An Roinn Oideachais Agus Eolaíochta

Junior Certificate Examination 2002

Science

Higher Level

Marking Scheme

Introduction

In considering this marking scheme the following points should be noted.

1. Words or expressions separated by a solidus, /, are alternative answers which are equally acceptable for the award of the assigned mark.

2. Words or expressions in round brackets, ( ), are alternatives to parts of an acceptable answer.

3. In some instances acceptable partial answers are given in square brackets, [ ], after the full answer to the particular item. In such cases, the marks indicated within the brackets cannot be awarded in addition to any marks already awarded for the item.

4. Marks given in square brackets in the right hand column are the totals for parts of questions as shown on the examination paper.

5. The descriptions, methods and definitions in the scheme are not exhaustive and alternative valid answers are acceptable.

6. The detail required in any answer is determined by the context and manner in which the question is asked and by the number of marks assigned to the item in the examination paper. In any instance, therefore, the detail required may vary from year to year.

Outline Marking Scheme

Section A	Q.1		$8 \times (2 \times 3)$.
	Q.2		$8 \times (2 \times 3)$.
	Q.3		$8 \times (2 \times 3)$.
Section B	Q.4	(a)	$2 \times 3, 2 \times 3, 2 \times 3, 2 \times 3$.
		(b)	$4 \times 3, 1 \times 3, 3 \times 3$.
	Q.5	(a)	$2 \times 3, 3 \times 3, 3 \times 3, 1 \times 3$.
		(b)	$3 \times 3, 2 \times 3, 1 \times 6$.
Section C	Q.6	(a)	$2 \times 3, 4 \times 3, 2 \times 3$.
		(b)	$2 \times 3, 2 \times 3, 2 \times 3, 2 \times 3$.
	Q.7	(a)	$1 \times 3, 1 \times 3, 2 \times 3, 1 \times 3, 2 \times 3, 2 \times 3$.
		(b)	$2 \times 3, 1 \times 3, 4 \times 3$.
Section D	Q.8	(a)	$1 \times 3, 1 \times 3, 1 \times 3, 2 \times 3, 2 \times 3, 1 \times 3$.
		(b)	$2 \times 3, 1 \times 3, 2 \times 3, 1 \times 3, 2 \times 3$.
	Q.9	(a)	$1 \times 3, 1 \times 3, 3 \times 3, 3 \times 3$.
		(b)	$1 \times 3, 1 \times 3, 3 \times 3, 3 \times 3$.
Section E	Q.10	(a)	$3 \times 3, 3 \times 3$.
		(b)	$3 \times 3, 3 \times 3$.
		(c)	$3 \times 3, 3 \times 3$. Any two parts.
	Q.11	(a)	$1 \times 3, 1 \times 3, 1 \times 3, 3 \times 3$.
		(b)	$4 \times 3, 2 \times 3$.
		(c)	$2 \times 3, 1 \times 3, 1 \times 3, 2 \times 3$. Any two parts.
	Q.12	(a)	$4 \times 3, 2 \times 3$.
		(b)	$2 \times 3, 4 \times 3$. Any one of four (i) - (iv).
	Q.13	(a)	$1 \times 3, 1 \times 3, 2 \times 3, 2 \times 3$.
		(b)	$2 \times 3, 4 \times 3$.
		(c)	$2 \times 3, 4 \times 3$. Any two parts.
	Q.14	(a)	$1 \times 3, 1 \times 3, 2 \times 3, 2 \times 3$.
		(b)	$2 \times 3, 4 \times 3$.
	Q.15	(a)	$1 \times 3, 2 \times 3, 3 \times 3$.
		(b)	$3 \times 3, 2 \times 3, 1 \times 3$.

SECTION A (144 MARKS)
Each of the questions 1, 2 and 3.

Question 1 **Any eight parts** **[8 × 6 marks]**

(a) Solid A (3)
Sinks least (3) **[6]**

(b) **Any *one* of:** walking / brakes / grip / any correct example (3)
Any *one* of: wear / heating / wastes energy / noise / any correct example (3) **[6]**

(c) 850 × 10 (3)
8500 (3) **[6]**
[8500 only – allow 2 × 3 marks]

(d) **Any *two* of:** smoke detectors / fire alarm / thickness of sheet metal (paper) / inspect luggage / moisture content of soil / dating / cancer treatment (medicine) / sterilising / diagnosis / imaging / indicator lights / lead levels / pollutant (dust) levels / research / luminous paint / engine wear / oil pipelines / mixing drugs / organ function / food preservation / fuel (generates electricity) (accept nuclear power) / weapons / tracers / etc. (2 × 3) **[6]**

(e) Heat / hot (warm) water (3)
Rises (3) **[6]**
[Convection / can heat small amounts of water – allow 2 × 3 marks]

(f) Area of head / area of point (3)
Greater / less (3) **[6]**
[$p = F/A$ – allow 3 marks only]

(g) Insulation / does not conduct / tog value (3)
Any correct example, e.g. cotton (3) **[6]**

(h) **Any *two* of:** earth / earth pin longer / earth pin enters socket first / earth wire longest (earth wire pulled out last) /cord grips / plastic (Bakelite) casing / insulation / live pin partly covered with plastic / live pin shorter than earth pin / live wire shortest (live wire pulled out first) / live pin enters socket after earth pin / plug only fits into matching socket (2 × 3) **[6]**

(i) North correctly labelled (3)
South correctly labelled (3) **[6]**

(j) **Any *two* of:** heat is energy / heat in joules / heat flow / heat can not be measured at a point / temperature can be measured at a point / temperature is hotness / temperature is in Celsius (centigrade) (Kelvin) (2 × 3) **[6]**

Question 2 **Any eight parts** **[8 × 6 marks]**

(a)	**Any *two* of:** CO_2 released / greenhouse effect / save (conserve) oil (coal) (natural gas) / acid rain / cleaner air / health / pollution (emissions) / etc.	(2 × 3)	**[6]**
(b)	Number of protons Plus number of neutrons [Number of nucleons (particles in nucleus) – allow 2 × 3 marks]	(3) (3)	**[6]**
(c)	Boil Lathers (scales) = temporary / does not lather (scale) = permanent	(3) (3)	**[6]**
(d)	**Any *two* of:** foam / carbon dioxide / halon / powder / water / etc.	(2 × 3)	**[6]**
(e)	Turn gas on / blue flame Open air hole (adjust the collar)	(3) (3)	**[6]**
(f)	Electron(s) Loses / gains	(3) (3)	**[6]**
(g)	**Any *one* of:** copper / iron / tin / lead / silver / gold / accept symbols **Any *one* of:** electrolyte (named electrolyte) / acid (named acid) / correct formula	(3) (3)	**[6]**
(h)	Four (state or show) Two / 2,8,8,2	(3) (3)	**[6]**
(i)	Measures / shows / checks Acids (bases) / acidity (alkalinity) **or** 0 to 14	(3) (3) **or** (3) (3)	**[6]**
(j)	Acid + base Gives salt + water	(3) (3)	**[6]**

Question 3 **Any eight parts** **[8 × 6 marks]**

(a)	Cell wall alone or in a pair – allow 2 × 3 marks Vacuole alone or in a pair – allow 1 × 3 marks	(2 × 3)	**[6]**
(b)	Microscope Examine (view) cells (small object) / to magnify	(3) (3)	**[6]**
(c)	Bone from acid lost strength (rigidity) (hardness) Acid removed calcium (calcium salts)	(3) (3)	**[6]**
(d)	Lower back / under ribs / in abdominal cavity / correct location **Any *one* of:** urea / water / salts / sodium / potassium / chloride / ammonia / hormones / drugs / alcohol / urine / etc.	(3) (3)	**[6]**
(e)	**Mouse: any *one* of:** herbivore / consumer / second **Hazel: any *one* of:** plant / producer / first	(3) (3)	**[6]**
(f)	Oxygen Relights glowing splint	(3) (3)	**[6]**
(g)	Contains water Vapour	(3) (3)	**[6]**
(h)	**Any *one* of:** sensors / receptors / sense organs / named organ **Any *one* of:** brain / spinal cord / CNS	(3) (3)	**[6]**
(i)	Oak **Any *one* of:** timber / fuel / oxygen / carbon dioxide / food / shelter / helps balance of nature / etc.	(3) (3)	**[6]**
(j)	Pooter Collect small animals (insects)	(3) (3)	**[6]**

SECTION B – PHYSICS (48 marks)

Either question 4 or question 5.

Question 4 **[48 marks]**

(a)	Define	Changes	(3)	
		Motion / speed / velocity / direction / momentum	(3)	**[6]**
		[Causes acceleration / mass × acceleration – allow 2 × 3 marks]		
	Calculate	0.25 × 100	(3)	
		25	(3)	**[6]**
		[25 alone – allow 2 × 3 marks]		
	Define	Force × distance	(3)	
		Joule / newton metre	(3)	**[6]**
	Calculate	30 × 200	(3)	
		6000	(3)	**[6]**
		[6000 alone – allow 2 × 3 marks]		
(b)	Describe	**Show or state**		
		Turn on bell / circuit shown	(3)	
		Ringing (bell) heard when air in jar	(3)	
		Pump out air / vacuum	(3)	
		Ringing (bell) not heard / not as loud	(3)	**[12]**
		[No diagram – deduct 3 marks]		
	What?	Number of waves per second / frequency = velocity ÷ wavelength	(3)	**[3]**
	How?	Distance = velocity × time / ($s = vt$) / 1500 × 0.5 / 750	(3)	
		divide by 2	(3)	
		375	(3)	**[9]**
		[375 alone – allow 3 × 3 marks]		

Question 5 **[48 marks]**

(a)	What?	Flow / movement	(3)	
		Charge / electrons / ions	(3)	**[6]**
	Show	(i) from positive to negative	(3)	
		(ii) circle with wire at centre	(3)	
		clockwise	(3)	**[9]**
	Describe	**Show or state**		
		Heating	(3)	
		Circuit with battery	(3)	
		Bulb (resistance wire)	(3)	
		Bulb (resistance wire) glows (gets hot)		
		Accept equivalent experiments		
		or	**or**	
		Chemical		
		Circuit with battery	(3)	
		Electrodes in electrolyte, e.g. copper sulphate solution	(3)	
		Chemical change observed, e.g. copper metal appears	(3)	**[9]**
		Accept equivalent experiments		
		[Name of effect alone, i.e., chemical / heating – allow 3 marks]		
	Give	**Chemical:** charging battery (mobile phone) / hair removal / etc.	(3)	
		or	**or**	
		Heating: cooker / hair dryer / clothes iron / blanket / heater / curling tongs / etc.	(3)	**[3]**
(b)	Describe	**Show or state**		
		3 cards with holes	(3)	
		Holes in line, see light	(3)	
		Holes not in line, do not see light	(3)	
		or	**or**	
		Drinking straw	(3)	
		Straight, see through	(3)	
		Bent, can not see through	(3)	
		or	**or**	
		Box with pin hole	(3)	
		Light source	(3)	
		Image of source	(3)	
		or	**or**	
		Small light source	(3)	
		Obstacle	(3)	
		Shadow	(3)	**[9]**
		Accept equivalent experiments		
	Copy	Ray from mirror 1 to mirror 2	(3)	
		Ray from mirror 2 to eye	(3)	**[6]**
		[no direction – deduct 3 marks]		
	Name	**Any *pair*:** green and magenta (purple) / red and cyan (turquoise) / blue and yellow	(6)	**[6]**

SECTION C - CHEMISTRY (48 marks)

Either question 6 or question 7.

Question 6 **[48 marks]**

(a)	Name	Acid / named acid / formula of acid	(3)	
		Carbonate / bicarbonate / CO_3 / HCO_3 / chalk / marble / limestone / named carbonate (bicarbonate)	(3)	**[6]**
	Write	**Marks for *correct formula/e* in an equation of the form:** **Carbonate / bicarbonate + acid = salt + water + CO_2** **e.g.**		
		Carbonate: $CaCO_3$	(3)	
		Acid: HCl	(3)	
		Salt: $CaCl_2$	(3)	
		Water / CO_2: H_2O / CO_2	(3)	**[12]**
		Equation need not be balanced **[No equation – deduct 3 marks]** [Accept word equation: two products – allow 3 marks; a third product – allow 3 marks]		
	Give	Lime water / lighted splint	(3)	
		Milky / quenched	(3)	**[6]**
(b)	Why?	**Boiled water:** remove oxygen (air)	(3)	
		Oil: keep oxygen (air) out	(3)	**[6]**
	What?	Absorbs / removes	(3)	
		Water / moisture	(3)	**[6]**
	What?	Oxygen (air)	(3)	
		Water	(3)	**[6]**
	Give	**Any *two* of:** paint / oil / enamel / plastic coat / galvanise / tin plate / grease / etc.	(2 × 3)	**[6]**

Question 7 **[48 marks]**

(a)	Name	Distillation	(3)	**[3]**
	Name	Condenser	(3)	**[3]**
	How?	Cold water / cold surface Remove heat from vapour / cools vapour	(3) (3)	**[6]**
	Identify	Alcohol	(3)	**[3]**
	What?	To measure temperature (boiling point) Of alcohol (vapour) [any correct use – allow 2 × 3 marks]	(3) (3)	**[6]**
	Name	Evaporation (boiling) / vaporisation / liquid to vapour (gas) Condensation / vapour (gas) to liquid	(3) (3)	**[6]**
(b)	What?	New substance(s) Formed (appear)	(3) (3)	**[6]**
	Give	Exothermic	(3)	**[3]**
	Name	***Two* named substances,** e.g. magnesium and oxygen	(2 × 3)	
	Write	***Correct formula/e* in an equation** e.g. $Mg + ½ O_2 = MgO$ **Equation need not be balanced** **[Allow 3 marks for correct formulae of named reactants** **If presented in the form of an equation allow final 3 marks]**	(2 × 3)	**[12]**

SECTION D – BIOLOGY (48 marks)

Either question 8 or question 9.

Question 8 **[48 marks]**

(a)	What?	Arteries / aorta and pulmonary artery (in that order)	(3)	**[3]**
	Name	Vein / vena cava	(3)	**[3]**
	Name	Atrium (auricle)	(3)	**[3]**
	Give	**Any *two matched* of:** **Blood from heart:** thicker wall / no valves / pulse / smaller bore (lumen) / higher pressure / oxygenated blood **Blood to heart:** thinner walls / valves / no pulse / larger bore (lumen) / lower pressure / deoxygenated blood	(2 × 3)	**[6]**
	Explain	**White blood cells: any *one* of:** kill (eat) germs / make antibodies / consume dead cells / help to control inflammation / fight infection	(3)	
		Platelets: any *one* of: help form blood clots / help to stop bleeding / help to keep dirt (germs) out of wounds / help form scabs	(3)	**[6]**
	Give	**Any *one* of:** good diet / reduce fats / take exercise / don't smoke / drink in moderation / etc.	(3)	**[3]**
(b)	What?	Carries air (oxygen) (carbon dioxide)	(3)	
		To (from) lung (air sacs) (bronchioles) [inhale / exhale – allow 3 marks]	(3)	**[6]**
	Name	Bronchioles	(3)	**[3]**
	Name and describe	**Name:** alveolus (air sacs)	(3)	
		Describe: thin-walled / spherical (state or show) [If **name** is 'alveolus' accept 'air sac' for structure]	(3)	**[6]**
	What?	Capillaries	(3)	**[3]**
	Give	Less carbon dioxide	(3)	
		More oxygen	(3)	**[6]**

Question 9 **[48 marks]**

(a)	Give	Temperature / humidity / wind / soil water / light / cuticle / stomata	(3)	**[3]**
	Name	Xylem	(3)	**[3]**
	Describe	Celery stem / any suitable stem	(3)	
		Water with dye	(3)	
		Dye in veins of celery	(3)	**[9]**
		Accept equivalent experiments		
	Tell	Throw quadrat (frame) randomly (a number of times)	(3)	
		Identify plants inside quadrat (frame) for each throw	(3)	
		Record (count) plants / compare	(3)	**[9]**
(b)	Name	Geotropism / hydrotropism / chemotropism / negative phototropism	(3)	**[3]**
	What?	Light / sun / gravity	(3)	**[3]**
	List	**Any *three* of:** water / warmth (heat) (temperature) / oxygen (air) / dormancy over / light	(3 × 3)	**[9]**
	Outline	**Show or state:**		
		Seeds with all conditions	(3)	
		Seeds missing one condition	(3)	
		Seeds missing one condition do not germinate / seeds with all conditions do germinate	(3)	**[9]**

SECTION E – APPLIED SCIENCE (72 marks)

Two questions from this section.

Question 10 – Earth Science **Any two parts** **[36 marks]**

(a)	Describe	**Show or state**		
		Sun and earth	(3)	
		Moon in between	(3)	
		Moon's shadow on earth / sunlight blocked by moon	(3)	**[9]**
	Explain	**Show or state**		
		Earth's axis tilted	(3)	
		Earth's north pole tilted away from sun / Earth's south pole tilted towards sun	(3)	
		Winter in northern hemisphere / summer in southern hemisphere	(3)	
		or	**or**	
		Earth's axis tilted	(3)	
		Earth's north pole tilted towards sun / Earth's south pole tilted away from sun	(3)	
		Summer in northern hemisphere / winter in southern hemisphere	(3)	**[9]**
(b)	What?	**Show or state**		
		Sun and planets	(3)	
	Show	Sun	(3)	
		Earth shown third out from sun	(3)	**[9]**
		[No diagram – deduct 3 marks]		
	Compare	(i) bigger on earth / smaller on moon	(3)	
		(ii) less extremes on earth / extremes on moon	(3)	
		(iii) earth has an atmosphere / moon has none	(3)	**[9]**
(c)	Explain	Land heats faster / land hot	(3)	
		Hot air rises over land	(3)	
		Cool air moves in from sea	(3)	**[9]**
	Explain	Land cools faster / land cold	(3)	
		Hot air rises over sea	(3)	
		Cool air moves out from land	(3)	**[9]**

Question 11 – Horticulture **Any two parts** **[36 marks]**

(a)	Distinguish	**Any *one* of:** soil is natural / compost is a mixture made by people	(3)	**[3]**
	Why?	**Any *one* of:** respiration / root growth / water movement (drainage) / air movement	(3)	**[3]**
	How?	**Any *one* of:** aerate / increase humus / better drainage / creates top soil	(3)	**[3]**
	What?	Growing plants In nutrient Solutions / water / without use of solid growing medium	(3) (3) (3)	**[9]**
(b)	Name and describe	**Name: any *one* of:** busy lizzie / geranium / privet / clematis / ivy / blackberry / etc. **Describe:** cut stem (leaf) Remove lower leaves (expose midrib) Dip in rooting compound (powder) / plant in compost / water **Accept equivalent methods**	(3) (3) (3) (3)	**[12]**
	Give	***One* advantage and *one* disadvantage** **Advantage:** exact copy of parent / quick / economic **Disadvantage:** no variation / no new characteristics	(3) (3)	**[6]**
(c)	Give	**Any *two* of:** correct stage of maturity / early in morning / leave long stem / remove lower leaves	(2 × 3)	**[6]**
	Why?	Prevent wilting (drying out) / keep stem rigid	(3)	**[3]**
	How?	Re-cut stem under water / crush woody stems	(3)	**[3]**
	Name	**Any *two* of:** sugar / bleach / washing up liquid / dispirin / aspirin	(2 × 3)	**[6]**

Question 12 – Materials Science **Both parts** **[36 marks]**

(a)	Name	**Textile: any *one* of:** cotton / linen / wool / nylon / polyester / etc.	(3)	
		Plastic: any *one* of: polythene / acrylic / nylon / PVC / etc.	(3)	
	Use	**Plastic: *one matched use*:** cutting boards / bags / containers / shop signs / coats / fishing line / thread / garden hoses / electrical insulation / etc.	(3)	
		Metal: *one matched use*: wire / electrical conductors / jewellery / cookware / roofs / car radiators / wind instruments / door knockers / statues / coins / etc.	(3)	**[12]**
		Accept uses of brass, bronze and coinage alloys **[No table – accept correct order]**		
	What?	Mixtures	(3)	
		Of metals	(3)	**[6]**

(b) **Answer any *one* of the following (i), (ii), (iii), (iv).**

(i) Plastics

	Name	Coal / oil	(3)	
	What?	Fossil plants (animals) (fuel)	(3)	**[6]**
		[Fossil may be implied by millions of years]		
	Describe	**Show or state**		
		Surround a metal can with a plastic	(3)	
		Surround a second identical metal can with a different plastic	(3)	
		Add the same amount of boiling water to each can	(3)	
		After time, plastic around hotter can is better insulator	(3)	**[12]**
		Accept equivalent experiments		

(ii) Metals

	In what?	Compound / ore	(3)	
	Why?	Reactive	(3)	**[6]**
	Outline	**Show or state**		
		Measure mass of a metal	(3)	
		Measure volume of the metal	(3)	
		Calculate density of the metal / density equals mass divided by volume	(3)	
			(3)	**[12]**
		Repeat for a different metal		
		Accept equivalent experiments		

(iii) Textiles

Give	**Any *two* of:** moth proofing / flame proofing / low friction coating / water proofing / cover from light / follow the care label / etc.	(2 × 3)	**[6]**
Describe	**Show or state**		
	Drape fabric over a file	(3)	
	Hang weights from the ends of the fabric	(3)	
	Count turns of the file until a hole appears	(3)	
	Repeat for a different fabric	(3)	**[12]**
	Accept equivalent experiments		

(iv) Timber

Give	**Any *two* of:** paint / preservative / varnish / ventilate / etc.	(2 × 3)	**[6]**
Describe	**Show or state:**		
	Clamp a strip of wood at one end	(3)	
	Hang weights from the other end	(3)	
	Measure the amount the wood bends (until it breaks)	(3)	
	Repeat for a different type of wood	(3)	**[12]**
	Accept equivalent experiments		

Question 13 – Food **Any two parts** **[36 marks]**

(a)	Why?	**Any *one* of:** prevents constipation / helps muscles of bowel move food (bolus) along / helps prevent diseases of the bowel	(3)	**[3]**
	What?	Colour	(3)	**[3]**
	Name	**Any *two* of:** fructose / salt / glucose	(2 × 3)	**[6]**
	Give	***One* advantage:** look better / taste better / last longer / prevent food poisoning / prevent oxidation / keep certain foods firmer / help keep prices down / safer food / better condition / etc.	(3)	
		***One* disadvantage:** allergies / possible damage to health / lack of consumer choice / hyperactivity in children / etc.	(3)	**[6]**
(b)	Name	**Any *two* of:** beer / bread / wine / spirits / cider / alcohol / sugar	(2 × 3)	**[6]**
	Describe	**Show or state:**		
		Container with sugar, yeast and water / grass	(3)	
		Stopper with tube to lime water / valve / cotton wool / seal	(3)	
		Some time / warm place / compress / add acid (sugar) (bacteria)	(3)	
		Lime water goes milky / smell of alcohol / carbon dioxide produced	(3)	**[12]**
		[No diagram – deduct 3 marks]		
(c)	Give	**Any *two* of:** kill microbes / prevent growth of microbes / make food last (stay fresh) longer / give more time for transportation (storage) / food 'out of season' made available / reduce waste / help prevent food poisoning (disease) / etc.	(2 × 3)	**[6]**
	Outline	Heat	(3)	
		To 72 °C [± 1 °C]	(3)	
		Cool	(3)	
		Quickly / to below 10 °C	(3)	**[12]**

Question 14 – Electronics **Both parts** **[36 marks]**

(a)	Name	Diode	(3)	**[3]**
	Give	Rectification / allow flow in one direction / changes a.c. to d.c. / prevent damage	(3)	**[3]**
	Explain	Diode	(3)	
		In reverse bias	(3)	**[6]**
	What?	Reverse connections of	(3)	
		Diode / battery	(3)	**[6]**
(b)	Name	B: thermistor / temperature dependent resistor / TDR	(3)	
		C: transistor	(3)	**[6]**
	Explain	Heat lowers resistance of B	(3)	
		Voltage across base and emitter increases / current flows into base	(3)	
		Collector current flows / transistor 'on'	(3)	
		Buzzer sounds	(3)	**[12]**

Question 15 – Energy Conversions **Both parts** **[36 marks]**

(a)	Name	Potential	(3)	**[3]**
	Give	**Any *two* of:** Potential to kinetic Kinetic to electrical Kinetic to magnetic Magnetic to electrical Electrical to heat Electrical to sound Kinetic to sound	(2 × 3)	**[6]**
	Outline	Conductor (coil) moves / magnet moves Past magnet / past conductor Voltage (current) (electrical energy) produced	(3) (3) (3)	**[9]**
(b)	Draw	Primary coil shown Secondary coil shown Core shown **[No diagram / no labels – deduct 3 marks]**	(3) (3) (3)	**[9]**
	What?	Change a.c. Voltage	(3) (3)	**[6]**
	Name	**Any *one* of:** door bell / TV / radio / CD player / scanner / CRT display / battery charger / VCR / computer / printer / mains adapter / etc.	(3)	**[3]**