British Horological Institute

Examiner's Report

Certificate in Clock and Watch Servicing

Unit 1 : Technician Grade : Theory of Clock and Watch Servicing

Seventeen candidates submitted scripts for assessment. A broad range of ability was demonstrated, with the proportion of Passes and Pass with Merits similar to the long term average.

Several candidates failed to attempt the correct number of questions. Three candidates answered only three long questions, instead of four, and one candidate answered as many as six questions. If a candidate answers too many questions, marks are only awarded for the first four questions. One candidate did not submit the short answer section.

Section A – Clocks and Clock Servicing

Q1 Pivots and Bushing. (8 candidates) Unfortunately few candidates gained good marks. All knew the basic principles but many answers were too brief; most described the use of the bushing tool, for fitting a new bush, and were clearly familiar with its correct use. Many candidates lost marks because detail was lacking in some of the steps.

Q2 Going Train and Motion Work. (9 candidates) All the candidates produced accurate diagrams of a typical going train; some had difficulty finding the rotation periods of the arbors from the tooth numbers given. Sketches of the motion work were generally good, with some excellent drawings. In some instances, however, the diagrams were incorrectly labelled or lacked the essential detail of the friction spring bearing against a shoulder.

Section B – Watches and Watch Servicing

Q3 Quartz Watch Movement. (4 candidates) Two candidates were able to draw a correct circuit diagram but the other two contained a number of errors. Fault identification and correction were generally poorly understood, but the procedure for replacing the battery was well known.

Q4 Incabloc settings and motion work. (11 candidates) All candidates showed an understanding the basic construction of the incabloc setting, but none accurately showed the correct location of the retaining spring. Most failed to show a full understanding of the principles of its action. Sketches of the motion work and friction drive were often poorly proportioned with most candidates again showing a good overview of the arrangement, but a lack of detailed knowledge.

Section C – Escapements

Q5 Lever Escapement. (10 candidates) The quality of drawings was often good but some were very poor. Most showed the required items labelled correctly. Descriptions of the action were in some instances vague but sometimes excellent. Knowledge of its action varied widely.

Q6 The Recoil Escapement. (7 candidates) There were some very good sketches but most showed an incorrect tooth form or pallet shape or both. Explanations of recoil, impulse and drop indicated that most candidates had only an overview of the action rather than knowledge in depth. All showed a workable arrangement for linking the pallets to the pendulum, but few took the opportunity to display knowledge of several different methods.

Section D – Workshop Processes

Q7 Watchmaker's Lathe. (11 candidates) Candidates were required to briefly describe the use of five attachments and give a detailed account of the use of the split collet. The question was not well answered, many described the design and appearance of the attachment, rather than its use; consequently, many possible marks were lost.

Q8 Workshop tools and solders. (5 candidates) There was little understanding of what was required by way of explanation in the use of the four tools; small screwdriver, tweezers, screwplate and nippers. Answers were invariably vague. Candidates also displayed little or no experience in the use of hard or soft solder with some answers not conforming to normal practice.

Section E - Short Answers

Many high marks were scored on this section, with most able to answer most of the twenty questions correctly. Surprisingly, the difference between mild and high carbon steel was not well known, (Q11) and few were able to give another word for elasticity, (Q16).

Unit 2 : Technician Grade : Basic Practical Workshop Processes

Candidates were required to make a Vienna sized hour snail, fitted to a collet and rotating on a blued post. A range of skills are necessary to completing the piece including turning brass, blueing steel, cutting a screw thread, flush riveting, filing a square and polishing flat and turned brass surfaces.

The assessment was based on the three categories of Dimensional Accuracy, Quality of Workmanship and Quality of Finish. Sixteen pieces were submitted for assessment.

Dimensional Accuracy was not of the same standard as in previous years; only 75% of the dimensions that were assessed falling within or just outside tolerance. The most accurate dimension measured was the height of the base of the post (2.2mm), within tolerance in all but three cases, which were just outside. The least accurate was the radius of the lowest step in the snail (5.2mm.) Only three were with tolerance. Step heights in general were often unequal and not accurately radiussed. Side and end shakes were also disappointing with only two candidates having both within acceptable limits.

Quality of Workmanship was variable. Candidates found the steps in the snail difficult to form well. The curves were often irregular and the filing of sharp inside corners proved difficult. Bevelling the edge of the large step often caused damage to the adjoining surface and none produced a truly flat face and straight edge.
The collet was usually neatly riveted to the snail with a tight, flush fit without bruising the components. The posts were well formed with parallel sides, square shoulders and correctly chamfered bases. In many cases, however, the threads were not well formed, especially the rounded undercut, and some pin holes were off centre. Taper pins seldom protruded equally on both sides when fully tight.

Quality of Finish The flat surfaces of the snail were, in most cases, well polished. The edges, however, were not of the same standard with file or abrasive marks still very much in evidence, especially in the corners. The ends of the post were generally well polished, but many failed to achieve a high polish on the curved surface. The square base was not well finished with abrasive marks remaining on the top and sides of most examples. In nearly all cases the underside of the base was left unfinished. Candidates should be aware that bluing must be done by heat treatment, in the traditional manner. No marks are awarded for the use of blue lacquer.

Unit 3 : Technician Grade : Technical Drawing

Candidates were required to prepare a drawing of a fly assembly consisting of four elevations including a sectional elevation. Five dimensions were required for two elevations together with a title block.

The principle of projecting the various elevations from the front elevation was correctly applied for the plan but generally not followed for the side elevation and the sectional elevation.

The general standard of lettering was adequate but sometimes poor; this is an area where more emphasis is required. It is not just a last minute addition to a drawing but an important and integral part of conveying the full meaning of the drawing and its contents. Dimensioning was generally good although many candidates did not have ten dimensions present as requested in the examination paper.

Marks are awarded for layout which requires a little prior planning to ensure the elevations are correctly centred on the page.

The basic conventions for drawing are carefully assessed by the Examiner. The clarity and presentation of a drawing is very dependant upon the contrast between the different types of lines and this could be much improved. Joining of lines, particularly straight and curved lines, was poor. Hidden detail was generally present but some drawings did not show the dashed lines correctly joining the outline. The cutting plane or marking of the section was only shown properly by two candidates.

Gears require the pitch circle to be shown correctly to indicate that it is a gear but only two candidates demonstrated a full knowledge of this basic convention.

A number of candidates did not understand how the fly was to be assembled. It was expected that most candidates would be familiar with a fly assembly but in many drawings the components were not correctly positioned. Sometimes the boss on the fly was touching the pinion. Accurate measurements would have ensured that if the flyspring was correctly placed in the groove in the arbor there would be sufficient clearance.

Many candidates showed little attention to detail, pivots were very poorly drawn omitting curved/straight lines and flush countersunk rivets were absent.

Unit 4 : Technician Grade : Practical Clock / Watch Servicing

Six candidates submitted a Record of Repairs for the Technician Grade; there was a range of different types of clocks and the documentation was complete and signed by a professional member of the Institute.

The Examiners exercise considerable care to ensure that there can be no error in the final mark awarded. If, however, you believe that a mistake has occurred then you may request that your paper be assessed again. The charge for remarking is £40.00 per unit, which must accompany the request. This should be received on or before 31st August 2007. The fee will be returned if it is found that as a result of the appeal process the outcome of the examination (i.e. Pass / Fail or Pass / Pass with Merit) is changed.