



Register Number:.....

B.E. DEGREE EXAMINATIONS: JUNE 2015

(Regulation 2009)

Fourth Semester

AUTOMOBILE ENGINEERING

EEE251: Basics of Electrical and Electronics Engineering

Time: Three Hours

Maximum Marks: 100

Answer all the Questions

PART A (10 x 1 = 10 Marks)

- One unit of electrical energy is
 - 1000 Wh
 - 1000 kWh
 - 100 Wh
 - 100 kWh
- Power factor of AC circuit is the _____ of angle between V and I
 - sine
 - cosine
 - tan
 - cosec
- DC motor employed for traction is
 - Shunt motor
 - Series motor
 - Compound motor
 - Any DC motor
- Capacitor in single phase induction motor is used for
 - Starting
 - Braking
 - Reversing
 - Improving efficiency
- _____ is used for voltage regulation
 - PN junction diode
 - Zener diode
 - MOSFET
 - BJT
- The device used as light source is
 - LED
 - Photo diode
 - Phototransistor
 - Zener diode
- Capacitor in the rectifier output is used for maintaining _____ constant
 - Current
 - Voltage
 - Power
 - Impedance

8. CMRR is related to
- | | |
|----------------------------|-----------------------|
| a) Rectifiers | b) Voltage regulators |
| c) Differential amplifiers | d) Oscillators |
9. _____ gate is the universal gate
- | | |
|---------|--------|
| a) AND | b) OR |
| c) NAND | d) NOT |
10. Flip-flops are _____ bit logic elements
- | | |
|-----------|-------|
| a) single | b) 4 |
| c) 8 | d) 16 |

PART B (10 x 2 = 20 Marks)

11. State the limitations of Ohm's Law
12. Define RMS value of sinusoidal current
13. Name the types of single phase induction motors
14. Draw the speed torque characteristics of DC series motor
15. What are the types of MOSFETs?
16. What are the applications of phototransistors?
17. Define line regulation of a voltage regulator
18. Mention the applications of differential amplifiers
19. Convert $(2244)_8$ to hexadecimal number
20. Draw the truth table of XOR gate

PART C (5 x 14 = 70 Marks)

21. a) (i) State and explain Kirchhoff's Laws (7)
 (ii) Derive the RMS value of sinusoidal voltage (7)
- (OR)**
- b) Explain the sinusoidal steady state response of series RC circuit with diagrams and give the relevant expressions.
22. a) Explain the construction and operation of DC motors with neat diagrams
- (OR)**
- b) (i) Explain the selection procedure of motors for textile industry (7)
 (ii) Explain any one starting method of single phase induction motor (7)
23. a) (i) Draw and explain the characteristics of Zener diode (7)

(ii) Explain the working principle of BJT (7)

(OR)

b) Explain the operation of MOSFET and photo diode with neat diagrams

24. a) With neat diagram, explain half wave rectifier circuit and waveforms. Show the improvement with capacitive filter

(OR)

b) Draw and explain the operation of differential amplifier

25. a) Explain the parallel adder and subtractor circuit with neat diagrams

(OR)

b) Explain the RS flip-flop and JK flip-flop with truth tables
