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## Question Paper Code : X 10142

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020/  
APRIL/MAY 2021  
Second Semester  
Electronics and Communication Engineering  
BE 8254 – BASIC ELECTRICAL AND INSTRUMENTATION ENGINEERING  
(Common to Computer and Communication Engineering/Electronics and  
Telecommunication Engineering)  
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

**(10×2=20 Marks)**

1. Suggest any two ways to improve power factor.
2. Compare overhead system with underground system.
3. What is all day efficiency ?
4. A transformer can't be operated using DC supply. Why ?
5. State the purpose of yoke in a DC machine.
6. Mention the essential parts of DC generator.
7. Is a single phase induction motor a self starting machine ? Justify your answer.
8. List the various ways of determining voltage regulation of an alternator.
9. Classify transducers based on energy consideration.
10. How to overcome gross error in a measured data ?

PART – B

**(5×13=65 Marks)**

11. a) A three phase, 10 KVA load has a power factor of 0.342. The power is measured by two wattmeter method. Find the reading of each wattmeter when power factor is leading and lagging. **(13)**

(OR)

- b) Explain the power measurement in a three phase circuit using two wattmeter method. **(13)**



12. a) State the elemental theory of transformer and derive its EMF equation. **(13)**

(OR)

b) i) A transformer has 8 windings in its primary core and 5 in its secondary coil. If the primary voltage is 240 V, find the secondary voltage.

ii) A transformer has primary coil with 1200 loops and secondary coil with 1000 loops. If the current in the primary coil is 4 Ampere, then what is the current in the secondary coil ?

iii) Why transformer rating is in KVA ? **(5+5+3)**

13. a) What are the various methods employed to control the speed of a DC machine ? Explain any one in detail. **(13)**

(OR)

b) Explain the constructional features of a DC generator and also derive its EMF equation. **(13)**

14. a) Describe any two method involved in starting a single phase induction motor. **(13)**

(OR)

b) Explain the operation of a brushless DC motor and stepper motor. **(7+6)**

15. a) Define error. Classify errors and suggest the ways to overcome it during measurement. **(13)**

(OR)

b) With a neat sketch, explain the operation of LVDT. **(13)**

PART – C

**(1×15=15 Marks)**

16. a) Justify the need for oscilloscope and explain its working with relevant diagram. **(15)**

(OR)

b) Derive the equivalent circuit of a single phase transformer. **(15)**

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