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B.E. (Computer Science & Engineering (New)) Third Semester (C.B.S.)

Digital Circuits & Fundamentals of Microprocessor

P. Pages: 2



NRJ/KW/17/4379

Time: Three Hours

Max. Marks: 80

- Notes: 1. All questions carry marks as indicated.
 - 2. Solve Question 1 OR Questions No. 2.
 - 3. Solve Question 3 OR Questions No. 4.
 - 4. Solve Question 5 OR Questions No. 6.
 - 5. Solve Question 7 OR Questions No. 8.
 - 6. Solve Question 9 OR Questions No. 10.
 - 7. Solve Question 11 OR Questions No. 12.
 - 8. Assume suitable data whenever necessary.
- **1.** a) Convert the following.

i)
$$(101101.1011)_2 = (?)_{10}$$

ii)
$$(10.625)_{10} = (?)_2 = (?)_{BCD}$$

iii)
$$(27.125)_{10} = (?)_8 = (?)_{16}$$

- b) Simplify the following using K-map.
 - i) $F(A, B, C, D, E) = \Sigma(1,4,6,10,20,22,24,26) + \Sigma d(0,11,16,17).$



ii)
$$f(w, x, y, z) = \pi M(4, 6, 10, 11, 13, 14, 15)$$

OR

2. a) State and prove Demorgan's theorem.

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b) Reduce the following Boolean expression.

i)
$$\left(WX + \overline{W}\overline{x}\right)(W + x) + WX(\overline{X} + \overline{Y})$$

ii)
$$\overline{A}BC + A\overline{B}C + AB\overline{C} + ABC$$

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3. a) Implement the following using 4:1 multiplexer. $F(A, B, C, D) = \Sigma m(1, 2, 3, 4, 5, 8, 9, 12)$



b) Write short note on priority encoder.

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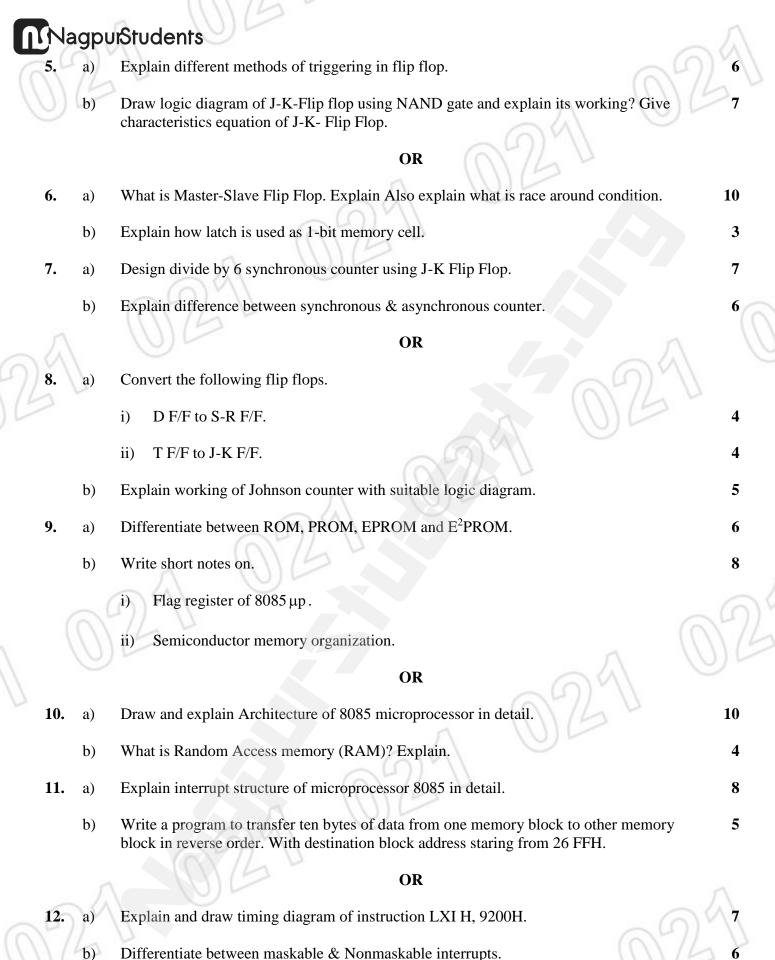
OR

4. a) Design BCD to Ex-3 code converter.



b) Write short note on weighted & non weighted code.

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High expectations are the key to everything. ~ Sam Walton

