Q.20 Convert the following-

a) $(6B)_{16} = (.....)_2$

b) $(110100101101)_2 = (.....)_8$

Q.21 Write any four difference between BJT and FET.

Q.22 Draw the full wave bridge rectifier circuit and also calculate the rectification efficiency of it.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Draw and explain the working principle of half wave rectifier. Also draw the output waveform for the give sinusoidal input. Write any two applications of half wave rectifier.

Q.24 Draw the circuit diagram of XOR and XNOR gate. Explain why NOR and NAND gates are known as universal gate. Draw AND gate using NAND gate.

Q.25 a) Write any four differences between BJT and FET transistors.

b) Perform the following operations-

i) 1001+0011

ii) 1101+0110

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221524

2nd Sem. / Instrumentation & Control Engg., Medical Electronics

Subject : Analogue and Digital Electronics

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 In a Zener diode, the doping concentration of impure atom is

a) $1:10^6$ b) $1:10^7$

c) 1.10^8 d) 1.10^{10}

Q.2 The ripple factor of a half wave rectifier is approx

a) 1.21 b) 1.38

c) 0.48 d) 0.90

Q.3 The hexadecimal equivalent of a binary number $(100001100111)_2$ is

a) $(876)_{16}$ b) $(867)_{16}$

c) $(674)_{16}$ d) $(487)_{16}$

Q.4 Which of the following option is incorrect for the two input (A and B) OR gate

a) If A=1 and B=1 then O=1

b) If A=0 and B=0 then O=0

c) If A=0 and B=1 then O=1

d) If A=1 and B=0 then O=0

Q.5 A latch circuit with a clock input is known as

a) Shelf register b) Flip-flop

c) Adder d) A/D Converter

Q.6 For Si diode, the value of cut-in voltage is

a) 1 V b) 0.3 V

c) 0.7 V d) 1.08 V

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Expand BJT.

Q.8 A NAND gate is the combination of NOT and OR gate. (T/F)

Q.9 Number of select lines required to design a 64:1 MUX are_____.

Q.10 The depletion region decreases if the forward bias voltage across the normal P-N diode increases. (T/F)

Q.11 Define ripple factor of rectifier.

Q.12 The material whose conductivity lies between insulator and conductor is known as _____.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Draw the diagram of half wave rectifier. Write any two applications of it.

Q.14 Draw the full adder circuit and also write the truth table.

Q.15 Write any four differences between normal P-N diode and Zener diode.

Q.16 Define the term avalanche breakdown and also write the advantage of this breakdown.

Q.17 Write the symbol and truth table of XOR gate.

Q.18 Write down any two applications of each-A/D and D/A converters.

Q.19 Write any four applications of BJT.