

3. (a) What are the losses occurring in a transformer? 4  
(b) Derive an equation for emf induced in the windings of an ideal transformer. 6
4. Discuss in detail the advantages, disadvantages and applications of the synchronous motor. 10
5. (a) Explain the concept of slip. 3  
(b) In a workshop, a 3-phase, 4-pole 50 Hz induction motor is running at 1455 rpm. Find the percentage slip. 5  
(c) What is the use of starter? 2
6. (a) What is an inverter? Enlist a few industrial applications of inverters. 1+2  
(b) Give the classification of inverters. 5  
(c) What is sinusoidal pulse with modulation? 2
7. (a) What is DC/DC converter? 2  
(b) Write a short note on  
(i) buck converter  
(ii) boost converter 4+4
8. (a) What is service line? What is different between wire and cable? 1+2  
(b) What is MCB, and what are its applications? 1+2  
(c) What is current that is considered safe for a human body? Why earthing is provided? 1+2  
(d) Lead acid battery can be charged whereas primary cell cannot be charged. Why? 1

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## B.Tech Even Semester (CBCS) Exam. July 2021

### Computer Science & Engineering / Agricultural Engineering / Electronics & Communication Engineering (2nd Semester)

Course No: ASH-204  
(Basic Electrical Engineering)

Full Marks: 50  
Pass Marks : 25

Time: 2 hours

1. Answer any five questions.  
2. Begin each answer in a new page.  
3. Answer parts of a question at a place.  
4. Assume reasonable data wherever required.  
5. The figures in the right margin indicate full marks for the question.
1. (a) What is magnetic material? 2  
(b) What are ferrites and ferromagnetic materials? Give their properties and applications. 2+3  
(c) Find the inductance of a coil in which a current of 0.2A increasing at the rate of 0.4A per second represents a power of 0.4 watt. 3
2. (a) What is transformer? Explain the assumption taken for ideal transformer. 2+4  
(b) A single phase transformer is rated 25 kVA, 600/200 V, 50 Hz. Calculate the impedance of load in ohms to fully load the transformer when connected to (a) 600 V side (b) 240 V side. 4

Turn Over