

F 3611

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Fifth Semester

Branch : Aeronautical Engineering/Computer Science and Engineering/Electrical and
Electronics Engineering

EN 010 502—PRINCIPLES OF MANAGEMENT (AN, CS, EE)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What is delegation ?
2. What is Labour turnover ?
3. What are the functions of production department ?
4. State the importance of financial management.
5. What is Marketing Management ?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain the term MBO.
7. Explain the need and objectives of training and development.
8. State the advantages of project planning.
9. State the methods of financing.
10. Explain the functions and objectives of advertizing.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.

Each question carries 12 marks.

11. (a) Explain organizational structure in detail.

Or

(b) Explain about the management concepts in detail.

12. (a) Explain the procedure of recruitment and selection of man power.

Or

(b) Explain industrial disputes and methods of setting industrial disputes.

13. (a) Explain various types of production.

Or

(b) Explain with an example how project planning is done with CPM.

14. (a) Explain the objectives and functions of financial management.

Or

(b) Explain working capital in detail.

15. (a) Explain marketing management and its functions.

Or

(b) Explain channels of distribution.

(5 × 12 = 60 marks)

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Fifth Semester

Branch : Electrical and Electronics Engineering

EE 010 504—POWER ELECTRONICS (EE)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What is the function of snubber circuit ? List out the different types of snubber circuits.
2. What is the effect of source inductance in a converter circuit ?
3. How the output voltage can be controlled in a chopper circuit ?
4. What are the different types of inverters ?
5. What are the applications of boost regulators ?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Draw and explain the DIAC based triggering circuit for TRIAC
7. What is meant by line commutated inverter ? Explain with the help of appropriate graphs.
8. Draw the power circuit of two quadrant chopper and explain the working
9. Give the advantages and disadvantages of unipolar and bipolar pulse width modulation.
10. Draw the power circuit of boost regulator topology and also its input and output voltage waveform.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.

Each full question carries 12 marks.

11. Draw the general block diagram of thyristor gate trigger circuit and explain each block. Also draw the waveforms in the gate trigger circuit.

Or

12. Explain about the different device protection schemes to be adopted in drive circuits.
13. Draw the power circuit and relevant waveforms and explain the working of a three phase half wave controlled rectifier circuit. Derive the expression for output voltage.

Or

14. Explain the principle of dual converter with the help of neat figure.
15. What is the principle of operation of three phase cycloconverters ?

Or

16. Explain about the different types of single quadrant choppers with the help of power circuit diagrams, output waveforms and relevant equations.
17. Explain the principle of operation of a single phase current source inverter with relevant circuits and waveforms.

Or

18. Describe the three phase voltage source inverter circuit with 180° mode of operation for resistive load. Use appropriate diagrams and waveforms.
19. Draw the power circuit and relevant waveforms of forward converter and explain the basic principle of operation.

Or

20. Draw the circuit of buck boost topology of regulators in switched mode power supply systems and explain the working of operation with relevant waveforms and output equations.

(5 × 12 = 60 marks)

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Reg. No. 11018973

Name. Manu Prem

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Fifth Semester

Branch : Electrical and Electronics Engineering

EE 010 505—LINEAR INTEGRATED CIRCUITS (EE)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. Define CMRR rate and its effects in detail.
2. Draw the equivalent circuit of op-amp and explain. What is a practical op-amp ?
3. What is SVRR ?
4. List some applications of PLL.
5. Name essential parts of a DAC.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Draw and explain voltage to current converter circuit which uses (i) Floating load. Derive its output.
7. What are different DC characteristics of an op-amp ? Explain.
8. Explain Astable multivibrator using op-amp.
9. Draw and explain the functional block diagram of 555 timer.
10. Explain IC voltage regulator 723.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each full question carries 12 marks.

11. Explain the application of op-amp as (i) voltage follower ; (ii) summing and scaling amplifier ; (iii) integrator and differentiator and derive the necessary output voltage equations and relevant output waveforms.

Or

Turn over

12. Explain internal and external compensation of an op-amp.
13. (a) Draw and explain triangular wave generator with relevant waveforms. (8 marks)
 (b) What is a Schmitt trigger ? Explain. (4 marks)

Or

14. (a) Explain the working of RC phase-shift oscillator. (6 marks)
 (b) Explain the operation of a peak detector. (6 marks)
15. (a) Design a second order Butter low-pass filter having upper cut-off frequency 1 kHz. Then determine its frequency response. (6 marks)
 (b) Draw and explain a first order low-pass filter. (6 marks)

Or

16. (a) Explain the working of a successive approximation A/D converter with neat block diagram. (6 marks)
 (b) Explain a binary weighted resistor DAC. (6 marks)
17. (a) Draw a bistable multivibrator using IC 555 and explain it in detail. (8 marks)
 (b) Explain the application of PLL as frequency multiplier with neat diagram. (4 marks)

Or

18. Write short notes on :
- (i) Basic principles of PLL. (4 marks)
 (ii) Transfer characteristics of PLL. (2 marks)
 (iii) PLL application as FSK demodulator. (6 marks)

19. What are the limitations of a three terminal voltage regulator ? Design an adjustable regulator from 7810 regulator to get an output voltage of 20 V.

Or

20. (a) Explain the working of series opamp regulator. Draw and explain the functional diagram of 723 regulator. (6 marks)

- (b) What is the principle of SMPS ? Discuss its advantages and disadvantages. (6 marks)

[5 × 12 = 60 marks]

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Fifth Semester

Branch : Electrical and Electronics Engineering

EE 010 506—MICROPROCESSORS AND APPLICATIONS (EE)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What are various status flags provided in 8085 ? Discuss their roles.
2. What is machine cycle and instruction cycle ?
3. What is stack ? What is the function of stack pointer ?
4. What are the advantages of assembly language over machine language ?
5. Discuss PUSH and POP operation.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. What is DMA data transfer scheme ?
7. What are interrupts ? Discuss with examples, how to transfer data using interrupts.
8. Explain what is (a) Memory mapped I/O scheme ; (b) I/O mapped I/O scheme.
9. How many status flags does 8086 have ? Discuss the role of each flag.
10. What is pipelining ? How is it achieved in 8086 ? What are its advantages ?

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each full question carries 12 marks.

11. Draw and explain the timing diagram for (a) Opcode fetch ; (b) Memory read ; (c) Memory write operation.

Or

12. What do you understand by singlechip microcomputer ? Where are they used ? Give some examples of microcontrollers.

Turn over

13. (a) Discuss various types of addressing modes of 8085 with suitable examples. (8 marks)
(b) Write an ALP to add two 8 bit numbers the sum may be of 16 bits. (4 marks)

Or

14. (a) Write an ALP to find the sum of a series of 8 bit numbers, sum may be of 16 bits. (6 marks)
(b) Write an ALP to divide two 8 bit numbers dividend being a 16 bit number. (6 marks)
15. (a) Explain, what is SIM and RIM instruction. Discuss the bit pattern of the accumulator for SIM and RIM instructions. (6 marks)

- (b) Discuss how memory chips and I/O devices are interfaced to a microprocessor. (6 marks)

Or

16. (a) What are vectored and non-vectored interrupts ? (4 marks)
(b) What are different interrupt lines of 8085 ? Discuss their main features. (8 marks)
17. Explain the architecture of 8255 with a neat diagram.

Or

18. (a) What is DMA data transfer scheme ? (6 marks)
(b) Discuss the function of DMA controller 8257. (6 marks)
19. Explain the internal architecture of 8086 with neat block diagram.

Or

20. (a) What are important signals of Intel 8086 ? Discuss them in detail. (6 marks)
(b) Explain register organization of 8086. Explain the function of each register. (6 marks)

[5 × 12 = 60 marks]

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016**Fifth Semester**

Branch : Electrical and Electronics Engineering

POWER ELECTRONICS (E)

(Old Scheme—Supplementary/Mercy Chance)

[Prior to 2010 Admissions]

Time : Three Hours

Maximum : 100 Marks

Part A*Answer all questions.**Each question carries 4 marks.*

1. Draw the static VI characteristics of a GTO and mark the salient features and operating regions.
2. What is reverse recovery time in power diodes ?
3. An SCR is used to control the power of 1 kW, 230 V, 50 Hz heater. Determine the heater power for firing angle of 45° .
4. Design a UJT firing circuit. The UJT has $V_s = 30$ V, $\eta = 0.55$, $I_p = 10 \mu\text{A}$, $V_o = 3.5$ V and $I_o = 10$ mA. The frequency of oscillation is 60 Hz and width of the triggering pulse is 50 μs .
5. What is freewheeling diode ? List its advantages.
6. Draw and explain the half controlled bridge rectifier circuit feeding R load, with the help of necessary waveforms.
7. With the waveforms explain single pulse width modulation control used for single-phase inverter.
8. What is commutation ? Explain natural and forced commutation.
9. List and explain the parameters which affect the performance of choppers.
10. Explain the method of speed control of chopper fed DC motor. (separately excited).

(10 \times 4 = 40 marks)

Turn over

Part B

Answer all questions.
Each full question carries 12 marks.

11. (a) Explain the principle of operation of an SCR on the basis of two-transistor analogy. (6 marks)
- (b) The reverse recovery time of a diode is $5 \mu\text{s}$ and the rate of fall of diode current is $80 \text{ A}/\mu\text{s}$. If the softness factor is 0.5, determine (i) Storage charge ; and (ii) Peak reverse current. (6 marks)

Or

12. Explain the structure and working of power MOSFET. Draw and explain its characteristics.
13. (a) Explain how an SCR can be protected against (i) Large $\frac{di}{dt}$; and (ii) Large $\frac{dv}{dt}$. (3 + 3 = 6 marks)
- (b) Draw and describe any two SCR triggering circuits, with necessary waveforms. (6 marks)

Or

14. Why static equalization is required when SCRs are connected in series ? Explain. Derive and expression for the static equalizing resistance.
15. Explain the operation of single-phase fully controlled full wave rectifier circuit working as a line commutated inverter. Sketch relevant waveforms and explain.

Or

16. Explain the effect of source inductance when a 1ϕ bridge rectifier is supplying inductive loads. Draw the waveforms. Also derive the equation for overlap angle.
17. With neat sketches and waveforms, explain an auxiliary commutation circuit supplying a resistive load.

Or

18. With neat circuit diagram and waveforms, explain the operation of 3ϕ bridge inverter with 180° mode of operation. Clearly indicate the triggering sequences. What harmonics are absent in the output waveform ?

19. (a) Explain the operation of a step-up chopper circuit with necessary sketches. (6 marks)
- (b) A Chopper circuit drives an induction load from 230 V DC supply. Given the load resistance of 4Ω , the average load current is 30 A and operating frequency is 400 Hz. Compute the ON period and OFF period of the chopper. Also determine the duty cycle of the chopper. (6 marks)

Or

20. (a) Classify choppers based on the quadrant of operation and explain each one clearly.
- (b) With a neat circuit diagram and $V_o - V_i$ curve, explain the operation of a class C chopper. [5 × 12 = 60 marks]