

SUMMER EXAMINATIONS 2000

**HIGHER DIPLOMA IN APPLIED SCIENCE
(MICROBIOLOGY)**

PAPER 1

EXTERN EXAMINER: PROFESSOR C M BROWN
INTERNAL EXAMINER : Internal Examiners

TIME ALLOWED : 3 HOURS

**(INDICATE CLEARLY THE QUESTIONS ANSWERED ON THE
FIRST PAGE OF YOUR ANSWER BOOK)**

ANSWER FIVE QUESTIONS

- Q.1. Write an essay on the Quality Management System ISO 9000 series.
- Q.2. Describe antibody production by B cells, with particular reference to the production of IgG or IgM antibodies.
- OR
- Outline the production, properties and uses of monoclonal antibodies.
- Q.3. Describe the methodology of the polymerase chain reaction (PCR).
List its potential applications, and include two specific examples of PCR-based diagnostic tests.
- Q.4. Write an essay describing how one could clone the messenger RNA (mRNA) population of a typical eukaryotic cell.
- Q.5. Write a standard operating procedure (SOP) detailing the isolation, enumeration and confirmation of *E.coli* by the Multiple Tube (MPN) technique.
- Q.6. Write an essay on 'QA and QC in Good Manufacturing Practice'.
- Q.7. Outline procedures used for the lyophilisation of bacterial cultures. What advantages does lyophilisation confer over other methods of preservation?
- Q.8. Write an essay on the MF (membrane filtration) sterility test. Compare and contrast its advantages and disadvantages, as compared with the DT (direct transfer) method.
- Q.9. Write notes on TWO of the following:
- (a) Testing solutions for injection for the presence of particulates.
 - (b) Isolators and their use to the parenteral manufacturer.
 - (c) Air monitoring in clean/sterile production facilities.