

Total No. of Questions – [3]

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OCTOBER 2019 INSEM (T1)  
S. Y. B.TECH. (E & TC) (SEMESTER – III)

COURSE NAME: ELECTRONICS DEVICES AND CIRCUITS  
COURSE CODE: ETUA21184

(PATTERN 2018)

Time: [1 Hour]

[Max. Marks: 20]

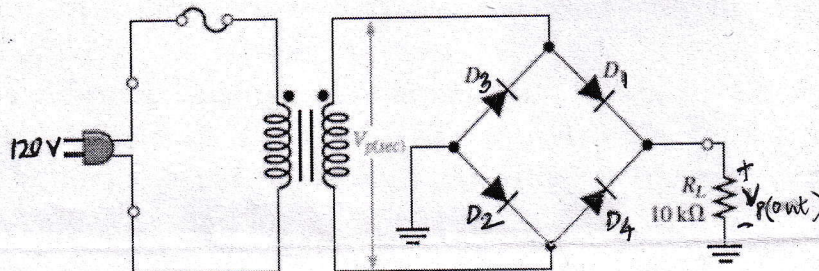
(\*) Instructions to candidates:

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Use of scientific calculator is allowed.
- 4) Assume suitable data where ever required.

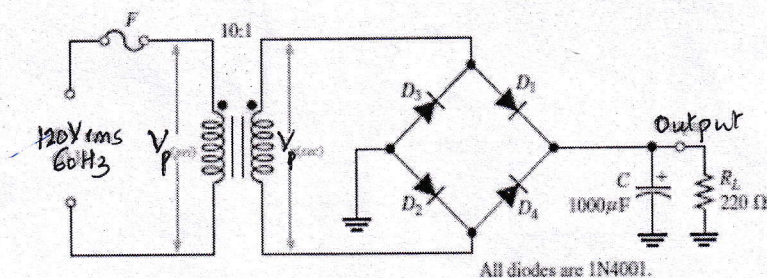
Q1) Attempt any one

- a) Draw the neat circuit diagram and explain the working of [4+4]  
center tapped full-wave rectifier.

Determine the peak output voltage for the bridge rectifier shown in figure. Assuming the practical model, what PIV rating is required for the diodes? The transformer is specified to have a 12 V rms secondary voltage for the standard 120 V across the primary.

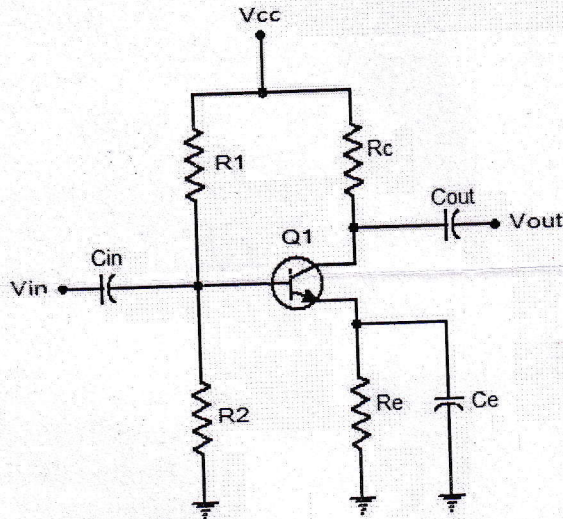


- b) Explain the working of capacitor filter for half wave rectifier [4+4]  
with neat circuit diagram and output waveform.  
Determine the ripple factor for the filtered bridge rectifier with a load as indicated in figure below.



**Q2) Attempt any one**

- a) A Common Emitter amplifier with bypass capacitor has [8]  
 following parameters  $V_{CC} = 20\text{ V}$ ,  $R_1 = 100\text{ K}\Omega$ ,  $R_2 = 10\text{ K}\Omega$ ,  $R_C = 2\text{ K}\Omega$ ,  $R_E = 100\text{ }\Omega$ , and  $\beta = 50$ . Determine the operating point parameters  $V_{CEQ}$ ,  $I_{CQ}$ ,  $I_{BQ}$  and stability factor (S).



- b) Draw the Hybrid Model of transistor for Common Emitter [4+4]  
 configuration and give the significance of all four hybrid parameters.  
 Derive the expression of stability factor (S) for voltage divider biasing circuit.

**Q3) Attempt any one**

- a) Draw output characteristic and transfer characteristic for n-channel JFET. [4]  
 b) Self-bias circuit using n-channel JFET has following [4]  
 parameters:  $V_{DD} = 18\text{ V}$ ,  $R_D = 4.7\text{ K}\Omega$ ,  $R_S = 1.5\text{ K}\Omega$ ,  $R_G = 1\text{ M}\Omega$ ,  $V_p = -4\text{ V}$ ,  $I_{DSS} = 8\text{ mA}$ . Determine operating point parameters such as  $V_{DSQ}$ ,  $V_{GSQ}$  and  $I_{DQ}$ .

