



ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Mark scheme

June 2003

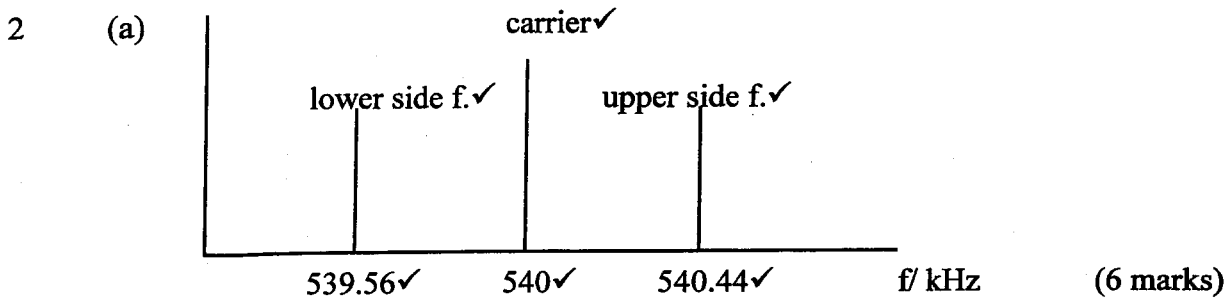
GCE

Electronics

Unit ELE5

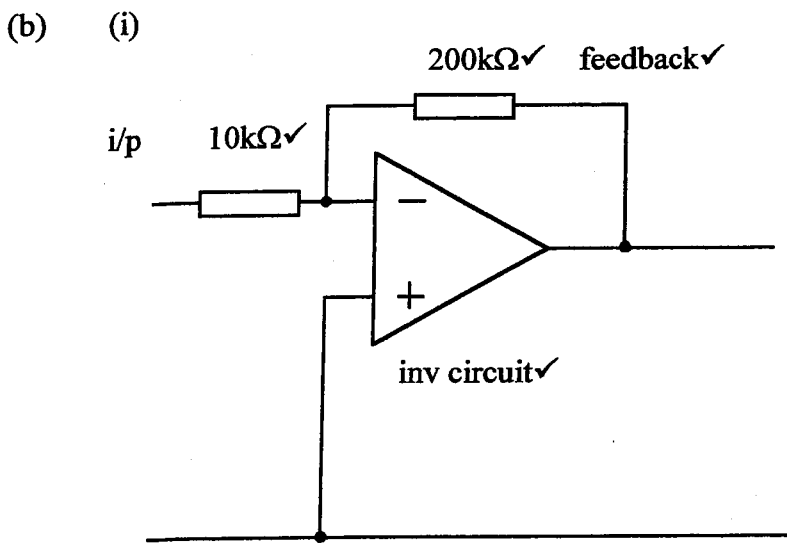
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- 1 (a) input transducer✓ modulator✓ transmitter✓
carrier generator✓ (4 marks)
- (b) 50Ω ✓ (1 mark)
- (c) (i) $2 \times 2 = 4m$ ✓
(ii) $300000000 \div 4 =$ ✓ $75MHz$ ✓ (3 marks)
(total 8)



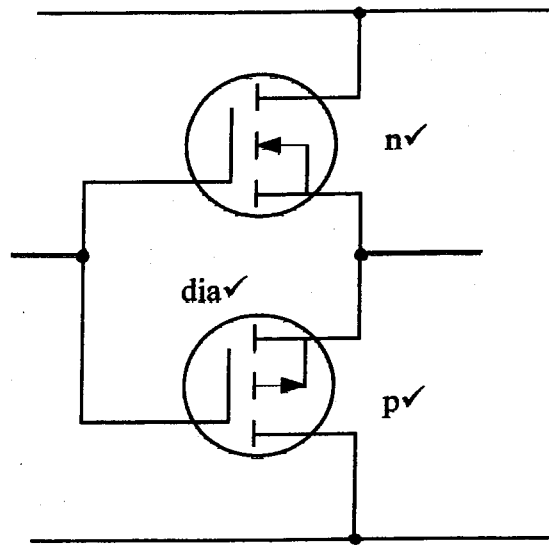
- (b) carrier wave period✓
modulation period✓
100% modulation correct✓ (3 marks)
(total 9)

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



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

4 (a)



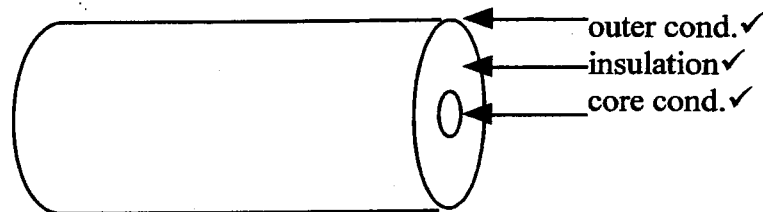
(3 marks)

(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)

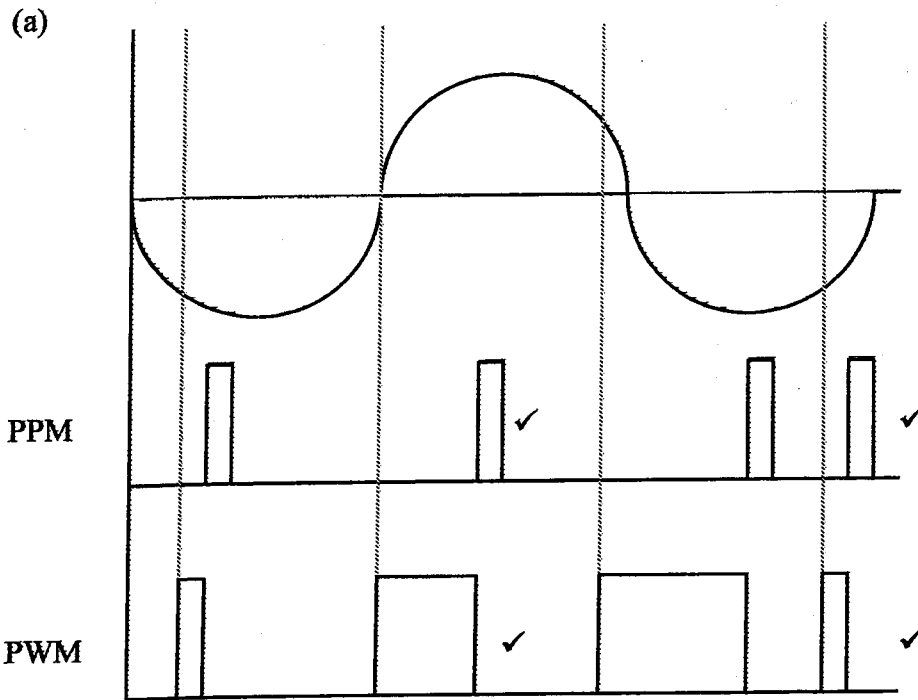
(b) twisted pair ✓
optic fibre or free space ✓
(2 marks)

(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)

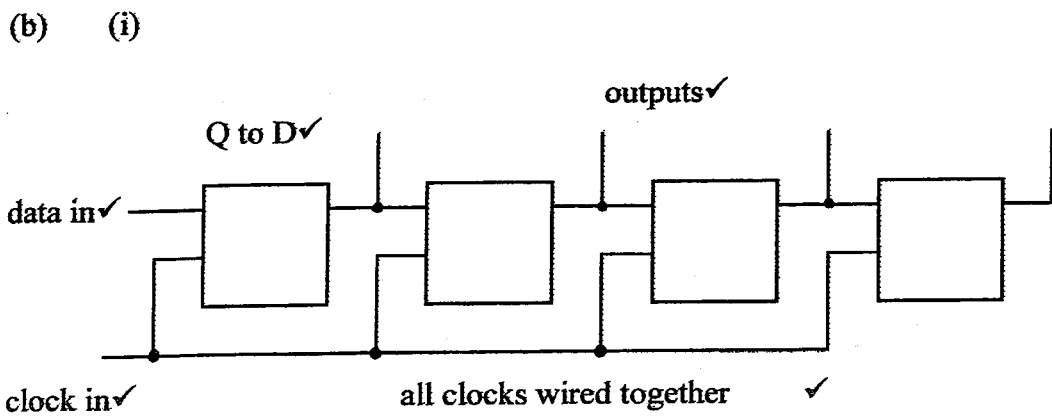
- (b) (i) $1.1 \times 10^4 \times 10^{-8} = 1.1 \times 10^{-4}\text{s}$ ✓
(ii) control voltage ✓

(3 marks)
(total 7)

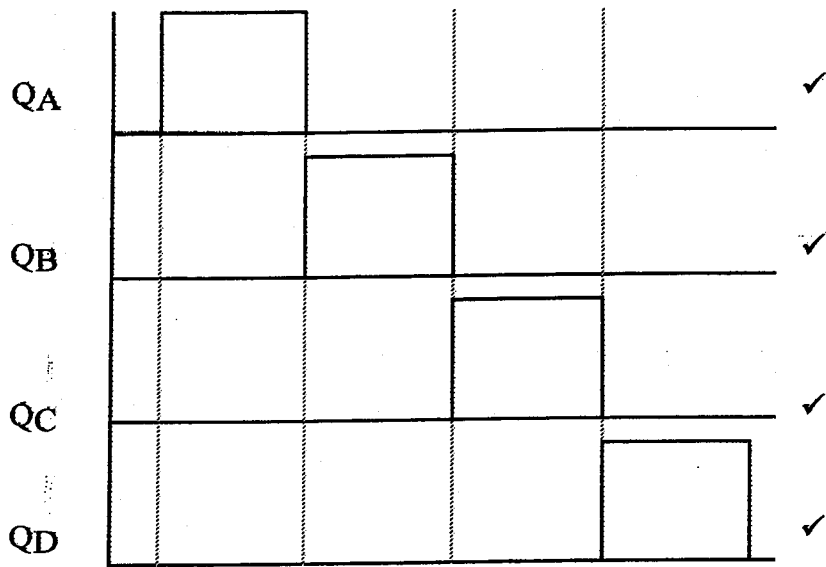
7

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

(3 marks)



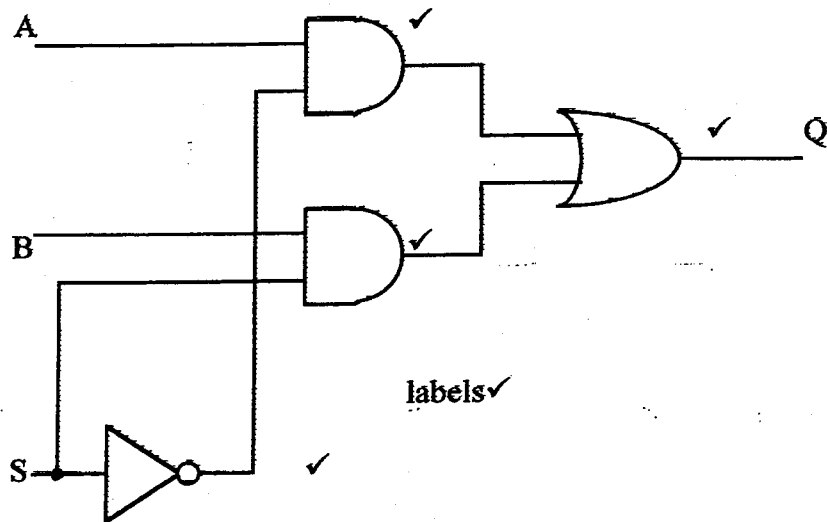
(ii)



(9 marks)

(c) (i) time division multiplex ✓

(ii)



(6 marks)
(total 18)

Paper Total 72 marks