

Answers to revision questions for NGC2 element 5

Answers to questions 1–8 are to be found in the study material

Answer 9 Definitions

- Competence is defined by The Electricity at Work Regulations 1989: those working on electrical equipment must have the necessary knowledge and experience or be under appropriate supervision. Maybe you feel that this is a slightly evasive or circular definition but you try to think of a better way of expressing the concept of competence.
- Earthing ... very low resistance electrical connection to the Earth, which, in the event of a fault will allow excess current to flow away; this flow to earth should trigger the operation of a safety device such as a fuse or a rcd.
- Insulation ... material of such a high electrical resistance that no electrical current will flow through it.
- Protection ... the usual meaning of the word - as we have stressed, protection which is appropriate to prevent irreparable damage to a piece of equipment (for example, a fuse) may be insufficient to prevent irreparable damage to a person (the very rapid circuit breaking action of a rcd is needed to protect people).
- Reduced voltage ... most types of electrical power tool can be produced in versions which operate off 110 volts rather than the normal mains 230 volts. Because of the way the electrical circuits for such equipment are constructed ('centre-tapped'), in effect the voltage to which a victim might be exposed is reduced by a factor of four. However, because 55 volts is still capable of producing a fatal shock, other forms of protection (rcd) will still need to be incorporated in the electrical circuit.
- Excess current protection ... if excess current is flowing in an electrical circuit, something is wrong, and devices such as the fuse and the rcd are needed to provide the required level of protection.
- Residual current device ... very fast acting electrical device which will break the circuit if it detects that electrical current is any way being 'spilled' from the circuit - that is actually the significance of the word 'residual'. Please speak to your tutor or phone us in Chichester if you wish to discuss further.
- Duty holders ... we can identify three groups of duty holder, namely: employers, self-employed people and employees each with their specific duties which relate to matters which are within the control of each of these groups; the Regulations require employer / employee co-operation when this is necessary.

Answer 10 Double insulation is an appropriate form of protection in equipment which no exposed metal parts may not need to be bonded to earth (earthed) and the electrical circuit will comprises line (brown) and neutral (blue). The second level of insulation ('double insulation') in such equipment may be provided by plastic casing of the equipment.

