



ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Mark scheme

June 2003

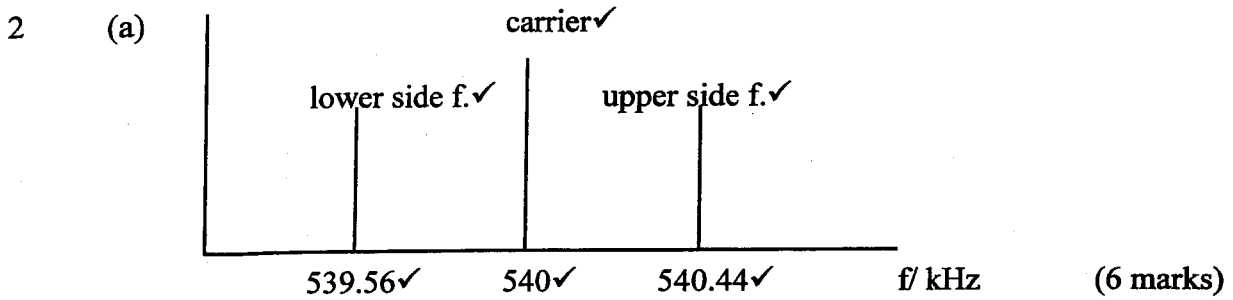
GCE

Electronics

Unit ELE5

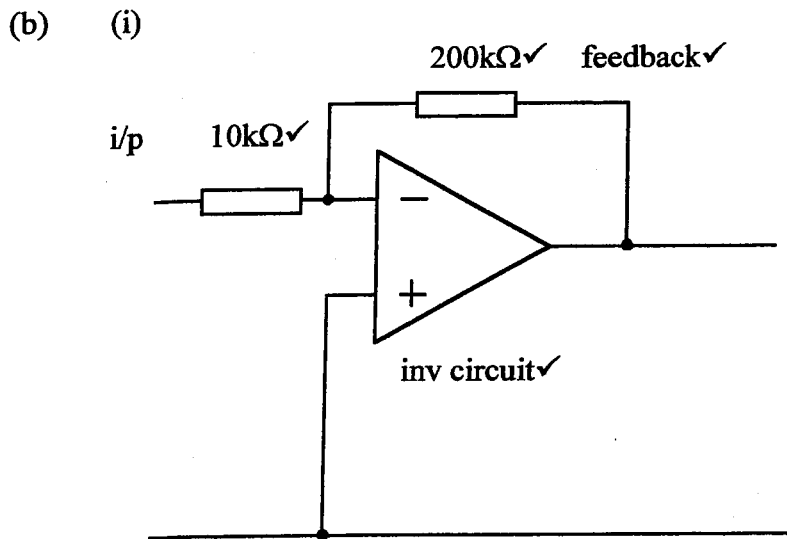
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- 1 (a) input transducer✓ modulator✓ transmitter✓
carrier generator✓ (4 marks)
- (b) 50Ω ✓ (1 mark)
- (c) (i) $2 \times 2 = 4\text{m}$ ✓
(ii) $300000000 \div 4 =$ ✓ 75MHz ✓ (3 marks)
(total 8)



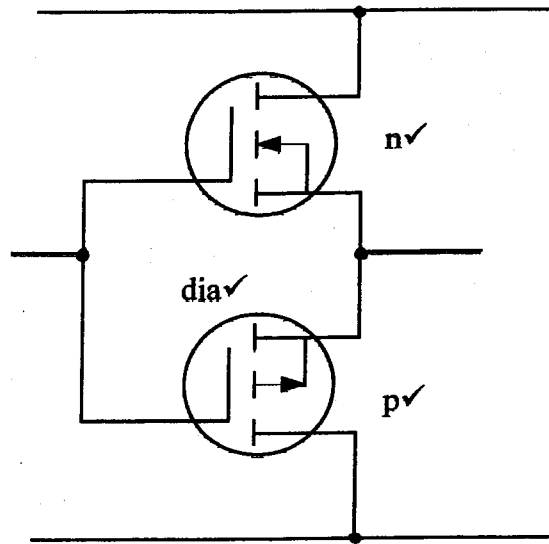
- (b) carrier wave period✓
modulation period✓
100% modulation correct✓ (3 marks)
(total 9)

- 3 (a) rf amp✓ mixer✓ if amp✓ demodulator✓ (4 marks)



- (ii) $+50\text{mV} \times -20 =$ ✓ $-1000\text{mV} (-1\text{V})$ ✓ (6 marks)
(total 10)

4 (a)



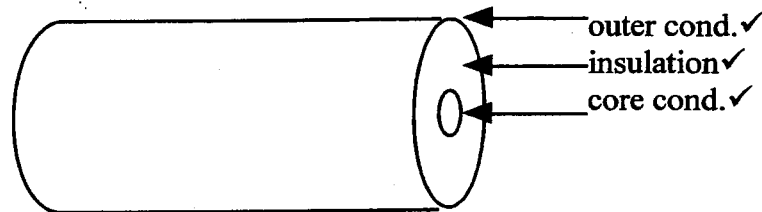
(3 marks)

(b) n channel MOSFET acts as a source follower for positive half wave✓
p channel MOSFET acts as a source follower for negative half wave✓
(2 marks)

(c) cross - over distortion✓
clipping distortion✓
(2 marks)

(d) (i) heatsink✓
(ii) removes heat✓ from MOSFETs to air✓
(3 marks)
(total 10)

5 (a)



(3 marks)

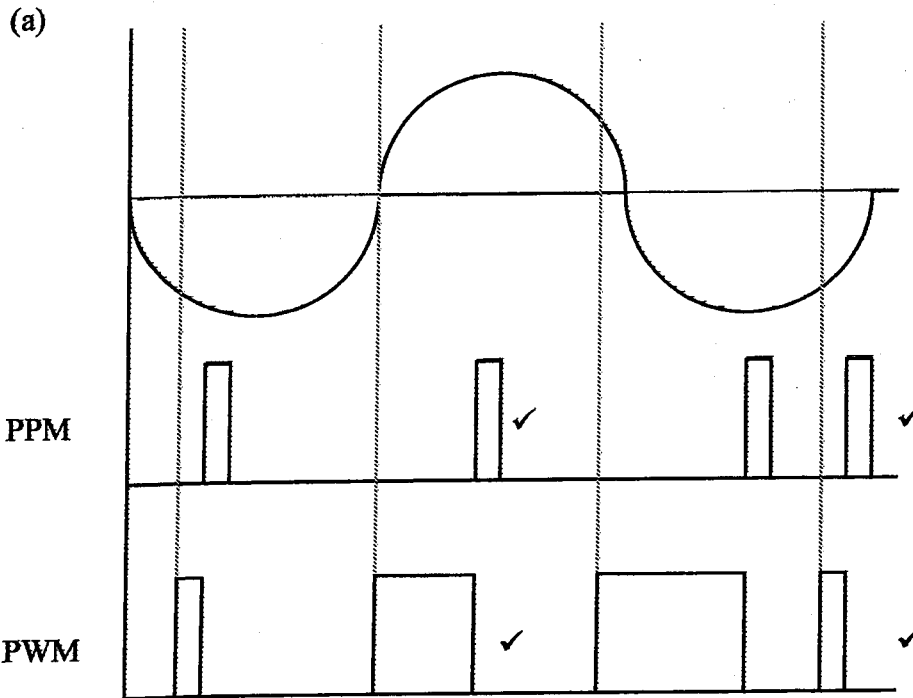
(b) twisted pair✓
optic fibre or free space✓
(2 marks)

(c) frequency division multiplex✓
time division multiplex✓
(2 marks)

- (d) (i) $8\text{kHz} \div 2 = 4\text{kHz}$ ✓
 (ii) $8\text{kHz} \times 8 \text{ bits} = 64\text{kbps}$ ✓

(3 marks)
 (total 10)

6



(4 marks)

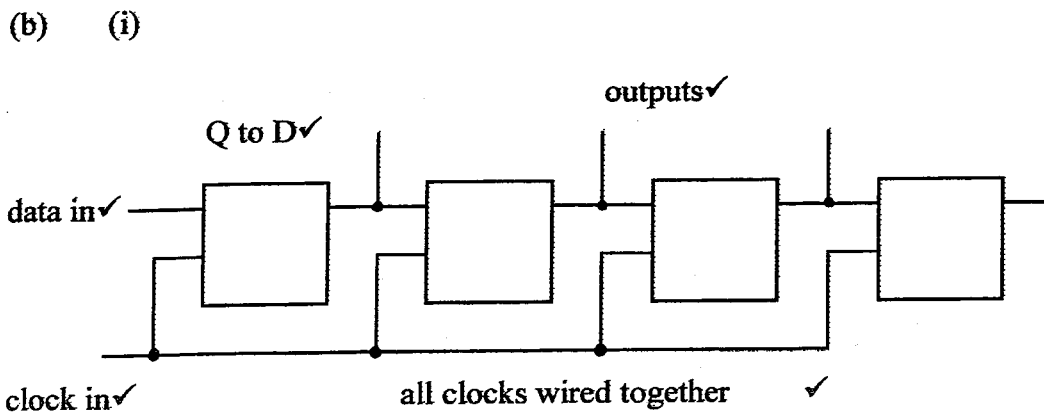
- (b) (i) $1.1 \times 10^4 \times 10^{-8} = 1.1 \times 10^{-4}\text{s}$ ✓
 (ii) control voltage ✓

(3 marks)
 (total 7)

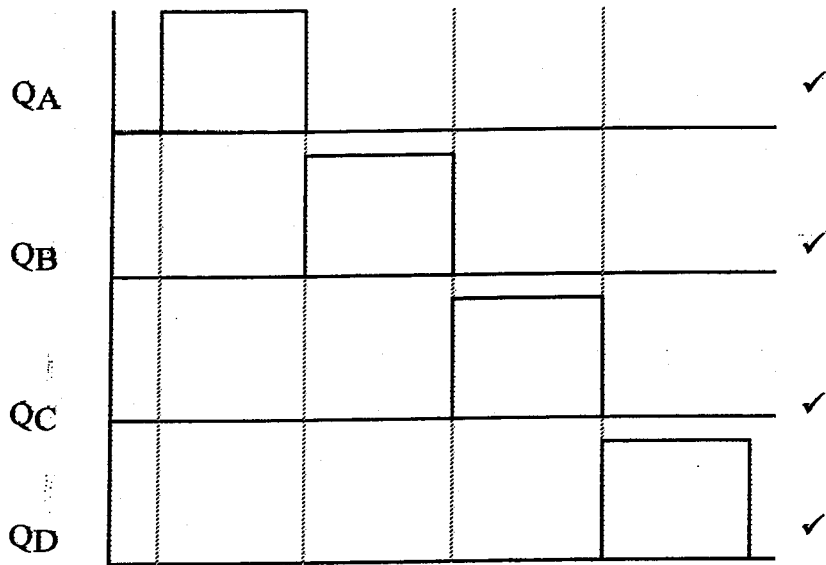
7

- (a) (i) Pulse Code Modulation ✓
 (ii) parallel ✓ to serial ✓

(3 marks)



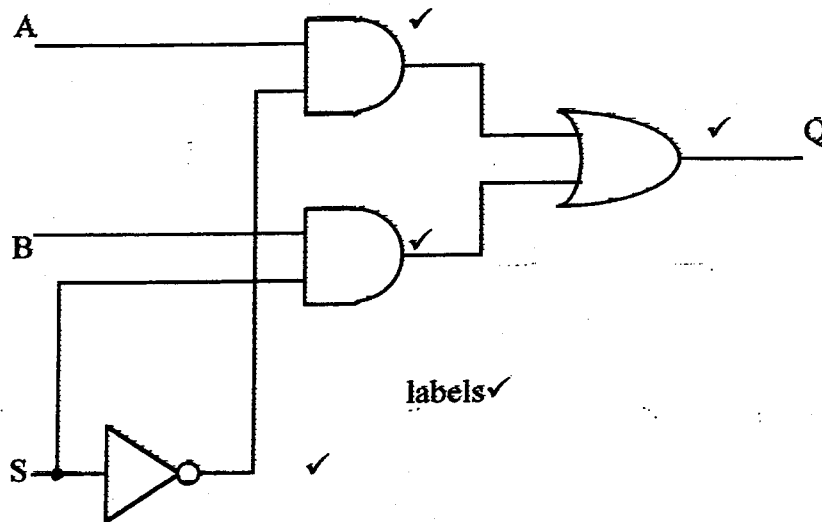
(ii)



(9 marks)

(c) (i) time division multiplex ✓

(ii)



(6 marks)
(total 18)

Paper Total 72 marks