a) MOSFET

b) Feedback Amplifier

c) Universal gates

d) Operational Amplifier

2014

Electrical and Electronics Engg(Part - II)

Ied : 3 Hours   *Full Marks : 35*

e figure in the margin indicate full marks.
ites are required to give their answers in their
own words as far as practicable

GROUP - A
(Multiple Choice Type Questions)

. Choose the correct answer for the following: (any five)

x5

i)   The decimal equivalent of binary 11.1 is

a) 3.5 b) 3.1 c) 5.1 d) 2.2

ii)   Open loop voltage gain of an op-amp is

a) Small b) Large c) can be anything

iii)   Which of the following devices has highest input impedance

a) MOSFET b) BJT c) JFET

iv)   CMRR of an op-amp

a) much larger than unity   b) much smaller than unity

v) Which of the following feedback topologies offers high impendance?

a) Voltage Series b) Voltage Shunt c) Current Series d) Cu Shunt

vi) Oscillators use following feedback :

a) Negative b) Positive c) Both Negative and Positive d) No

GROUP - B
(Short Answer Type Questions)
Answer any two questions   2X 5=10

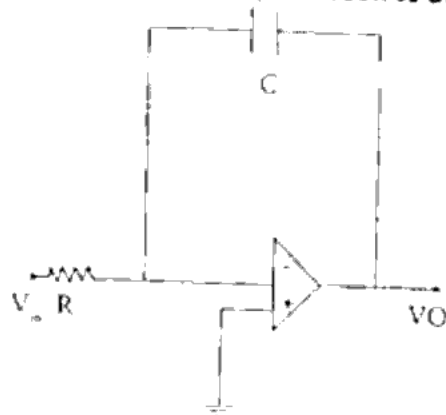2. Draw and explain the working pronciple of CMOS inverter cir

(5)

3. What is positive feedback?Name the different feedback topolog

(2 +

4. Identify the circuit and find out the output voltage V_0 of the ci if

$v_{in} = 5 \sin 2000\pi t$ m V, R = 100k Ω and C = 1μ F.   1

$(BC)_{16} = (?)_2$

$195)_8 = (?)_2$

Realize the Boolean expression using minimum number of NAND gates

$$Y = (A + \bar{B})(\bar{A} + \bar{B})$$

3+2

GROUP - C
(Long Answer Type Questions)
Answer any two questions 2X10=20

1) In a J-FET for an applied $V_{GS} = 0V$ and $V_{DS} = 2.5$ V the drain current appears to be 13.5 mA/ What is the value of I_{DSS} here?If V_{DS} is increased to 3V and the pinch - off voltage is stated -2V .What is the value of I_D 5

b) What is know as Gain-bandwidth product of an amplifier?State the Barkhausen Criteria.   5

a) What are integrator and differentiator?Describe it with suitable block diagram.

b) The midrange open-loop gain of a certain op-amp is 120dB. Negative feedback reduces this gain by 50dB.What is the closed loop gain?

5+5

a) Define the truth table of XOR gate.Implement the XOR operation using the minimum number 2- input NAND gate.   4+1

b) If in an adder 3 input resistances are 2KΩ, 4 KΩ, and 8 KΩ and the feedback resistance is 10 KΩ. What is the output voltage of the OP-Amp   5