No. of Printed Pages : 3

ET-202(B)

B.Tech. Civil (Construction Management) /
B.Tech. Civil (Water Resources Engineering)

00563

Term-End Examination

December, 2016

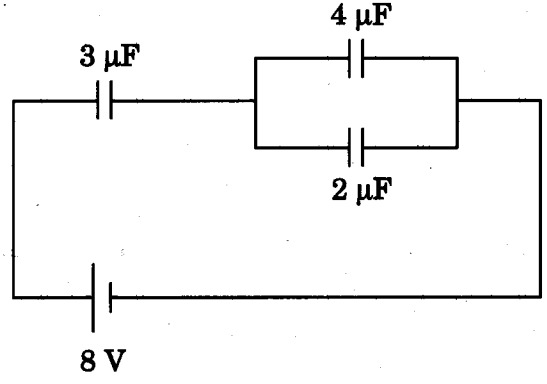
ET-202(B) : PRINCIPLES OF ELECTRICAL SCIENCES

Time : 3 hours *Maximum Marks : 70*

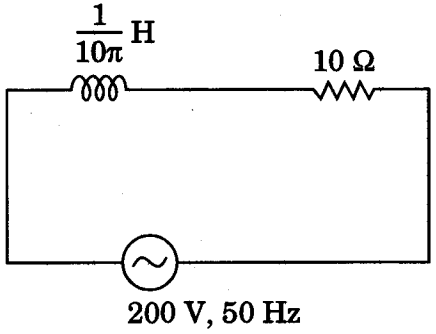
Note : *Answer any **five** questions. Each question carries equal marks. Use of calculator is permitted.*

1. (a) State and explain Maximum Power Transfer theorem and prove it. 7

(b) Calculate the energy stored in the 4 μF capacitor and charge on the plates of the 3 μF capacitor. 7



2. (a) In the given figure, $L = \frac{1}{10\pi}$ Henry, $R = 10\ \Omega$.



Calculate : 7

(i) Power factor of the a.c. circuit

(ii) Voltage drop across the inductor

(b) Regarding a system function, explain the following : 7

(i) Forced response to an exponential input

(ii) Frequency response

(iii) Step response

3. (a) Give the construction and working of Autotransformers and Audio Frequency Transformers. 7

(b) With the help of a neat and clean diagram, explain the constructional features of a direct current generator. 7

4. (a) Explain the speed – torque characteristics of shunt motors and also explain their speed control. 7

(b) Discuss the constructional features and working of a three-phase induction motor. 7

5. (a) Explain the construction and working of a moving iron instrument. 7

(b) Draw the voltage – current characteristics of a diode and explain its application in a full wave rectifier. 7

6. (a) Explain the transistor action of a Field Effect Transistor and give its V – I characteristics. 7

(b) Discuss the working of a differential amplifier and explain the term CMRR. 7

7. (a) Explain various kinds of Flip-Flops used as digital building blocks. 7

(b) What is a microprocessor ? Give an idea about its input-output ports, memory interface design and applications. 7