

Examiners' Report Paper A 2010 (Electricity/Mechanics)

1. General Considerations

1.1 This year's paper concerns an invention for inflating bicycle tyres. In the client's letter, (par. 1), it is stated that the client manufactures and sells bicycles. A bicycle frame of the client is described as being made of hollow tubes that are welded together (par. 1, fig. 1a). A top tube and a seat tube of the frame are defined.

1.2 In his letter (par 2), the client mentions a conventional air pump clipped to a bicycle frame. In his letter, (par. 4), the client describes a prior art bicycle that has a bicycle frame having a seat tube fitted with a plug and a miniaturized air pump. The miniaturized air pump fits inside the seat tube of the bicycle frame so that it cannot fall off the bicycle.

1.3 In his letter, (par. 5) the client states that competitors managed to avoid direct infringement of a patent protecting this prior art bicycle. The patent had a claim directed to a bicycle.

1.4 In his letter (par. 3) the client refers to a first prior art document D1 that discloses a bicycle having a compressed air reservoir. The compressed air reservoir of D1 is built into the seat tube of a bicycle frame. An electric rotary air pump is also fixed in the seat tube, (see D1, par. 2).

1.5 In his letter (par. 12) the client refers to a second prior art document D2, which discloses a bicycle having an air suspension device for the seat post. The air suspension device comprises an air pump and an air chamber. The air pump has a cylinder and a piston (see D2, par. 1). The cylinder of the pump comprises a portion of the seat tube of the bicycle frame (D2, par. 3).

1.6 In par. 12 the client states that an idea has been developed into an invention by making a bicycle having an air pump assembly.

1.7 First, second and third examples of the client's invention are described with reference to figs. 4, 5 and 6 respectively.

1.7.1 In describing the first example of the invention (par. 13-19, fig. 4) the client states:

- a. that a bicycle frame is part of the air pump assembly (par. 13);
- b. that the air pump assembly comprises a cylinder that comprises a portion of a seat tube of the bicycle frame, a piston that can reciprocate in the cylinder and a piston actuator (par. 14).

1.7.2 The second and third examples of the invention are described with reference to the first example (see par. 20, par. 22 and figs 5 and 6), in such a way that the above statements a and b also apply to these specific examples of the invention.

1.8 Answer papers are assessed on a scale of 0 to 100 marks:

up to **50 marks** can be achieved for an independent claim,
up to **35 marks** can be achieved for a set of dependent claims, and
up to **15 marks** can be achieved for the description.

It is noted that references in this text beginning with "GL" are to the Guidelines for Examination in the European Patent Office of December 2007.

2. Independent claim (50 marks available)

Generally it is noted that the marks awarded for an independent claim reflect the degree to which the claim achieves protection for the client's invention in its broadest possible scope.

2.1 An example solution claim for protecting the client's invention could be based on the following list of features:

- a) Air pump assembly comprising:
- b) a bicycle frame having a tube;
- c) a cylinder,
- d) whereby the cylinder comprises a portion of the tube;
- e) an air outlet means for allowing air to exit the cylinder,
- f) the air outlet means comprising a lateral through-hole in the portion of the tube,
- g) the hole extending to the exterior of the frame,
- h) whereby the air pump assembly further comprises a piston for reciprocating in the cylinder.

In the following notes, remarks are made to features of the example solution. Where an "equivalent" is given, it is intended to indicate a different wording that can achieve the same number of marks as the wording given in the example solution. It is not intended to indicate that the wording itself necessarily has the same meaning as the wording of the example solution.

2.1.1 Remarks to feature a

- a. The invention concerns a reciprocating pump that is built into and comprises part of a bicycle frame. It therefore includes features of a pump and of a bicycle frame.
- b. The formulation "air pump assembly" includes the possibility that some of the features are not purely features of a pump.

Equivalents:

"An (air) pump"

The term "pump" or "air pump" is considered to be a general term for any device that can pump, and this may comprise parts that are not necessary for pumping air.

"A bicycle frame assembly".

Non Equivalents:

"A bicycle frame."

"A bicycle frame comprising/having an air pump assembly."

The term "bicycle frame" (without "assembly") is considered to be a term for a discrete part of a bicycle made of hollow tubes that are welded together. The bicycle frame is defined as

being part of an air pump assembly, see par. 13. However examples of the air pump assemblies described in the client's letter comprise parts that are not part of a bicycle frame. For example a hermetic plug that forms part of the cylinder of the air pump assembly, but not part of the bicycle frame see par. 25.

"A bicycle"

A claim to a bicycle risks being worked around by a competitor without direct infringement of the claim, see client's letter, par. 5.

2.1.2 Remarks to feature b

Non equivalents:

"A tube of a bicycle frame."

The invention concerns a reciprocating pump assembly that incorporates a bicycle frame. In this case it is unclear as to whether the protection sought is limited to a tube per se, or whether a bicycle frame as a whole is to be protected.

"A tube for a bicycle frame".

The invention concerns a reciprocating pump assembly that incorporates a bicycle frame. In this case any hollow tube that would also be suitable for making bicycle frames is claimed.

2.1.3 Remarks to feature c

In the context of the paper it was considered, for example from par. 25, that the word "cylinder" of a pump assembly implicitly comprises a closing means such as a plug or a metal wall.

Equivalents:

A cylinder having a closed end.

A cylinder having a sealed end.

A cylinder having an axial opening

A tube portion having a closed end.

2.1.4 Remarks to feature d

In par. 1 of the client's letter, a top tube and a seat tube of a bicycle frame are defined. In the example pumping assemblies of the invention it is not necessary to form a cylinder from an entire tube of a bicycle frame, see for example par. 15 and fig. 4. It is therefore considered to be appropriate to define a "portion" of a tube when defining the cylinder of the pump assembly.

Equivalents:

"whereby the cylinder comprises a section of the tube"

"whereby the cylinder is formed from a portion of the tube".

Non equivalents:

“Whereby the cylinder comprises the tube”.

2.1.5 Remarks to feature e

An air outlet means is considered necessary for achieving the desired effect of the invention, namely to inflate a bicycle tyre. The feature is further defined in features f and g. It is noted that in order to achieve full marks it is not necessary to use the wording “air outlet” in defining the concept of an air outlet.

Equivalent:

“an air outlet for allowing air to exit the cylinder”

“an air outlet means”

“an air outlet”.

2.1.6 Remarks to feature f

Feature f distinguishes the air outlet means of the example solution claim from the air outlet shown in D2, fig. 1, ref 15b.

Equivalent:

“the air outlet means comprising a lateral through-hole in the cylinder”

“the air outlet means comprising a lateral hole in the cylinder”

2.1.7 Remarks to feature g

Feature g distinguishes the air outlet of the example solution claim from the air outlet shown in D2, fig. 1, ref. 3c.

Many different possibilities exist for achieving novelty of the claim by defining the air outlet first defined in feature e from the air outlets disclosed in D2, fig. 1, ref. 15b and 3c.

Equivalents:

Where the feature g (or features f and g) is replaced by:

“the air outlet means being arranged for allowing air to exit the bicycle frame”.

Where features f and g are replaced by: “the air outlet means being arranged for connecting an air hose for inflating a tyre”.

Where features g and h are replaced by: “the pump assembly further comprising a piston for reciprocating in the cylinder, whereby the air outlet means is arranged so that when the piston reciprocates, air is pumped out of the air outlet means”.

2.1.8 Remarks to feature h

Feature h distinguishes the air pump assembly of the example solution claim from the assembly disclosed in D1, par. 2 and fig. 1. In this assembly the pump is a rotary pump

and therefore has no piston for reciprocating in the cylinder of the assembly. It is noted that the term “reciprocating pump” is considered to implicitly include a piston.

2.2. This year, the only independent claim expected is a single device category claim. Where an answer paper has an additional independent claim in a different category, e.g. a method of making a pump assembly or a method of pumping a tyre, 50 marks are available for the independent device claim and no marks are available for such an additional independent method claim. Answer papers having multiple independent claims in the device category can achieve up to 45 marks for the independent claims in total, because it is considered that the invention can be appropriately claimed with a single independent claim. Other cases are to be considered on a case by case basis. This year separate applications are not expected and no marks are foreseen for them.

2.3 Unnecessary limitations (between 5 and 30 marks per issue deducted)

2.3.1 Unnecessary limitations in independent claims are considered to be features that: a) are unnecessary for defining the client’s invention in its broadest possible scope; and b) disadvantage the client by limiting the scope of the claim. An unnecessary limitation may for example result in the exclusion of protection for one of the examples of the invention discussed in the client’s letter.

2.3.2 Between 5 and 30 marks are deducted for each unnecessary limitation. The number of marks deducted reflects the severity of the limitation concerned.

2.3.3 If a feature of a claim is unclear so that it is ambiguous as to whether or not the claim is unnecessarily limited by that feature, then this is considered under the section lack of clarity and not in this section.

2.3.4 Independent claims having features a-h of the example solution claim and having at least one additional feature in accordance with the following list are for example considered to be unnecessarily limited. Marks are deducted for including these features according to the following scheme:

- a. - A claim defining a bicycle (-20 marks).
- b. - A claim defining a cylinder comprising a portion of the seat tube of a bicycle frame (-15 marks).
- c. - A claim defining a cylinder comprising a portion of the top tube of a bicycle frame (-30 marks).
- d. - A claim defining a cylinder comprising a portion of the seat tube or a portion of the top tube of a bicycle frame (-5 marks).
- e. - A claim defining a valve (or a one way valve, or an inlet valve), without specifying its location in the air pump assembly. It is noted that pump assemblies according to the invention do not need to include a valve. See client’s letter, par. 11 in conjunction with par. 26 (-5 marks).

- f. - A claim defining a valve (or a one way valve, or an inlet valve) and specifying a single location for it in the air pump assembly, e.g. in the piston (-30 marks).
- g. - A claim defining an air hose (-15 marks).
- h. - A claim defining a cylinder comprising a plug, for closing the cylinder (-15 marks).
- i. - A claim defining a cylinder comprising a metal wall (that is part of the frame for closing the cylinder) (-15 marks).
- j. - A claim defining an air outlet comprising a ring (-20 marks).
- k. - A claim defining an air outlet comprising a thread (-10 marks).
- l. - A claim defining a bicycle frame as having a top tube -unless marks have already been deducted for claiming a cylinder comprising a top tube under item "c" (-10 marks).
- m. - A claim defining a piston actuator as comprising a seat post or a seat post and a seat (-25 marks).
- n. - A claim defining a piston actuator as comprising a rod and a handle. (-25 marks).
- o. - A claim defining other features of a bicycle such as: a seat post; a bicycle seat; a clamp for clamping a bicycle seat post -unless marks have already been deducted for claiming a bicycle under item "a" (-10 marks).
- p. - A claim defining other features of a pump, such as: a piston as being made of rubber; a piston being glued to the piston actuator (-10 marks).
- q. - A claim defining a feature as "consisting of" one or more components, where it is considered more appropriate to use the wording "comprising" one or more components (-5 marks).

2.3.5 Independent claims having features a-h of the example solution claim and having at least one additional feature in accordance with the following list are not considered to be unnecessarily limited. In this case, no marks are deducted for including these features:

- a. - A claim defining a piston actuator.
- b. - A claim defining that the piston is arranged for moving in a first direction to draw air into the cylinder and/or is arranged for moving in a second direction for pumping air out of the cylinder.

2.3.6 For answer papers having independent claims that are not according to the examples given, when deducting marks, it is decided on a case by case basis to what extent a feature limits a claim unnecessarily.

2.4 Lack of Novelty (30 marks deducted)

2.4.1 An answer paper having a single independent claim whose subject matter is considered to lack novelty against any of the available prior art loses 30 marks.

2.4.2 Considering D1, it is noted that any independent claim that includes the feature of a piston is considered to be novel with respect to D1.

2.4.3 Considering D2, the following is noted:

a. Fig. 1 of D2 shows a detail of a bicycle with an air suspension device. The device comprises an air pump having a cylinder and a piston for reciprocating in a cylinder (see par. 1 and 2).

b. The one-way valve 15b, mentioned in D2, par. 4 and shown in fig. 1 is considered to be disclosed as follows:

- It does constitute an air outlet.
- It does constitute an air outlet for pumped air.
- It does constitute an air outlet for allowing air to exit the cylinder.
- It is **not** located in the cylinder (it is located in the piston).
- It does **not** constitute an air outlet that extends to the exterior of the frame.

c. The lateral through-hole 3c, mentioned in D2, par. 9 and shown in fig. 1 is considered to be disclosed as follows:

- It does constitute an air outlet (because it is a through hole).
- It is located in the cylinder of the pump (see par. 3 and 9).
- It can allow air to exit the cylinder.
- It does **not** constitute an air outlet that extends to the exterior of the frame.
- It does **not** constitute an air outlet that allows air to pass to the exterior of the frame (since D2 describes a bicycle).
- It does **not** constitute an air outlet for pumped air.
- It is **not** located between the piston and the hermetic plug that closes the cylinder, see D2, par. 9.

2.4.4 The following claims are considered to lack novelty with respect to at least one of the items of prior art available. (-30 marks).

a. - An independent claim only having features a to g of the example solution claim, lacks novelty with respect to the assembly shown in fig. 1 of D1. It is noted that D1 also discloses an air pump, see D1, par. 2 and ref. 16 of fig. 1.

b. - An independent claim defining an arrangement comprising features b to g of the example solution claim, and defining that the cylinder is suitable for accommodating a reciprocating piston, lacks novelty with respect to any of the intermediate products shown in D1, figs. 2a and 2b and described in D1, par. 5, 6 and 7.

c. - An independent claim only having features a to e and h of the example solution claim, lacks novelty with respect to the assembly shown in fig. 1 of D2, see D2, par. 4, ref. 15b and par. 9, ref 3c.

d. - An independent claim only having features a to f and h of the example solution claim, lacks novelty with respect to the assembly shown in fig. 1 of D2, see D2, par. 9, ref. 3c.

e. - An independent claim defining an arrangement comprising a piston, and defining that the piston is suitable for reciprocating in a tube of a bicycle frame, lacks novelty with respect to any of the intermediate products shown in D2, figs. 2a, 2b, 2c and described in D2, par. 10 and 11.

f. - An independent claim having features a, b and c of the example solution claim and further defining a piston for reciprocating in the cylinder and an air outlet means for allowing air to exit the cylinder, the air outlet means comprising a lateral through hole in the cylinder, whereby when the piston reciprocates in the cylinder, air is pumped out of the cylinder via the air outlet means. This claim is considered to lack novelty with respect to the prior art arrangements using miniaturised pumps described in par. 4 and 6-10 of the client's letter.

g. - An independent claim being worded: "Air pump assembly comprising: a bicycle frame having a tube; a cylinder, whereby the cylinder is integrated into the tube; an air outlet means comprising a lateral through hole in the cylinder for allowing air to be pumped out of the cylinder, the assembly further comprising a piston for reciprocating in the cylinder. This claim is considered to lack novelty with respect to the prior art arrangements using miniaturised pumps described in par. 4 and 6-10 of the client's letter.

2.4.5 If, due to an unclear or ambiguous formulation, there are doubts as to whether or not the wording of a claim can be read onto a piece of the prior art, then marks are deducted in this section, not under lack of novelty.

2.5 Lack of inventive step (25 marks deducted)

2.5.1 An answer paper having a single independent claim, whose subject matter is considered to lack an inventive step in the light of the available prior art loses 25 marks.

2.5.2 The subject matter of the following claim is considered to lack inventive step with respect to the following items of prior art: The miniaturised air pumps described in the client's letter par. 6-11.

A claim defining: An air pump assembly comprising; a tube for a bicycle frame and features c to h of the example solution independent claim. In this case the air pump assembly comprises a tube which would be merely suitable for a bicycle frame, it does not comprise a bicycle frame. The remaining features of the claim are all known from prior art reciprocating air pumps, such as the ones shown in figs 3a and 3b of the client's letter (-25 marks).

2.6. Lack of Clarity (up to 30 marks deducted)

2.6.1 Up to 30 marks in total can be deducted in this section. The full deduction of 30 marks is applicable where the sum of all clarity issue deductions would add up to 30 marks or more.

2.6.2 The following claims are considered to be examples of claims that lack clarity:

- a. - A claim to a bicycle frame having a tube, the bicycle frame comprising features c to g of the example solution claim, whereby the bicycle frame further comprises a piston for reciprocating in the cylinder (-3 marks).
- b. - An independent claim being worded: “Air pump assembly comprising: a tube of a bicycle frame” followed by features c-h of the example claim. In this case it is considered to be unclear as to whether a bicycle frame is included within the scope of the claim (-3 marks).
- c. - An independent claim having features a to f and h of the example solution claim and the additional feature that the air outlet is near to a closed end of the cylinder. The relative term “near to” is considered not to clearly distinguish the subject matter of this claim from the air pump assembly disclosed in D2, par. 3, which also comprises an air outlet in the form of a lateral through hole as disclosed in D2, par. 9, and fig. 1, ref. 3c (-20 marks).
- d. - An independent claim having all features a-h of the example solution claim and the additional feature that the air outlet is near to a closed end of the cylinder. The relative term “near to” is considered not to clearly define the subject matter of the claim. However, in this case the remaining features of the claim make the claim new and inventive with respect to the available prior art (-5 marks).
- e. - An independent claim having features a to f and h, and additionally the feature “the cylinder having a sealed end and the hole being located between the piston and the sealed end of the cylinder”. This claim is considered to be unclear since the piston is defined in feature h to reciprocate in the cylinder, without defining any limitation of its travel within the cylinder. Therefore defining the position of the hole with reference to the relative position of the piston renders the scope of the claim unclear. (-10 marks).
- f. - Up to 25 marks can be deducted for a claim which is distinguished from an item of prior art by a result to be achieved or a desired effect. The full deduction of 25 marks is only made where the sole difference between the claim and an item of prior art is a desired effect. For example, an independent claim having only features a to e and h of the example solution claim (known from D2) in addition to a statement “whereby the pump assembly is arranged for inflating a bicycle tyre”. (-25 marks).
- g. - An independent device claim which is claimed **only** when in use. For example, a claim having features a to g of the example solution claim and the feature “whereby the pump assembly further comprises a piston reciprocating in the cylinder” (-10 marks). However it is noted that conditional statements, such as the following, are not considered to render the claim unclear, therefore no marks are deducted for these statements under this section: “whereby the pump assembly further comprises a piston that reciprocates in the cylinder when the pump assembly is in use”; “whereby the pump assembly further comprises a piston that is arranged so that when it reciprocates in the cylinder, air is pumped out of the cylinder”.
- h. - An independent claim having features which rely for their definition on the drawings of the client’s letter, for example a feature defining that “when a piston is moved in the direction of the arrow a, air is drawn into the cylinder” (-10 marks)

i. - An independent claim being worded: “Air pump assembly comprising: a bicycle frame having a tube; a cylinder, whereby the cylinder comprises the tube”, and features e to h of the example solution. In this case it is considered to be not clear whether the invention is limited to a cylinder comprising the entire tube of a bicycle rather than claiming an unspecific portion of the bicycle tube (-5 marks).

j. - An independent claim being worded: “Air pump assembly comprising: a bicycle frame having a tube; a cylinder, whereby the cylinder is formed in a portion of the tube”, and features e to h of the example solution. In this case it is considered to be not clear whether or not the cylinder comprises a portion of the tube or is merely located inside the tube -as is the case with the miniaturised air pumps (-5 marks).

k. - An independent claim being worded: “Air pump assembly comprising: a bicycle frame having a tube; a cylinder, whereby the cylinder is integral with the tube; an air outlet means comprising a lateral through hole in the cylinder for allowing air to be pumped out of the cylinder, the assembly further comprising a piston for reciprocating in the cylinder”. In this case it is considered not to be clear whether or not the cylinder comprises a portion of the tube or is merely located inside the tube -as is the case with the miniaturised air pumps (-5 marks).

2.6.3 For answer papers having independent claims which have clarity issues that are not according to the examples given, the number of marks deducted reflects the severity of the clarity issue concerned. Up to 15 marks per issue can be deducted.

2.7. Formal matters (up to 5 marks deducted)

2.7.1, For the example solution it is considered appropriate to use a two part form of claim. However this year, a single part form of claim can also be justified. Claims written in the two part form or single part form can achieve full marks (see also part 4.1 of this report). An incorrect two-part form with respect to any of the items of prior art mentioned in the client's letter leads to a deduction of 3 marks.

2.7.2 The total absence of reference signs in the claims results in a deduction of 2 marks.

2.7.3 Partially incorrect or very incomplete reference signs in the claims results in a deduction of 1 mark.

3. Dependent claims (35 marks available)

Generally it is noted that the marks awarded for a dependent claim reflect the degree to which the claim offers a fall back position for the client, taking into consideration the independent claim or claims and the prior art available.

3.1. Important aspects to consider are:

- **clarity**: e.g. consistency of terminology with the independent claim, and
- **claim structure**: a set of dependent claims having a good structure gives the client an appropriate set of fall-back options, the claims as a whole are concise and have correct back references.

3.2 Dependent claims which are worded in such a way that the full potential as a fall back position is achieved for the client receive the maximum marks available.

Example: Dependent claims 2 and 3 depending on the example solution independent claim, and having the wording:

"2. An air pump assembly according to claim 1, comprising a piston actuator that comprises a rod and a handle." (3 marks).

3. An air pump assembly according to claim 1 or claim 2, wherein the tube is a seat tube." (3 marks)".

3.3 Where a feature is unnecessarily limited in a set of dependent claims, for example by the way in which it is worded or by grouping it together with other features, the full potential of a fall back position for that feature is not achieved, and fewer marks are awarded for that feature.

Example: A dependent claim 2 depending on the example solution independent claim, and having the wording:

"2. An air pump assembly according to claim 1, comprising a piston actuator that consists of a rod and a handle". (2 marks).

Example: A dependent claim 2 depending on the example solution independent claim, and having the wording:

"2. An air pump assembly according to claim 1, wherein the air pump assembly comprises a piston actuator that comprises a rod and a handle and the tube is a seat tube." (3 marks).

3.4 No marks are available for dependent claims which are considered not to provide useful fall back positions for the client:

Example: A dependent claim depending on the example solution independent claim, and having the wording "An air pump assembly according to claim 1, wherein the piston is made of rubber" (See D2, par. 4).

Example: A dependent claim depending on the example solution independent claim and being worded: "An air pump assembly according to claim 1 in combination with an air hose having a valve." In this case, there is no fall back feature for the air pump assembly already defined in claim 1 and the air hose is per se known, see par. 11 of the client's letter.

3.5 Example solution feature set for the dependent claims.

3.5.1 In this section, an example solution feature set is defined which could have been used to formulate appropriate dependent claims for an independent claim corresponding to the example solution independent claim discussed above.

3.5.2 In the example solution feature set, groups of features for dependent claims are defined, each relating to specific aspects of the invention. The marks available for each of these groups is indicated. It is however noted that there were different ways of grouping features in dependent claims whilst still achieving the full number of available marks.

3.5.3 Example set of features for developing in dependent claims, where the independent claim is according to the example solution independent claim:

- a pump actuator comprising a seat post /seat post and seat: **(2 marks)**
- a pump actuator comprising a rod and a handle: **(3 marks)**
- the rod and the handle being dimensioned such that they fit into the tube: **(2 marks)**
- the tube is a seat tube: **(3 marks)**
- the tube is a top tube: **(3 marks)**
- the assembly comprises a valve: **(2 marks)**
- the valve is in the piston: **(2 marks)**
- the valve is in the cylinder: **(2 marks)**
- the lateral through hole of the air outlet means is threaded: **(2 marks)**
- the air outlet means comprises a ring: **(2 marks)**
- the ring has an internal thread: **(2 marks)**
- the ring has an external thread: **(2 marks)**
- a plug to close the cylinder: **(2 marks)**
- a metal wall to close the cylinder: **(2 marks)**
- a bicycle comprising a pump assembly: **(4 marks)**

3.6 Up to 5 marks in total are available for any claim or claims considered to provide a useful fall back, and which are not considered in the above example list. However, the total number of marks for the dependent claims cannot exceed 35 marks.

3.7 The dependent claims appropriate for achieving fall back positions for the client may depend on the independent claim.

3.7.1 For example, an independent claim having only features a to g of the example solution would lack novelty with respect to D1. In this case a dependent claim claiming feature h of the example solution independent claim would be a very valuable fall back position and so could achieve 5 marks.

3.7.2 Some answer papers have an independent claim which is more restricted than the example solution independent claim because it includes a feature of the example solution feature set for the dependent claims (see above). In these cases, for each remaining fall-back claim, the same number of marks as for the same claim in the example solution dependent claim set are available.

3.8 For answer papers having more than 15 claims, no marks are awarded for claim 16 and onwards. Since the client will not pay any claim fees (see par. 27 of the client's letter), claims above 15 will be deemed by the EPO to have been abandoned in accordance with

Rule 45(3) EPC.

4. Description (15 marks available)

4.1 For an acknowledgement of prior art, 5 marks are available. Full marks in this section can be obtained for citing a single piece of prior art and explaining it. When the independent claim is constructed in the two part form, full marks can be awarded for a citation and a brief explanation of the cited prior art. When the independent claim is constructed in the single part form, full marks can be awarded for a citation and explanations from which it is derivable which of the features claimed in the independent claim are known from the cited prior art. See GL C III 2.3.2.

4.1.1 For the example solution independent claim, an identification and explanation of either D1 or the miniaturised air pumps mentioned in the client's letter (see for example par. 4 and fig. 2) is considered appropriate. These items of prior art relate to the general technical purpose of inflating a bicycle tyre with equipment integrated into a bicycle. Up to 5 marks are available.

4.1.2 For the example solution independent claim, a clear identification of such an appropriate piece of prior art, without any explanation can receive 2 marks.

4.1.3 For the example solution independent claim, the air pump clipped to a bicycle frame described in par. 2 of the client's letter or the items of prior art disclosed in document D2 are considered to be a less appropriate starting points for developing the invention. The air pump clipped to the frame does not provide a means for inflating a tyre which cannot fall off the bicycle. The prior art items of D2 do not relate to the general technical purpose of inflating a bicycle tyre. In these cases, an identification and a brief explanation can receive up to 3 marks.

4.1.4 For the example solution independent claim, a clear identification of such a less appropriate piece of prior art, without any explanation can receive 1 mark.

4.2 A total of 6 marks are available for a discussion of a problem. To receive all the marks available, the problem must be consistent with the prior art acknowledged in the answer paper.

4.2.1 For the example solution claim, a problem could be discussed as follows:

D1 discloses an air pump assembly comprising a bicycle frame.
The air pump assembly comprises an air reservoir in the form of a closed cylinder comprising a portion of the seat tube of a bicycle, and an electric air pump. The assembly is suitable for inflating bicycle tyres.

A problem with the air pump assembly disclosed in D1 is that, when no mains electricity supply or compressed air supply is available, the assembly can only inflate a maximum of two bicycle tyres.

4.3 A total of 4 marks is available for a discussion of a solution to the problem provided by the invention. To receive all the marks available, the solution must be consistent with the independent claim of the answer paper.

4.3.1 For the example solution claim, a solution to the above problem could be discussed as follows:

The invention as claimed solves this problem by providing a piston which can reciprocate in the cylinder defined in claim 1. This enables the manual operation of the air pump assembly for inflating a bicycle tyre. Therefore an unlimited number of bicycle tyres can be inflated without requiring an electricity supply or a compressed air supply.

EXAMINATION COMMITTEE ICandidate No.

Paper A (Electricity/Mechanics) 2010 - Marking Sheet

Category	Maximum possible	Marks awarded	
		Marker	Marker
Independent claim	50		
Dependent claims	35		
Description	15		
Total	100		

Examination Committee I agrees on marks and recommends the following grade to the Examination Board:

☐ PASS
(50-100)☐ COMPENSABLE FAIL
(45-49)☐ FAIL
(0-44)

02 July 2010

Chairman of Examination Committee I