Engineering Questions by Topic

Ordinary Level

Question 6

45 Marks

1996 Question 6

(a) Explain the meaning of the following centre lathe terms:

(i) leadscrew;
(ii) travelling steady;
(iii) face plate;
(iv) mandrel.

(b) With the aid of sketches describe the mechanism of a 3-jaw self centring chuck.

(c) Why are chucks usually supplied with two sets of jaws?

(d) What is meant by the terms, **rake** and **clearance** as applied to cutting edges?

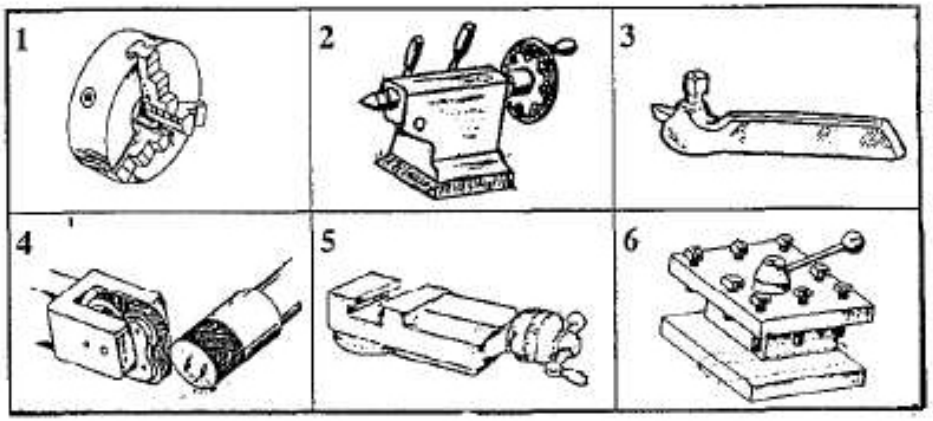
OR

Explain **three** of the following terms associated with the CNC lathe:

(i) the types of co-ordinates used;
(ii) safety switch;
(iii) spindle start forward;
(iv) linear interpolation.

1997 Question 6

(a) Identify **the six** illustrations.



(b) Describe with the aid of a sketch, how you would use a mandrel when turning a piece of work.

(c) Name **three** methods of taper turning.

OR

(c) Explain the following terms associated with a CNC lathe and use simple line diagrams to illustrate your answer.

(i) Incremental Co-ordinates;

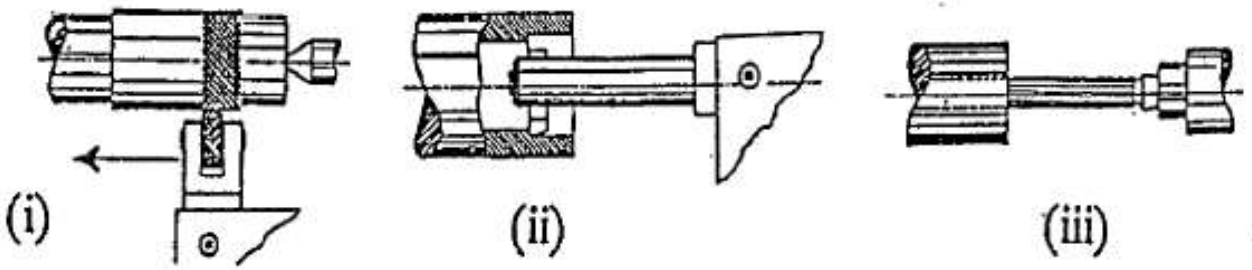
(ii) Absolute Co-ordinates;

(iii) Tool Park Position;

(iv) Linear interpolation.

1998 Question 6

(a) Name the lathe processes shown and give an application for each:



(b) Name **two** safety precautions to be observed for each of the lathe processes shown above.

(c) With the aid of a diagram show how the tailstock is guided along the bed of the lathe.

(d) Make a simple sketch of the centre lathe to indicate the following:

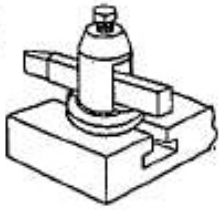
(i) Swing; (ii) Distance along bed; (iii) Distance between centres.

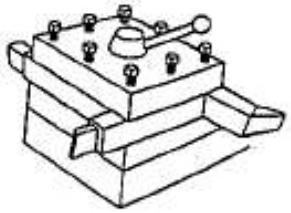
OR

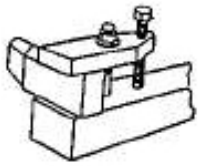
(d) Name the three planes of movement in a Computer Numerical Control (CNC) lathe.

1999 Question 6

(a) Name the **three** lathe toolposts and give one advantage and one disadvantage for the use of each one in the workshop.

(i) 

(ii) 

(iii) 

(b) Name **two** methods of taper turning using the centre lathe and explain **one** method with the aid of diagram and note.

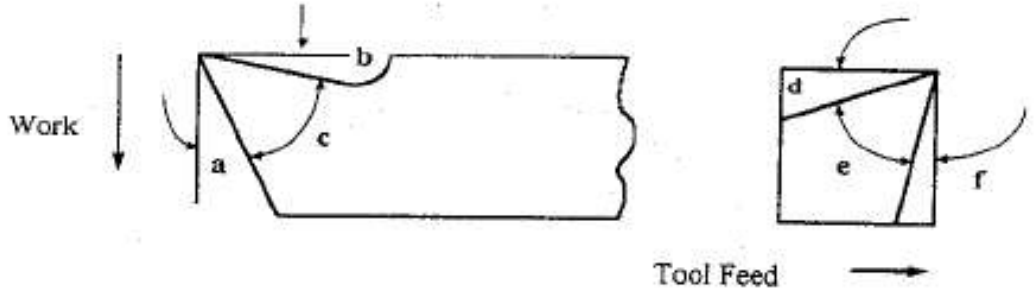
(c) Name **three** safety precautions when operating the centre lathe.

OR

(c) What are the main advantages of operating a lathe by Computer Numerical Control (CNC) over a manual controlled lathe?

2000 Question 6

(a) Identify the tool angles a, b, c, d, e, f

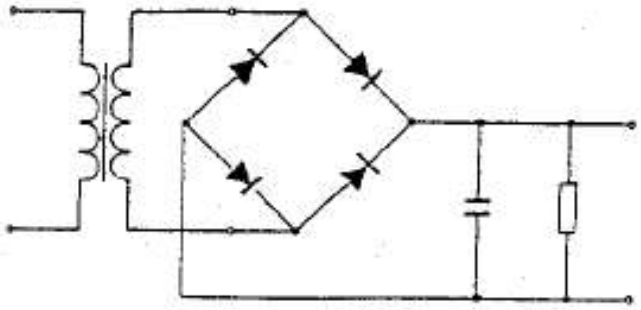


(b) Explain the function of the following lathe components:
(i) Compound slide; **(ii)** A combination drill; **(iii)** A knurling tool.

(c) Name **two** safety precautions to be observed when operating the centre lathe.

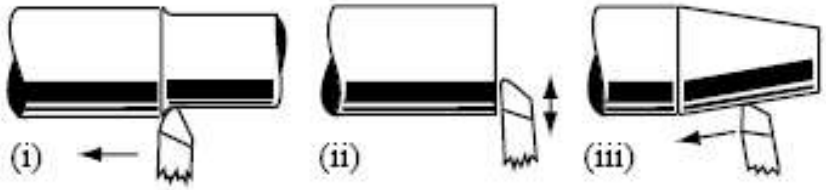
OR

(c) Explain how the power supply circuit shown in the diagram operates.



2001 Question 6

(a) Name the lathe turning operations shown.



(b) Describe **one** of the following work holding methods used in machining, and state the type of work machined.

(i) Between centres; (ii) Mandrel; (iii) Independent jaw chuck.

(c) Sketch a lathe cutting tool, showing the following angles:

(i) Top rake; (ii) Front clearance; (iii) Side clearance.

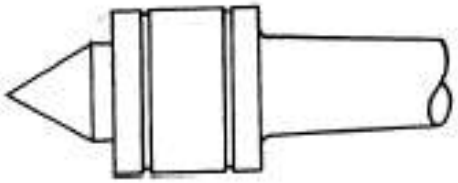
OR

(c) Name **three** advantages of a CNC lathe over a conventional lathe.

2002 Question 6

(a) Name the lathe tools shown and explain the function of **one**.

(i)



(ii)

(b) State **two** uses for a lathe tailstock.

(c) What is the purpose of reaming?

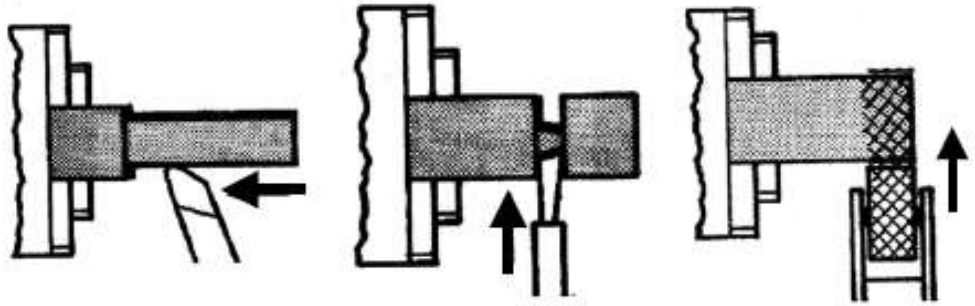
(d) Give **two** reasons why the bed of a lathe is made from cast iron.

OR

(d) List **two** advantages of using a CNC lathe as compared to a conventional lathe.

2003 Question 6

(a) Identify the turning operations shown:



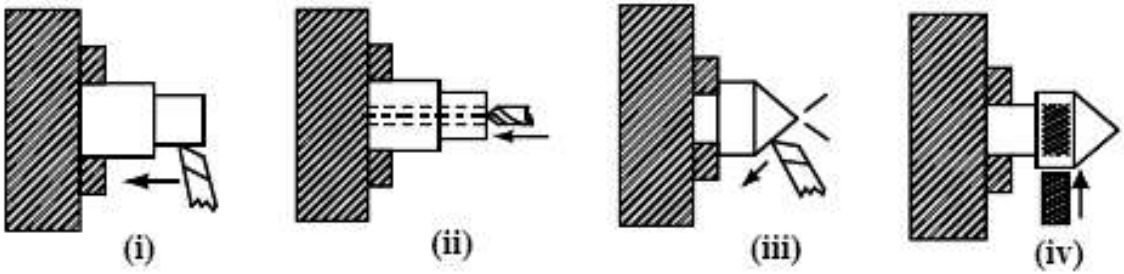
(i) **(ii)** **(iii)**

(b) Explain the necessity for clearance and rake angles on a lathe cutting tool.

(c) Name **three** methods of taper turning on the centre lathe and explain **one** method with the aid of a diagram and note.

2004 Question 6

(a) Name **any three** of the lathe operations shown in the production of the Plumb Bob.



(b) Describe **any two** of the following in relation to machining:

(i) Coolant; **(ii)** Clearance angle; **(iii)** Depth of cut; **(iv)** Cutting speed.

(c) Name the type of chuck shown and identify **two** other workholding methods used on the lathe.

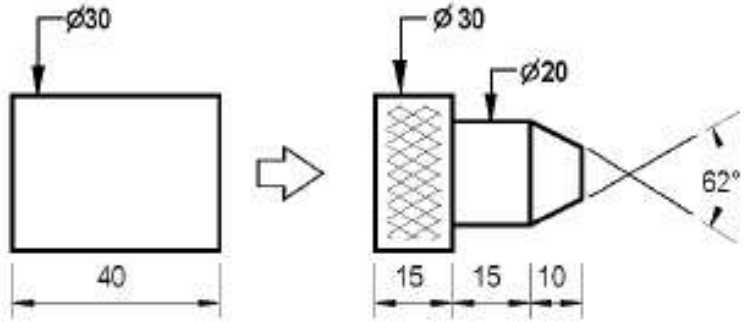
OR

(c) What is meant by **any three** of the following CNC terms:

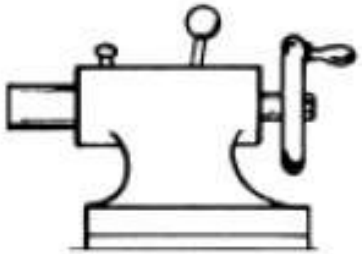
(i) Simulation; **(ii)** Safety switch; **(iii)** G Codes; **(iv)** CAD/CAM.

2005 Question 6

(a) The part shown is to be turned on a centre lathe from a 30 mm diameter aluminium bar. Name **three** of the turning operations used during its production.



(b) **(i)** Identify the lathe component shown opposite.



(ii) Describe **two ways** in which it may be used on the lathe.

(c) Explain **any two** of the following terms:

(i) Rake angle, **(ii)** Centre drill, **(iii)** Clearance angle.

OR

(c) Describe **two** advantages in using a CNC lathe instead of a manual lathe.

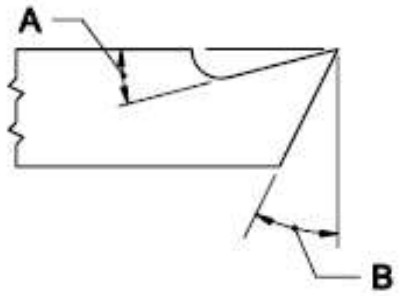
2006 Question 6

(a) Describe a suitable application for **any three** of the following lathe parts:

(i) Faceplate, **(ii)** Three jaw chuck, **(iii)** Knurling tool, **(iv)** Four jaw independent chuck.

(b) **(i)** Name the tool angles indicated on the lathe cutting tool shown.

(ii) State the purpose of **one** of the tool angles indicated.



(c) Describe, using sketches, **any two** of the following turning operations:

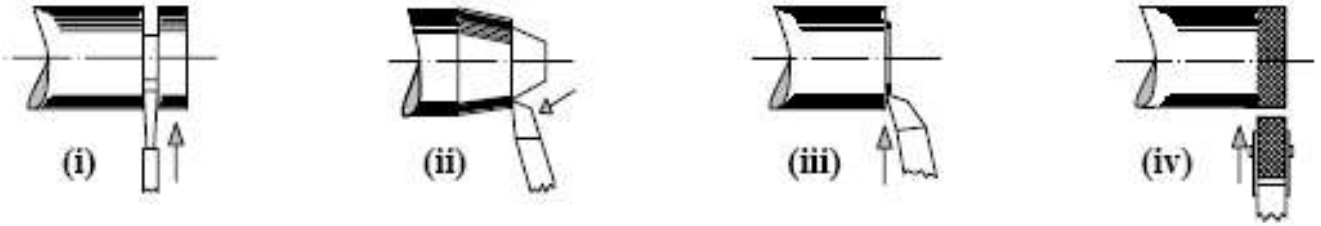
(i) Parallel turning, **(ii)** Taper turning, **(iii)** Facing.

OR

(c) Identify **two** safety precautions to be taken when machining on a CNC lathe.

2007 Question 6

(a) Name **any three** of the lathe turning operations shown below:



(b) Describe **any three** of the following terms associated with drilling:

(i) Pilot hole, **(ii)** Countersink hole, **(iii)** Clearance hole, **(iv)** Blind hole.

(c) Sketch a lathe cutting tool showing **any two** of the following angles:

(i) Top rake, **(ii)** Front clearance, **(iii)** Side clearance.

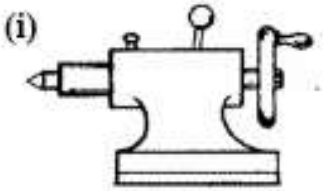
OR

(c) Explain **any two** of the following engineering technology terms:

(i) CAM, **(ii)** CNC, **(iii)** CAD.

2008 Question 6

(a) Identify **any three** of the lathe parts shown:

(i) 

(ii) 

(iii) 

(iv) 

(b) **(i)** Describe, using sketches, **any one** of the following lathe turning operations:

Taper turning, Knurling, Drilling.

(ii) State **two** safety precautions to be observed for the turning operation selected at **6(b)(i)**.

(c) State **two** reasons why a lathe cutting tool must be set on centre before machining.

OR

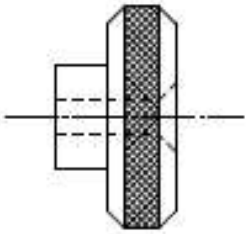
(c) Explain **any two** the following terms in relation to a CNC lathe:

(i) Emergency stop, **(ii)** Simulation, **(iii)** Stepper motor.

2009 Question 6

(a) The model car wheel shown is to be turned on a centre lathe.

Name **three** turning operations used in the production of the car wheel.



(b) **(i)** Describe **any one** of the following work holding methods used on the lathe.

Four jaw independent chuck, Fixed steady, Faceplate.

(ii) State a suitable safety precaution to be observed for the work holding method selected at **6(b)(i)**.

(c) In relation to machining, describe **any two** of the following terms:

(i) Rake angle, **(ii)** Coolant, **(iii)** Tailstock.

OR

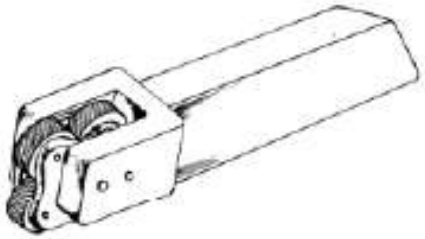
(c) Explain **any two** the following CNC lathe terms:

(i) Safety switch, **(ii)** G code, **(iii)** CAD/CAM.

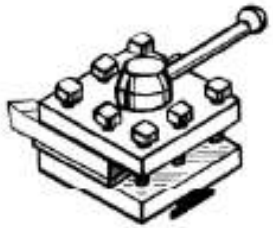
2010 Question 6

(a) Identify **any three** of the lathe parts shown:

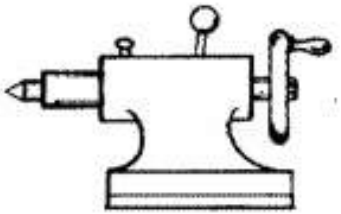
(i)



(ii)



(iii)



(iv)

(b) Explain **any three** of the following in relation to machining:

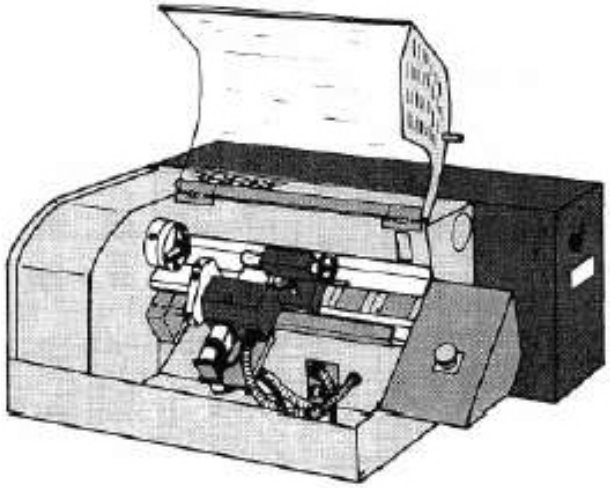
(i) Chuck key, **(ii)** Feed, **(iii)** Swarf, **(iv)** Clearance angle.

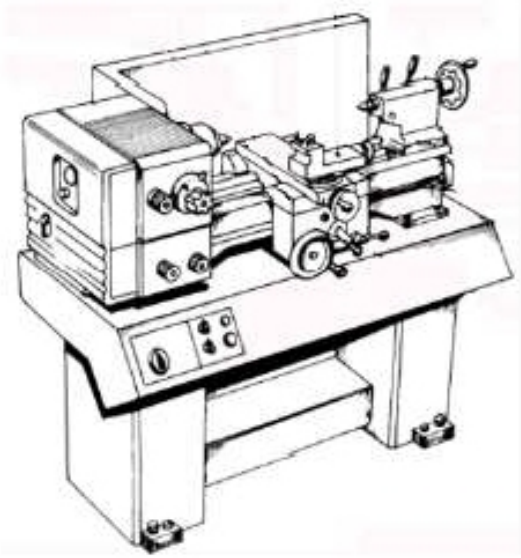
2010 Question 6 cont.

(c) Describe **one** method of taper turning on a centre lathe and identify **one** safety precaution to be observed when taper turning.

OR

(c) Identify **three** advantages of a Computer Numerical Controlled (CNC) lathe over a Manual lathe.





2011 Question 6

(a) Name **any three** of the lathe work-holding methods shown.

(i)

(ii)

(iii)

(iv)

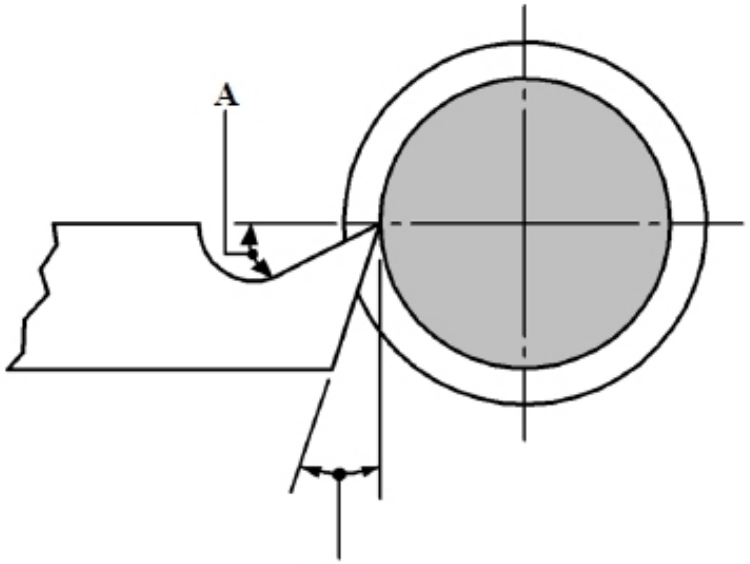
(b) **(i)** State **two** reasons for using cutting fluids when machining.

(ii) List **one** safety precaution to be observed when using cutting fluids on the centre lathe.

2011 Question 6 cont.

(c) (i) Name the cutting-tool angles labelled **A** and **B**.

(ii) State the function of **any one** of the cutting-tool angles **A** and **B**.



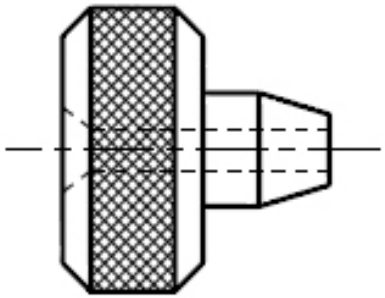
OR

(c) Explain **any three** of the following Computer Numerical Control (CNC) machining terms:

(i) CAD, (ii) Simulation, (iii) G codes, (iv) CNC program.

2012 Question 6

(a) The control knob shown is to be machined on a centre lathe or on a CNC lathe. Describe **any three** of the operations used to produce the control knob.

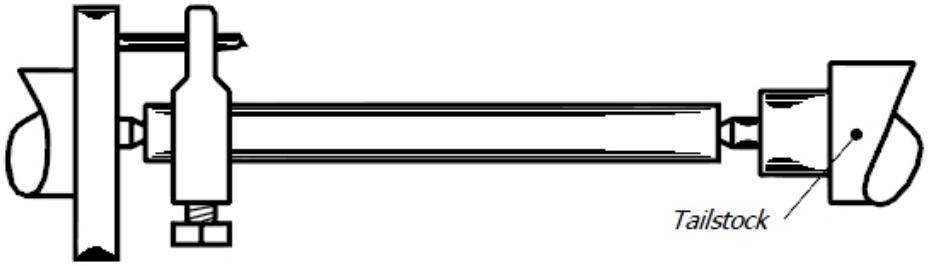


(b) Describe **any three** of the following in relation to machining:

(i) Cutting speed, **(ii)** Depth of cut, **(iii)** Feed, **(iv)** Clearance angle.

2012 Question 6 cont.

(c) A work-holding method used to turn long shafts on a centre lathe is shown.



(i) Name the work-holding method shown.

(ii) Name **two** other methods of work-holding on the lathe.

(iii) State **one** safety precaution to be observed when turning long shafts on the centre lathe.

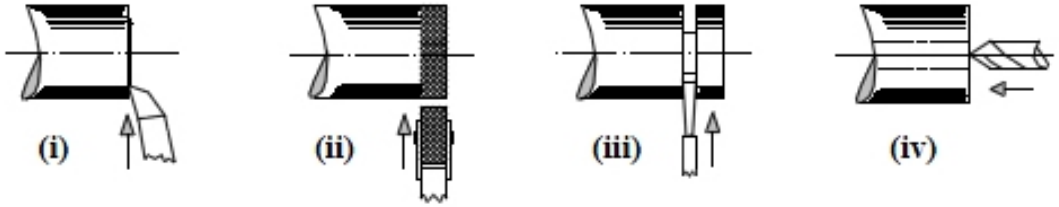
OR

(c) Explain **any three** of the following Computer Numerical Control (CNC) machining terms:

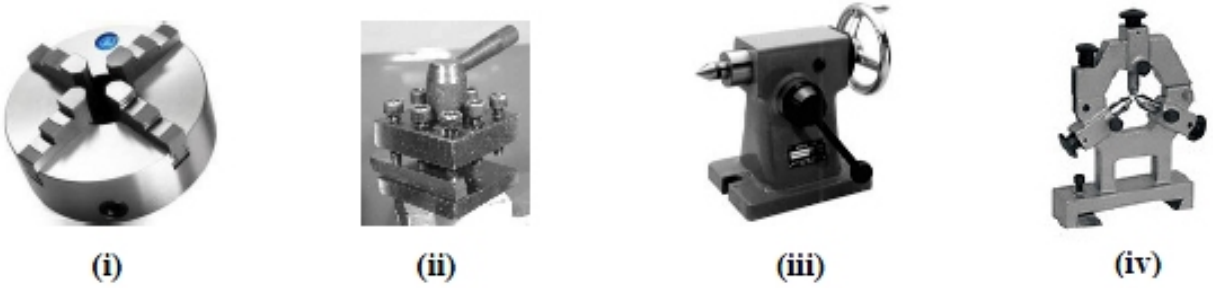
(i) CAD/CAM, **(ii)** Z Axis, **(iii)** G Codes, **(iv)** Canned cycle.

2013 Question 6

(a) Name **any three** of the lathe operations shown.

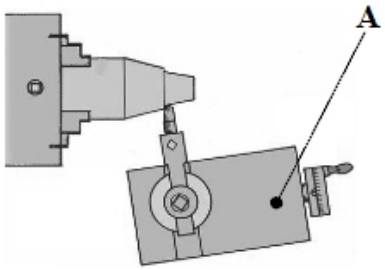


(b) Name **any three** of the lathe parts shown and give **one** use for **each** part named.



2013 Question 6 cont.

(c) A turning process used on a centre lathe is shown below.



(i) Name the turning process.

(ii) Name part **A** used in the turning process.

(iii) State **one** safety precaution to be observed when using the turning process in **6(c)(i)**.

OR

(c) Name **any three** of the parts labelled **A**, **B**, **C** and **D** on the Computer Numerical Controlled lathe shown.