Q.20 Explain why CE configuration is most popular in amplifier circuits.

Q.21 Write at least five applications on A/D and D/A Converter.

Q.22 Draw and explain the VI characteristics of CB configuration.

## SECTION-D

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

Q.23 Discuss diode as rectifier. Describe diode as half-wave, full wave and bridge rectifiers.

Q.24 Explain the working of master slave J-K flip-flop and How it will overcome the race around condition of the flip-flop.

Q.25 Convert decimal number 275 to hexadecimal, binary, octal and vice-versa.



No. of Printed Pages : 4 221524
Roll No. .....

**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 The most commonly used transistor circuit arrangement is

a) common emiiter

b) common base

c) common collector

d) all of the above three equally

Q.2 A nibble represents

a) Three bits b) Four bits

c) Five bits d) Two bits

Q.3 In P-type semiconductor, there

a) No majority carriers

b) Electrons as majority carriers

c) immobile negative ions

d) immobile positive ions

Q.4 An intrinsic semiconductor at absolute zero temperature

a) behaves line an insulator

b) has a large number of holes

c) has a few holes and same number of electrons

d) Behaves like a metallic conductor

Q.5 In a MUX, the input data lines N and select input data lines m are given by a relation

a) $m = 2^N$ b) $2^m = N$

c) $m = 2N$ d) $N = 2m$

Q.6 A 1:8 DEMUX has_____ select lines

a) 4 b) 3

c) 8 d) 2

## SECTION-B

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

Q.7 With the addition of pentavalent impurity to semiconductor,_____ semiconductor is obtained.



Q.8 The value of collector current of a transistor is_____ than emitter current. (Less/more)

Q.9 Semiconductors have_____ bonds.

Q.10 In a p-type semi-conductor_____ are majority carriers.

Q.11 The radix of an octal number system is_____

Q.12 The logical expression for XNOR gate is_____

## SECTION-C

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

Q.13 Write and draw the symbol, logical expression and truth table of AND and NOR logic gates.

Q.14 Define Peak Inverse Voltage, rectification efficiencies and ripple factor.

Q.15 State the difference between BJT and MOSFET.

Q.16 Write a short note on JFET.

Q.17 Derive the relation b/w $\alpha$, $\beta$ and $\gamma$.

Q.18 Write down the difference between encoder and decoder?

Q.19 Sketch the cross section on N-channel MOSFET in depletion mode and draw the symbols.