с14-ес-306



## 4241

## BOARD DIPLOMA EXAMINATION, (C-14) OCTOBER/NOVEMBER-2018 DECE - THIRD SEMESTER EXAMINATION

ELECTRICAL TECHNOLOGY

Time : 3 Hours ]

[Total Marks: 80

## PART-A

3X10=30

*Instructions* : 1. Answer All questions.

- 2. Each question carries three marks.
- 3. Answer should be brief and straight to the point and shall not exceed five simple sentences.
- 1. Convert the following voltages from rectangular to polar form
  - (a) (6+8j) volts (b) (3-j4) volts.
- 2. Define bandwidth of a resonant circuit.
- 3. State Flemings right hand rule.
- 4. What is the function of commutator and brushes in D.C. generator?
- 5. Give any three advantages of three phase system over single phase system.
- 6. State Lenz's Law.
- 7. Define the terms: (a) Self-inductance (b) Mutual inductance(c) Co-efficient of coupling
- 8. Classify transformers based on the core material construction and function.
- 9. Define slip and synchronous speed of an induction motor.

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10. Write the e.m.f. equation of an alternator and express each term with their units.

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## PART-B

10X5=50

Instructions :

- 1. Answer any **Five** questions.
- 2. Each question carries **ten** marks.
- 3. Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer
- 11. A resistance of 100ohm, an inductance of 0.2 H and a capacitor of 150  $\mu$ F are connected in series across 230V, 50Hz supply. Calculate
  - a) Total impedance.
  - b) Current (I)
  - c) Power factor
  - d) Power consumed in the circuit
- 12. (a) Compare series and parallel resonant circuits.
  - (b) In the parallel resonant circuit shown in figure, find the resonant frequency.



- 13. (a) State and explain Faraday's laws of electromagnetic induction
  - (b) Classify DC generators based on the type of excitation and field winding connections.
- 14. Explain the working of three point starter used in DC motors with a neat sketch.
- 15. (a) Explain the working of thermal power plant with neat sketch.
  - (b) Three coils each having a resistance of 20 ohm and inductive reactance of 15 ohm are connected in star to 400v, 3-Phase, 50 Hz supply. Calculate
    - (a) The line current (b) Power factor.

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- 16. What is the working principle of a transformer? Derive the e.m.f. equation of a transformer.
- 17. Explain the working principle of capacitor start single phase induction motor and mention it's applications.
- 18. Two impedances  $Z_1 = (6+j8)$  and  $Z_2 = (8-j6)$  are connected in parallel. Calculate the total
  - a) Conductance
  - b) Susceptance
  - c) Admittance and
  - d) Current taken from the supply and its P.F. if the supply voltage is 200V, 50Hz

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