UNIVERSITI TUN HUSSEIN ONN MALAYSIA

TEST 1
SEMESTER II
SESSION 2012/2013

COURSE NAME	:	REINFORCED CONCRETE DESIGN 1
COURSE CODE	:	BFC32102/BFC3142
COURSE	:	BFF
DATE	:	MARCH 2012
DURATION	:	1 HOUR
INSTRUCTION	:	ANSWER **ALL** QUESTIONS
		ALL CALCULATIONS BASED ON BS EN 1990 (EC 0) BS EN 1990 (EC 1) NA BS EN 1990 (EC 0) NA BS EN 1991 (EC 1) BS EN 1992 (EC 2) BS 8110-1 : 1997 (Table 3.15)

THIS PAPER CONSISTS OF **TWO (2)** PAGES

Q1   (a)   Explain clearly the terms below:

        i.   Ultimate limit state

        ii.   Partial safety factor

        iii.   Characteristics materials strength

        iv.   Transient design situation of limit state

(8 marks)

    (b)   Flexural failure of beam section in bending may occur in three ways; balanced, under- reinforced and over-reinforced.

        Explain clearly the terms balanced, under-reinforced and over-reinforced. Draw a beam section and strain distribution diagram to support your answer.

(12 marks)

Q2   A size of reinforced concrete beam is 250 x 450 mm (b x d). The tension and compression reinforcements provided are 4H25 and 2H12 respectively.

    (a)   Draw the stress block diagram.

(10 marks)

    (b)   Determine the ultimate moment resistance of the section, if $f_{ck} = 30$ N/mm^2 and $f_{yk} = 500$ N/mm^2. The depth to compression reinforcement is 50 mm.

(20 marks)