17321

16117

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : *(1)* ***All*** *questions are* ***compulsory****.*
(2) Answer ***each*** *next main question on a* ***new*** *page.*
(3) Illustrate your answers with neat sketches ***wherever*** *necessary.*
(4) Use of Non-programmable Electronic Pocket Calculator is ***permissible****.*
(5) Mobile Phone, Pager and any other Electronic Communication devices are ***not permissible*** *in Examination Hall.*

Marks

1. A) Attempt **any six** of following : **12**

a) Draw symbol of P-N diode, Zener diode.
b) Define the term rectification efficiency and rectifier.
c) List the types of Biasing in BJT.
d) Draw output characteristics showing different region in CE configuration.
e) Define the term voltage regulation factor state need of voltage regulation.
f) Draw pin configuration of IC 723.
g) Draw symbol of NAND Gate and NOR Gate.
h) Convert :
i) $(456)_D = (\ )_B$ ii) $(5A)_H = (\ )_D$

B) Attempt **any two** of following : **8**

a) Compare intrinsic and extrinsic semiconductor (any 4 points).
b) Explain full wave bridged rectifier with the help of circuit diagram and input output waveform.
c) Explain working of n-p-n transistor in unbiased condition.

2. Attempt **any four** of following : **16**

a) List specification of zener diode (any 4).
b) Compare half wave rectifier, full wave centre tapped rectifier and full wave bridge rectifier w.r.t.
1) Efficiency 2) Ripple factor
3) TUF 4) Output waveform
c) Explain R-C coupled amplifier with circuit diagram.
d) Explain construction of n-channel JFET with neat sketch.

P.T.O.

Marks

e) Compare CE, CB, CC w.r.t. to
   1) Current gain
   2) Voltage gain
   3) Input impedance
   4) Output impedance

f) Explain with circuit diagram operation of zener diode as voltage regulator.

3. Attempt **any four** of following : **16**

a) Draw experimental circuit diagram and characteristics for forward biased P-N junction diode.

b) Explain with circuit diagram fixed bias method of BJT.

c) Draw and explain VI characteristics of UJT.

d) Draw and explain working principle of N-channel enhancement MOSFET.

e) Draw block diagram of DC regulated power supply state function of each block.

f) Explain NAND gate as universal gate implement AND, OR and NOT gate using NAND gate only.

4. Attempt **any four** of following : **16**

a) Explain operating principle of LASER.

b) Explain class B push pull power amplifier with circuit diagram.

c) Draw input and output characteristics of CB configuration.

d) Explain with circuit diagram transformer coupled amplifier.

e) Draw and explain output characteristics of JFET.

f) Explain with circuit diagram transistorised series voltage regulator.

5. Attempt **any four** of following : **16**

a) Compare BJT with FET (any 4 pts.).

b) State the need of multistage amplifier. Draw frequency response of R-C coupled amplifier.

c) Draw circuit diagram of voltage divider biasing list two advantages of voltage divider biasing of BJT.

d) Explain with circuit diagram and input output waveform center trapped full wave rectifier.

e) Differentiate between positive and negative feedback (any 4pts.).

f) Explain RC phase shift oscillator with circuit diagram.

6. Attempt **any four** of following : **16**

a) For Hartley oscillator C = 2 nF, L = 5.6 mH, Lz = 56 μ H. Calculate frequency of oscillation.

b) Draw circuit diagram of Colpitts Oscillator state its frequency of oscillation equation.

c) Draw and explain the basic block diagram of microprocessor.

d) Explain with circuit diagram IC 723 a dual voltage regulator.

e) Explain with circuit diagram transistor as a switch.

f) Define α and β. Derive relation bet. α and β.
