



1. (i) *Advantage of aspirin:*
prevents (recurrence of) heart attack/stroke / anticoagulant / reduces fever/inflammation;
- Disadvantage of paracetamol:*
may cause blood disorders/kidney damage / (overdose can cause serious) liver damage/brain damage/death / does not reduce inflammation; 2
- Do not accept increased toxicity when consumed with ethanol.*
Do not accept the same argument for advantage of aspirin and disadvantage of paracetamol.
Do not accept answers which refer to disease (i.e. reduces heart disease, causes kidney disease) or cancer.
Penalize additional incorrect answers if more than one advantage or disadvantage is stated.
- (ii) increased risk of stomach bleeding; 1 [3]
2. (i) administered by injection; 1
- (ii) (temporarily) bond to receptor sites in the brain/CNS;
prevent the transmission of pain impulses; 2
- (iii) ester; 1 [4]
3. (a) prostaglandins are involved in the transmission of pain impulses
(to the brain) / *OWTTE*; 1
- (b) morphine (temporarily) bonds to/inhibits receptor sites in the brain
(without depressing central nervous system) / *OWTTE*; 1
- (c) causes blood disorders;
causes damage to kidney;
causes damage to liver;
causes damage to brain; 2 max
- (d) preventing (recurrence of) heart attacks/strokes / reduces blood clotting / thins the blood / anti-inflammatory; 1
- (e) (i) phenol / alcohol / hydroxyl; 1



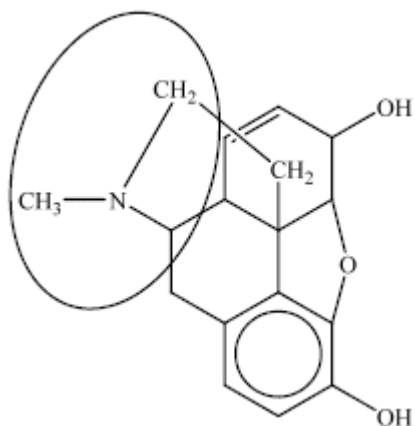
- (ii) ester; 1 [7]
4. ethanoic acid / ethanoic anhydride / ethanoyl chloride;
Accept formula instead of name.
diesterification / esterification / condensation; 2 [2]
5. *Differences:*
(two) hydroxy(l)/alcohol and phenol groups are esterified/replaced with ester/ethanoate/ acet(y)oxy groups / *OWTTE*;
Accept formulas instead of group names.
Functional groups: [2 max]
hydroxy(l)/alcohol/phenol;
ether/oxa;
(tertiary) amine/amino;
double bond/alkene;
aromatic/benzene ring/phenyl/aryl; 3 max [3]
6. (a) *Mild analgesics:*
suppress the production of prostaglandins/pain-sensitizing substances /
intercept the pain stimulus at the source;
Strong analgesics:
bind to (opioid) receptors in the CNS/central nervous system/brain /
suppress the transmission of pain impulses to the brain / *OWTTE*; 2
- (b) *Advantages: [2 max]*
strong(er) analgesics / relieve acute/extreme pain;
wide therapeutic window / *OWTTE*;
relieve anxiety / induce relaxation / improve the quality of life;
intravenous/faster distribution of drug;
Disadvantages: [2 max]
euphoria / lack of self-control / dangerous behaviour;
addiction/dependence / withdrawal symptoms;
tolerance / increased risk of overdose upon prolonged use;
kidney/renal failure;
risks associated with intravenous drug administration;
Accept other side-effects (including drug-specific for different opiates). 4 max [6]



7. *Advantage: [1 max]*
does not affect stomach/ulceration/bleeding;
does not give allergic reactions;
does not give Reye's syndrome;
- Disadvantage: [1 max]*
causes blood disorders;
causes kidney damage;
liver damage;
brain damage;
- 2 max
- [2]**
-
8. (i) amine;
ether;
alkene;
benzene ring;
Do not allow arene.
Allow phenyl (ring or group) or benzene.
Allow structural representation of functional group instead of name
(e.g. C=C instead of alkene).
- 2 max
- (ii) phenol / alcohol / hydroxyl (group);
Allow OH.
- 1
- (iii) (di)esterification / condensation / (di)acetylation;
- 1
- [4]**
-
9. (a) aspirin useful in preventing the recurrence of heart attacks/strokes / prevents blood clots;
aspirin reduces fever more effectively/antipyretic;
anti-inflammatory;
paracetamol overdose causes long term damage / easier to overdose on paracetamol / possible liver damage;
- 2 max
- (b) mild analgesics function by intercepting the pain stimulus at the source / interfere with the production of substances that cause pain/prostaglandins;
strong analgesics work by bonding to receptor sites in the brain / prevent the transmission of pain impulses without depressing the central nervous system;
- 2
- [4]**



10. (i)



any circle around the nitrogen atom / the nitrogen atom and its three neighbouring atoms;

1

(ii) tertiary;

1

(iii) ester;

1

[3]

11. *Advantage:* antidiarrheal/constipation (in treatment of diarrhoea) / reduces coughing;
Disadvantage: addiction / tolerance / risk of overdose;

2

[2]