveting a strip of iron and a strip of brass together.



- d) Which of the above metals forms the outer curve when this metallic strip gets heated? Explain the reason.
- e) What is the function shown by the ABC switch in the diagram.