



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

**PAPER ID : 199226**

Roll No.

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**B. Tech.**

(SEM. II) THEORY EXAMINATION, 2014-15  
**ELECTRONICS ENGINEERING**

Time : 3 Hours]

[Total Marks : 70

Note : All questions are compulsory.

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

- (a) Draw and explain the working of a Bridge rectifier with input and output waveforms. Calculate efficiency and ripple factor.
- (b) Design a voltage regulator that will maintain an output voltage of 20 V across a 1-k  $\Omega$  load with an input that will vary between 30 and 50 V. That is, determine the proper value of  $R_s$  and the maximum current  $I_{ZM}$ .
- (c) Determine and sketch  $V_o$  for the given network shown in Fig.1.

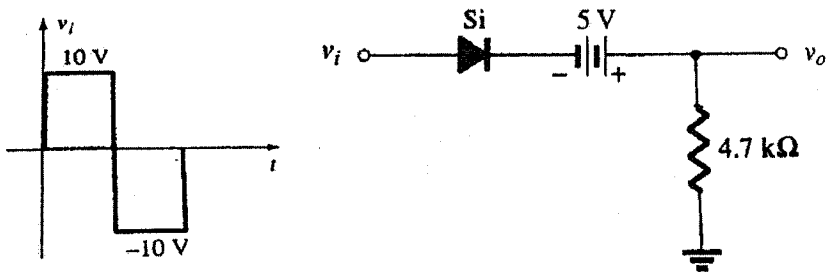


Fig.1

- (d) Determine  $V_o$  and the required PIV rating of each diode for the configuration of Fig.2.

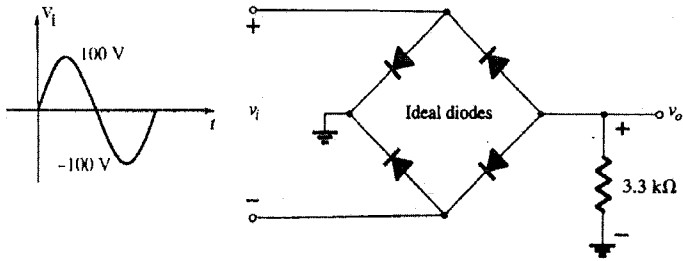


Fig.2

- (e) With the help of necessary diagram differentiate between Half wave and Full wave Voltage doubler.  
 (f) Sketch  $V_o$  for the given network shown in Fig.3 for the input shown

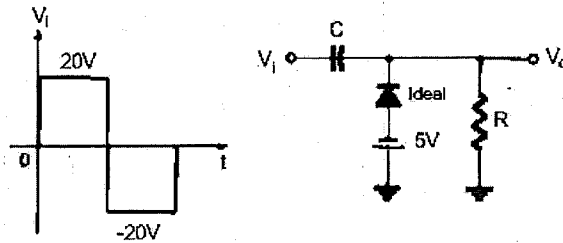


Fig. 3

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

- (a) Draw the input and output characteristics of CE npn transistor configuration with proper labels.  
 (b) Explain with the help of necessary diagrams how FET can be used as VVR.  
 (c) Determine  $Z_i, Z_o, V_o$  for the network of Fig.4 if  $V_i = 20mV$

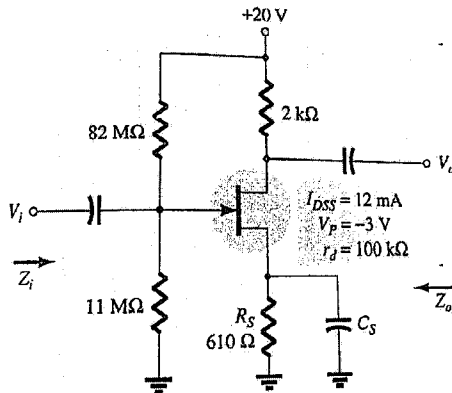


Fig. 4

- (d) For the common emitter or fixed bias configuration in Fig. 5, Determine  $r_e$ ,  $Z_i$ ,  $Z_o$ ,  $A_v$ .

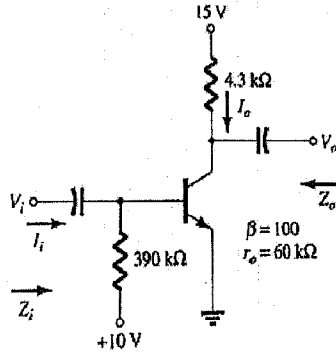


Fig. 5

- (e) Explain the construction and working of n channel depletion type MOSFET.  
 (f) Derive the stability factor  $S(I_{CO})$  for the Fixed bias configuration.

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

- (a) Explain:  
 (i) Differentiator circuit using Op-Amp.  
 (ii) Non-Inverting amplifier using Op-Amp.  
 (iii) Differential Amplifier using BJT with two modes of operation.
- (b) (i) Draw the circuit of an Op-Amp as voltage follower and find an expression for its voltage gain.  
 (ii) Determine the output-voltage for the given circuit shown in Fig. 6.

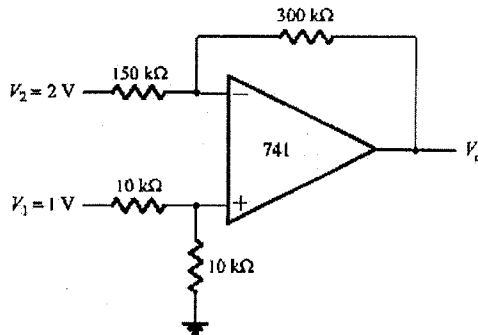


Fig.6

- (c) Define Op-Amp with the help of block diagram. Also describe the equivalent circuit along with its ideal and practical characteristics.
- 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. What are the characteristics of DVM?
- (b) (i) Explain how frequency and phase can be measured using CRO.  
(ii) Explain working principle of Digital multimeter with the help of suitable Block diagram.
- (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) (i) What are the needs of modulation? Explain.  
(ii) Explain with the help of block diagram the elements of communication systems.
- (b) What do you understand by modulation? Explain various modulation techniques. Also explain the demodulation technique of AM with the help of necessary diagram
- (c) (i) What do you understand by signal? Define various types of signals with suitable examples.  
(ii) The antenna current of an AM transmitter 8 Amperes, when only the carrier is sent, but it increases to 8.93 Amperes when the carrier is modulated by a single sine wave. Find the % modulation. Determine the antenna current when the % of modulation changes to 0.8.
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