**Design & Technology**

**Printing**

**Materials required for questions**

* Pencil
* Rubber
* Calculator

**Instructions**

* Use black ink or ball-point pen
* Try to answer all questions
* Use the space provided to answer questions
* Calculators can be used if necessary
* For the multiple choice questions, circle your answer

**Advice**

* Marks for each question are in brackets
* Read each question fully
* Don’t spend too much time on one question

**Good luck!**

**Q1.** Offset lithography is a process used in which scale of production?

**A** Mass scale

**B** Continuous

**C** Batch

**Q2.** What are the four colours used in offset lithography printing?

**A** Cyan, red, yellow and black

**B** Cyan, magenta, yellow and black

**C** Blue, magenta, yellow and black

**Q3.** When printing commercially, what is a registration mark used for?

**A** To check alignment of paper during print process

**B** To show where to cut paper after print

**C** To indicate that a registered trademark logo has been used

**Q4.** Which of the following is most suitable for batch process?

**A** Offset lithography

**B** Flexography

**C** Screen printing

**Q5.** Which of these is a characteristic of gravure printing?

**A** Cheap set up cost

**B** Short print runs

**C** Quick print times

**Q6.** Give **three** reasons why the use of biodegradable ink is beneficial when printing on packaging **(3 marks)**

Reason 1:

Reason 2:

Reason 3:

**Q7.** Explain the screen printing process. Include both notes and sketch(es) in your answer **(5 marks)**

**Q8.** Explain **two** advantages of flexographic printing **(2 marks)**

**Q9.** Describe, using annotated sketches, the process of printing using flexography **(4 marks)**

**Q10.** Explain **two** advantages of using flexography rather than gravure for printing on commercial packaging **(6 marks)**

**Answers**

**Q1.** A **Q2.** B **Q3.** A **Q4.** C **Q5.** C

**Q6.**

Any **three** from:

* Less likely to smudge (1)
* Do not contain toxic elements (1)
* Do not smell as they are not mineral based (1)
* Completely safe and do not require safety labelling (1)
* Less ink required as they flow more efficiently than conventional inks (1)
* More vivid/stronger colours (1)

**Q7.**

An outline covering **five** of the following:

* Material to be printed placed on base (1)
* Template made from card with required design placed on top of material (1)
* Screen placed on top of template, made from stretch nylon fabric and wood frame (1)
* Ink squeezed onto nylon fabric (1)
* Rubber blade spreads ink out and push through fabric and template onto material (1)
* Printed pattern can now be seen on material (1)

Maximum **four** marks if the stages are not in the correct order

**Q8.**

Any **two** from:

* Economic on long print runs (1)
* Fast (1)
* Low maintenance cost, low breakdown rate (1)
* Can be combined with web-fed systems which is much cheaper and faster than sheet fed (1)
* Fast drying inks (1)

**Q9.**

* Diagram showing 4 rollers with media in the correct position (1)
* Correctly labelling all 4 cylinders in the correct order (1)
* Ink pan/fountain sources ink for fountain roller/cylinder (1)
* Ink transferred to the plate cylinder using rollers (1)
* Doctor blade removes excessive ink (1)
* Ink is transferred to the media by pressure applied by the impression cylinder/roller (1)

Diagram of a cylinder with text

Description automatically generated

If no sketch, or a sketch without labels, award a maximum of **two** marks

**Q10.**

Any **two** of the following explanations that include identification of an advantage (1) and linked justifications of that advantage (1) + (1):

* Printing plates can be made from solid or liquid photopolymer (1) whereas gravure needs an engraved copper plate (1) this means that flexography has lower start-up costs / overall is a quicker start-up (1)
* Flexography prints onto sheet material (1) whereas gravure is fed from material on a roll (1) making flexography more versatile for printing on different media/mountable on uneven surfaces (1)
* Flexography can be used on shorter print runs (1) as it is able to respond to changes in demand / has shorter lead times (1) enabling greater flexibility and varied use of the process (1)