INTELLECTUAL PROPERTY
OFFICE OF SINGAPORE

ANSWER GUIDELINES TO QE 2012 PAPER A

Note: The answer guidelines contain a non-exhaustive list of points that examiners expect candidates to cover in the answer to this Paper.

General Instruction:

Independent Method claims

This claim is intended to read onto both embodiments. A possible claim is:

A method of connecting a shaft to a hub defining a through-hole,
the method employing a connection element [of deformable material] defining a through-hole for receiving a shaft and having a convex frusto-conical surface, [the frusto-conical surface having an axis aligned with the direction through the through-hole],
the method comprising:
- threading the shaft through the through-hole of the hub and the through-hole of the connection element;
- urging the connection element between the shaft and the hub, the connection element bearing against a concave frusto-conical surface;
whereby the connection element is deformed by the concave frusto-conical surface to press against the shaft.

The marks are awarded for a claim of much this scope. No marks are removed or awarded for features, which are perhaps essential to the invention, but nevertheless are not required to define the inventive concept or achieve novelty over the stated prior art. “Deformable” may draw a clarity objection. Another such limitation would be one requiring the shaft to be smaller than the hole in the hub.

Zero marks for a claim which does not read onto at least the second embodiment. Zero marks for a claim which reads onto the prior art.

Some candidates produced a method claim which attempted to cover both embodiments while nevertheless referring to a “second connection element”. That is, they intended the expression “second connection element” to be interpreted to cover the portion of the hub in the first embodiment which surrounds the aperture. Such a claim can be marked as if it

covers both embodiments, provided there is nothing else in the method claim which prevents it doing so, but marks should be removed because the resulting wording is so clumsy. Also, to benefit from this, it is necessary that there is something in the patent specification which indicates that the method claim is expected to cover both embodiments, e.g. a sub-claim which says that the "second connection element" is a portion of the hub, or usage of the term "second connection element" in relation to the first embodiment.

Marks are not removed or awarded for specifying the various dimension requirements (e.g. as given in the question paper "$d_6>d_5$, $d_6>d_2$"). That is because the limitations do seem to be required in workable embodiments, and yet they do not seem to be required for the claim to be clear. However, they are removed if the candidate makes a mistake in doing this, such that the claim becomes unclear, and remove marks if the candidate includes the limitation $d_5>d_2$, which is only said to be "typically" true.

Remove marks if the claims does not get across the idea that the surfaces are sloping relative to the axis of the shaft. They do not have to actually use the word "frusto-conical". Indeed, it might be possible to come up with an embodiment in which the surfaces are not frusto-conical but rather flat surfaces inclined to the axes of the through-hole and shaft; but no marks should be removed for not saying that the surfaces are frusto-conical.

Remove marks for a claim which does not imply that the connection element is deformed. It is not enough for the claim to say that connection element is pressed against the concave surface: no connection is made to the shaft until the connection element is deformed to touch it, so this does not work.

Do not remove any marks merely for referring to the screws, though of course marks should be removed for unnecessary limitations concerning the screws (e.g. that there are threaded holes in the hub (which means that the second embodiment is not covered), or that there are two screws).

<u>Dependent method claims</u>

The following features should be dependent claims. None of the following marks are awarded if the feature is mentioned instead in the independent method claim.

(a) The frusto-conical inner surface is on a second connection element provided in the aperture of the hub, and which is itself deformed outwardly by the urging motion.

(b) The connection element is urged by the tightening of screws.

(c) The screws pass through through-holes in the first connection element.

Independent Apparatus Claims

In view of the inventor's comment that the element 5 is "available in any workshop", no worthwhile apparatus claim to the first embodiment can be written, because it would just be the standard element 5 (plus two screws). Remove marks from a candidate who includes such a claim.

The second embodiment should be claimed, e.g. as follows:

A kit for connecting a shaft to a hub, the kit having:

a first connection element having a convex frusto-conical surface, and defining a through-hole;

a second connection element, the second connection element defining a cavity for receiving the first connection element with the convex frusto-conical surface of the first connection element facing a concave frusto-conical surface of the cavity, and the second connection element having an outer surface encircling said cavity;

whereby, upon the first connection element being positioned around a shaft, and the second connection element being located in a through-hole defined by a hub, the first connection means can be urged into the cavity of the second connection element, thereby deforming the second connection element outwardly against the hub, and deforming the first connection element inwardly against the shaft, to form a frictional connection between the hub and the shaft.

This scores marks. Marks off for referring to screws, the hub and/or the shaft, since the

question is clear that none of these will be sold as part of the kit, and there is no contributory infringement in Singapore. Marks off if the claim specifies which of the connection elements has the threaded holes (they could be on either connection element; or indeed they could be on further elements (not shown) which could be used to press the connection elements together). Marks off if the claim does not refer to deformation in any way. Also, marks off if the claim does not refer to sloping in any way.

The marks can alternatively be awarded to two independent claims directed to the respective connection elements on their own, provided that the claim is novel compared to the element 5. An example for the first connection element is:

> A connection element for use in an apparatus for connecting a shaft to a hub, the connection element having a body defining:
> - a through-hole for receiving a shaft;
> - an frusto-conical outer surface;
> - one or more through-holes for receiving screws;
>
> whereby, using screws received in the through-holes, the frusto-conical outer surface of the connection element can be urged against a frusto-conical concave surface of a second connection element located within an aperture of the hub, to deform the connection element against a shaft located in the through-hole.

Dependent apparatus claims

No additional marks are given for dependent apparatus claims, but the marks given above for dependent claims (b) and (c) can be awarded irrespective of whether the dependent claims are dependent to the method or to the apparatus.

Description

Field of the invention

Background of the invention (largely copied from question) . The mark is only awarded if

it includes a statement that the invention aims to solve a problem. This problem may be stated very generally (e.g. “to provide a new and useful way of connecting a shaft to a hub”, or “to address at least one of the problems of the methods stated above”).

Summary of the invention

- This should include paragraphs mirroring the two independent claims, lines explaining what the point of these features is, and a paragraph for each of the 3 dependent claims explaining the advantage of the feature. No marks are subtracted in this section for any problems with the claims themselves.

Description (largely copied from the question). If the description of the embodiments is repeated verbatim from the question paper, only one of the available marks is awarded. The other marks are awarded for adding a little more, such as using the word “embodiments” correctly instead of just “proposal”. Remove mark if the erroneous reference numeral (“hole 22”) is retained in the second line of the paragraph starting “The usage of the elements 20, 21…”.). Note that a candidate who complete omits the figures, or description and figures, will not fulfill the enablement requirement, and automatically fails the paper.