Printed Pages : 4

EC201/EEC201

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 199214

Roll No.

B. Tech.

(SEM. II) THEORY EXAMINATION, 2014-15

ELECTRONICS ENGINEERING

Time : **3** Hours] [Total Marks : **100**

Note : (1) Attempt all questions.
(2) All questions carry equal marks.

1 Attempt **any four** parts of the following: **5×4=20**

(a) With the help of the circuit diagram explain the working of voltage doubler circuit.

(b) For the network of Fig. 1, determine the range of V_i that will maintain V_L at 8 V and not exceed the maximum power rating of the Zener diode.

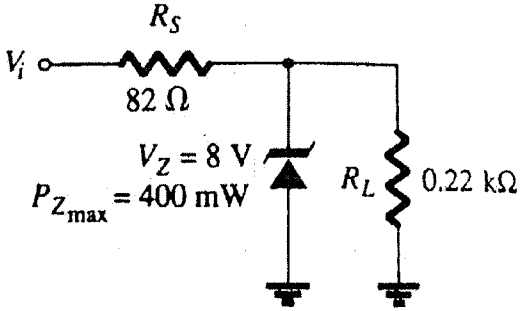

Fig.1

(c) Determine V_0 for the given network shown in Fig.2

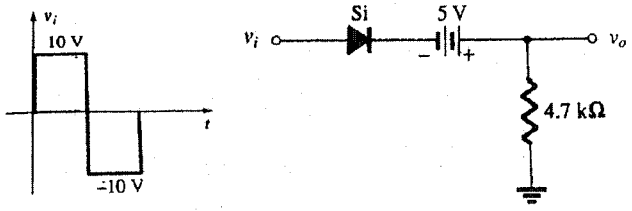

Fig.2

(d) Write short notes on Tunnel Diode with necessary diagram.

(e) Find out the ripple factor and efficiency of full wave Bridge rectifier.

(f) Sketch V_0 for the given network shown in Fig. 3 for the input shown.

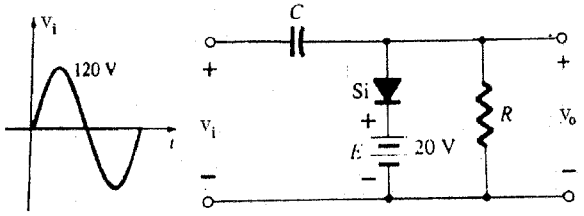

Fig.3

2 Attempt **any four** parts of the following: **5×4=20**

(a) Draw the input and output characteristics of CB npn transistor configuration with proper labels.

(b) For the common emitter amplifier configuration using Hybrid equivalent model, determine Z_i, Z_O, A_V

(c) Derive the stability factor $S(\beta)$ for the emitter bias configuration.

(d) Find out I_C, I_E, V_{CE} of the fig 4.

(e) Explain with necessary diagram how BJT works as switch

(f) What is a well-designed voltage divider biasing circuit? Explain.

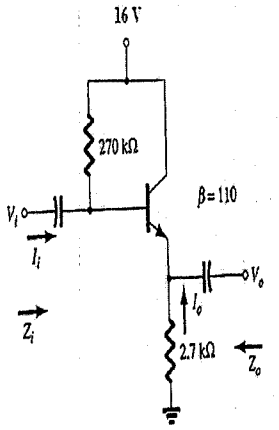

Fig. 4

3 Attempt **any four** parts of the following. **5×4=20**

(a) Define Op-Amp with the help of block diagram. Also describe the ideal characteristics of IC-741.

(b) Explain :

(i) Differentiator circuit using Op-Amp.

(ii) Unity gain amplifier using Op-Amp.

(c) For the network of Fig. 5, V_D=9 V. Determine I_D, V_{GS}, V_{DS}, V_p

(d) Explain the construction and working of n channel enhancement type MOSFET.

(e) Explain how FET used as Voltage Variable Resistance?

(f) Find out the output voltages of the Fig.6.

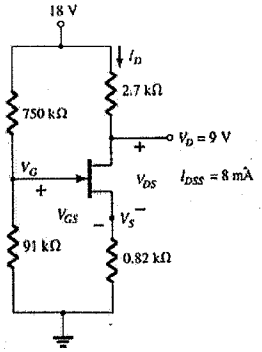

Fig.5

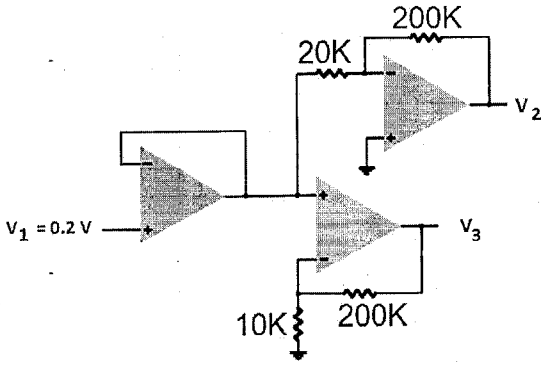

Fig.6

4 Attempt **any two** parts of the following: **10×2=20**

(a) Explain the basic principle of digital voltmeter with the help of block diagram.

(b) Explain how frequency and phase can be measured using CRO.

(c) Draw a neat block diagram of a cathode ray oscilloscope with proper labels. Also explain its working principle.

5 Attempt **any two** parts of the following: **10×2=20**

(a) Simplify the following expression using K-map and implement the output using universal logic gates.

$$F(A,B,C,D)=\sum M(1,3,4,6,8,9,13,15)+\sum d(0,2,14)$$

(b) Simplify the following expression using Boolean algebra

(i) $F = AB + A(B + C) + B(B + C)$

(ii) $F = A\overline{B}\overline{C}D + \overline{A}\overline{B}D + BC\overline{D} + \overline{A}B + B\overline{C}$

(c) (i) Add and Subtract without converting their base of the following two Hexadecimal numbers, A4FB and 3FDC.

(ii) What are universal gates? Implement two inputs XOR gate using only 4 NAND Gates.

(iii) Convert the Binary number $(101011001110011)_2$ to a Gray number. Also convert Gray number $(111001100011)_{Gray}$ to Binary number.