

D 13584

(Pages : 2)

Name.....

Reg. No.....

**FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2021**

Electronics

ELE 1B 01—BASIC ELECTRONICS AND NETWORK THEOREMS

(2019—2020 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A*Answer the following questions (1-12).**Each question carries 2 marks.*

1. Define Electric Field and Electric Potential.
2. State and explain Ohm's Law.
3. Find the power dissipated in a resistor of $10\text{ K}\Omega$, when connected across 10 V supply.
4. Find the equivalent resistance when two resistors of $100\ \Omega$ and $50\ \Omega$ are connected in (i) series (ii) parallel.
5. State and explain the Law of resistance.
6. Define a two-port network. What are the parameters associated with a two-port network ?
7. Define (i) Insulator ; and (ii) Semiconductor. Give two examples for each.
8. What is doping ? Explain.
9. What are the applications of SCR ?
10. Explain the ideal diode characteristics with a neat sketch.
11. Draw the Common Base configuration of BJT.
12. What is pinch-off in FET ? Explain.

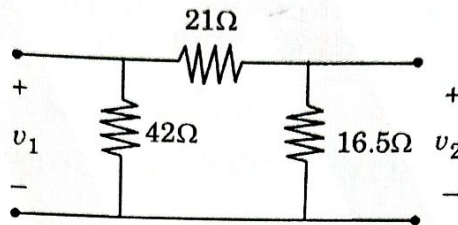
(Ceiling : 20 marks)

Section B (Short Essay Questions)*Answer all questions.**Each question carries 5 marks.*

13. Explain ideal and practical voltage and current sources.
14. State and prove Maximum Power transfer Theorem.

Turn over

15. Find the Y-parameters of the given network.



16. Explain the construction and characteristics of the Zener diode.
17. Explain the following for a semiconductor :
- Intrinsic Concentration.
 - Mobility
18. How is the depletion layer formed ? How is the width of depletion layer affected by forward and reverse bias ?
19. Explain the construction of MOSFET.

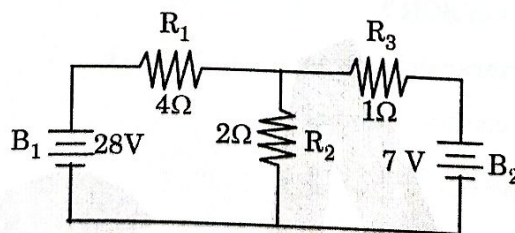
(Ceiling: 30 Marks)

Section C (Essay Questions).

Answer any **one** question.

The question carries 10 marks.

20. State Thevenin's Theorem. Determine the current flowing through the $2\ \Omega$ resistor in the given network using Thevenin's Theorem. Verify it using Superposition Theorem.



21. Explain the operation of UJT and its characteristics with necessary figures.

(1 × 10 = 10 marks)

D 92930

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Name.....

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THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION, NOVEMBER 2020

Electronics

ELE 3A 12—GENERAL COURSE II : SENSORS AND TRANSDUCERS

Time : Two Hours and a Half

Maximum : 80 Marks

Section A (Short Answer Questions)

Answer at least ten questions.

Each question carries 3 marks.

All questions can be attended.

Overall Ceiling 30.

1. What is a transducer ? Give an example.
2. What is the difference between sensors and transducers ?
3. Define the sensitivity of a transducer.
4. What are the static characteristics of a transducer ?
5. What is the difference between primary and secondary transducer ?
6. Explain the loading effect of a potentiometer.
7. What is an IR sensor ? What are the applications of IR radiation sensors ?
8. What is the effect of the temperature coefficient of resistance in strain gauge measurement ?
9. Write short notes on Photovoltaic cells.
10. RTDs are commonly made of doped platinum. Why ?
11. What is a sound level meter ? What are its different parts ?
12. What is the basic principle of working of Hall Effect transducers ?
13. How does an orifice plate flow meter work ?
14. What is meant by transduction ? Explain.
15. Write a note on the application-based classification of sensors.

(10 × 3 = 30 marks)

Section B (Short Essay Questions)

Answer at least five questions.

Each question carries 6 marks.

All questions can be attended.

Overall Ceiling 30.

16. Distinguish between active and passive transducers with example.
17. With a neat diagram, explain the working of capacitive transducers based on the change in distance between the plates.

Turn over

18. Explain the working of an unbonded strain gauge.
19. Explain capacitive level gauge for discrete level measurement.
20. Explain Bernoulli's principle and continuity equation.
21. How does a rotameter measure a flow ?
22. Explain the working of photodiodes in sensors.
23. Explain any two dynamic characteristics of a transducer.

(5 × 6 = 30 marks)

Section C (Long Essay Questions)

*Answer any two questions.
Each question carries 10 marks.*

24. With a Schematic diagram explain the construction and working of LVDT.
25. Explain the construction of the venturi meter and its working.
26. Explain the principle and working of the thermistor. What are the different types of thermistors ?
What are its applications ?
27. With suitable diagrams explain the working of any one type of manometer.

(2 × 10 = 20 marks)

D 71628

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Name.....

Reg. No.....

THIRD SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2019

(CUCBCSS-UG)

Electronics

ELE 3B 04—ANALOG AND DIGITAL INTEGRATED CIRCUITS

Time : Three Hours

Maximum : 80 Marks

Part A

Answer all questions.

Each question carries 1 mark.

1. What is input offset voltage?
2. What is the symbol of op-amp?
3. What is CMRR?
4. What are the various modes of operation of 555?
5. What is the minimum gain of an wein bridge oscillator for sustained oscillations?
6. Convert the binary number 1010011010 to hexadecimal.
7. What do you mean by a bit?
8. The binary equivalent of the decimal number 45?
9. Which logic gate is a basic comparator?
10. Define a down counter.

(10 × 1 = 10 marks)

Part B

Answer any five questions.

Each question carries 2 marks.

11. Draw the circuit diagram of a first order low pass filter using op-amp and draw its frequency response curve.
12. Define slew rate. What is its significance?
13. Draw the circuit diagram of a zero crossing detector.
14. Draw the voltage transfer curve of an ideal op-amp.
15. Differentiate between Combinational and Sequential circuits.
16. Reduce the expression $f = \sum_m (0, 1, 2, 3, 5, 7, 8, 9, 12, 13)$ using K map.
17. Explain the concept of a SIPO shift register.

(5 × 2 = 10 marks)

Turn over

Part C

Answer any **six** questions.

Each question carries 5 marks.

18. Explain about non-inverting amplifier.
19. Draw the circuit diagram of a subtractor using operational amplifier and explain.
20. Draw the block diagram of an operational amplifier and explain each block.
21. Explain RC phase shift oscillator.
22. Describe a two-bit magnitude comparator.
23. Simplify the expression $Y(A, B, D) = (\bar{A} + B)(A + B + D)\bar{D}$ and implement the logic circuit.
24. What do you mean by D flip-flop, explain with figure?
25. What are the different types of Shift registers? Illustrate the process of data shifting in various types?

(6 × 5 = 30 marks)

Part D

Answer any **two** questions.

Each question carries 15 marks.

26. Explain about two input adder, differentiator and integrator circuit using IC 714.
27. (a) Draw an astable multivibrator using 555 and explain with necessary waveforms.
(b) Design an astable multivibrator using 555 for the frequency of 500 Hz.

(8 + 7 = 15 marks)

28. Discuss the concept of a 3-bit synchronous up counter with necessary timing diagrams.
29. (a) Define basic gates with symbol, truth table, and Boolean expression.
(b) State and prove De Morgan's theorem.
(c) Discuss the concept of a Full Adder.

(5 + 5 + 5 = 15 marks)

[2 × 15 = 30 marks]

C 21497

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Name.....

Reg. No.....

FOURTH SEMESTER (CBCSS-UG) DEGREE EXAMINATION, APRIL 2022

Common Course for L.R.P. (Language Reduced Pattern)

A13—DATA COMMUNICATION AND OPTICAL FIBERS

Time : Two Hours and a Half

Maximum : 80 Marks

Section A*Answer atleast ten questions.**Each question carries 3 marks.**All questions can be attended.**Overall ceiling 30.*

1. What are the two types of line configuration ?
2. What is the difference between information and signal ?
3. How do a guided media differ from unguided media ?
4. What is the purpose of guard bands ?
5. List two applications of multiplexing.
6. How is synchronization achieved in GSM ?
7. What are the mobile services permitted by GSM ?
8. Why is flow control needed ?
9. Define the term protocol as it relates to data communication ?
10. How are LAPB, LARD and LAPM different from each other ?
11. What is collision ?
12. What are the advantages of double heterostructure ?
13. Define Numerical aperture. Obtain an equation for the same.
14. Define cut off wavelength.
15. What are the conditions to be satisfied for laser action ?

(10 × 3 = 30 marks)

Turn over

Section B

Answer atleast **five** questions.

Each question carries 6 marks.

All questions can be attended.

Overall ceiling 30.

16. Discuss the different transmission modes with examples.
17. List the steps that take an analog signal to PCM code.
18. What are the elements of Radio subsystem in GSM architecture ? What are their functions ?
19. Why and when are different signalling channels needed? What are their differences ?
20. Describe the types of BSC frames.
21. What are the two popular approaches of packet switching ?
22. What are the different materials used for the manufacture of optical fibers ? How are refractive index varied in these materials ?
23. Explain the working of a PIN photodiode.

(5 × 6 = 30 marks)

Section C

Answer any **two** questions.

Each question carries 10 marks.

24. What are the different types of propagation of radio waves in an unguided media ?
25. Discuss the three major multiplexing techniques in detail.
26. Write a note on different types of LANs.
27. Briefly discuss on the different optical sources that are used in optical fiber communications.

(2 × 10 = 20 marks)

C 21271

(Pages : 2)

Name.....VVASSCS019.....

Reg. No.....

FOURTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION, APRIL 2022

Electronics

ELE4C04—MICROPROCESSORS

(2014—2018 Admissions)

Time : Three Hours

Maximum : 64 Marks

Part A*Answer all questions.*

1. An assembler of a microprocessor is used for translation of a program from _____.
2. Write an instruction that can be used to clear the content of accumulator.
3. The addressing mode used in the instruction PUSH B is _____.
4. RST0 – RST7 are the _____ in 8085.
5. The cycle required to fetch and execute an instruction in a 8085 microprocessor is _____.
6. When a subroutine is called, the address of the instruction following the CALL instruction is stored in _____.
7. The register which holds the information about the nature of results of arithmetic and logic operations is called as _____.
8. Which general register or general register pair is incremented / decremented by 2 during PUSH and POP instructions ?
9. The 80386, with its 32-bit address bus, can address up to _____ of physical memory.
10. Both the CISC and RISC architectures have been developed to reduce the _____ gap.

(10 × 1 = 10 marks)

Part B*Answer all questions.*

11. Describe briefly program counter.
12. Discuss the steps involved to fetch a byte in 8085.
13. What is mnemonic ?

Turn over

14. Explain the differences between JMP and CALL instructions.
15. What is the purpose of HOLD and ALE signals in a processor ?
16. What are the instructions associated with the subroutine ?
17. State three features of CISC architecture.

(7 × 2 = 14 marks)

Part C

Answer any five questions.

18. Differentiate between memory mapped I/O and I/O mapped I/O.
19. Draw and explain the flag register of 8085 in brief.
20. Explain the operations carried out when 8085 executes the instructions : (i) MOV A, M ; (ii) XCHG ; (iii) DAA ; and (iv) LDA 6000.
21. Define : (i) Timing diagram ; (ii) Instruction cycle ; (iii) Machine cycle ; and (iv) T state.
22. With neat diagram explain the general architecture of computer.
23. Discuss the significance and importance of call and return instructions in 8085 microprocessor.
24. Define stack and also write down stack related instructions.
25. Write features of Pentium processor.

(5 × 4 = 20 marks)

Part D

Answer any two questions.

26. Draw the pin configuration of 8085 microprocessor and explain the functional usage of each pin in details.
27. Write an assembly language program to find the largest of the three number 06H, 0AH and 0BH, and store the result in 4200H. Also draw the flow chart.
28. Describe the different types of interrupts used in 8085 microprocessor ?
29. Discuss the important features of 80386 processor. Also outline the improvements made in processor 80486 over 80386.

(5 + 5 = 10 Marks)

[2 × 10 = 20 marks]

C 61212

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Name.....

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FOURTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, APRIL 2019

(CUCBCSS—UG)

Common Course for L.R.P.

ELE 4A 14—BASICS OF AUDIO AND VIDEO MEDIA

(2014 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part A

Answer all questions.

Each question carries 1 mark.

1. The period of 50 Hz sound signal is _____.
2. Decibel is defined as _____.
3. Octave is defined as the interval of _____.
4. Typical reverberation period of a big concert hall is about _____ seconds.
5. Impedance of ribbon microphone is of the order of _____.
6. Squawker is used to reproduce sound frequency in the range of _____.
7. Notch filter is usually used to filter _____ frequency.
8. _____ is the fastest ADC.
9. MIDI stands for _____.
10. Motion vector is associated with _____.

(10 × 1 = 10 marks)

Part B

Answer any five questions.

Each question carries 2 marks.

11. Define Loudness and Phon.
12. What is frequency response of a microphone ?
13. What are crossover networks ?
14. What are the various distortions in loudspeakers ?

Turn over

15. What are the purposes of a graphic equaliser ?
 16. What are the basic D/A conversion techniques ?
 17. What are the advantages of Blue ray recording ?

(5 × 2 = 10 marks)

Part C

*Answer any six questions.
 Each question carries 5 marks.*

18. Explain the following terms associated with sound waves :
 (a) Harmonics. (b) Overtone.
 (c) Timbre. (d) Pitch.
 (e) Threshold of hearing.
19. Explain the growth and decay of sound in an enclosure.
 20. Explain the characteristics of microphone.
 21. Explain the working principle of a moving coil cone type loudspeaker.
 22. Explain the principle of operation of a parametric equaliser.
 23. How audio compression is carried out in MP3?
 24. Explain how stereo recording is carried out.
 25. Explain the working principle of VCD recording and play back.

(6 × 5 = 30 marks)

Part D

*Answer any two questions.
 Each question carries 15 marks.*

26. Explain the acoustical features and design of auditoriums.
 27. Explain the construction and working of various types of microphones.
 28. What are the various types of A/D conversion methods ? Explain.
 29. Explain any one video compression standard with necessary block diagram.

(2 × 15 = 30 marks)

D 50650

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Name.....

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FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2018
(CUCBCSS—UG)

Electronics

ELE 5B 08—MICROCONTROLLER 8051

Maximum : 80 Marks

Time : Three Hours

Part A

Answer all questions.
Each question carries 1 mark.

1. Mention the size of the 8051 microcontroller ?
2. The Smallest interval of the time to accomplish any simple instruction is called _____.
3. The basic time interval for discrete operations of the microcontroller is called _____.
4. When the 8051 is reset, the stack pointer used to hold _____ RAM address.
5. Upon reset of 8051, which register bank is selected by default ?
6. Which timer mode is exhibits auto reload feature ?
7. What register is used to controls the serial data communication ?
8. In byte level logic operation which register flags are affected if the direct RAM address.
9. Find the answer when the following code is executed :
MOV A, #3 Ah
DEC A
10. What register keeps track of interrupt priority in the 8051 ?

(10 × 1 = 10 marks)

Part B

Answer any five questions.
Each question carries 2 marks.

11. Write a short note on registers in 8051 ?
12. What is program counter ?
13. Draw PSW register bits.

Turn over

14. List out various exchange instructions.
15. Name the various interrupt in 8051.
16. Name the various addressing modes.
17. Give any *two* advantage of Serial communication.

(5 × 2 = 10 marks)

Part C

*Answer any six questions.
Each question carries 5 marks.*

18. Narrate about concept of pipelining.
19. Write a note on Stack operation in 8051.
20. Narrate about PUSH and POP.
21. Explain any *five* data transfer instruction with suitable example.
22. Distinguish between serial and parallel communications.
23. List out various pins of LCD.
24. Explain the function of TMOD register.
25. Explain the following instructions :
 - (i) ACALL.
 - (ii) RET.

(6 × 5 = 30 marks)

Part D

*Answer any two questions.
Each question carries 15 marks.*

26. Explain about various instruction used for moving data in 8051 and classify them according to their addressing modes.
27. With neat diagram, explain how 8051 is connected with RS232.
28. With neat diagrams explain the Architecture of 8051.
29. Draw the Interfacing diagram for LCD and explain the program.

(2 × 15 = 30 marks)

C 30355

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Name.....

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FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2017

(CUCBCSS-UG)

Electronics

ELE 5B07—ELECTRO MAGNETIC THEORY

Time : Three Hours

Maximum : 80 Marks

Part A

Answer all questions.

Each question carries 1 mark.

1. Express differential area in spherical co-ordinate system.
2. Express gradient of a scalar function V in cartesian co-ordinate system.
3. For static electric fields, $\nabla \times \vec{E} =$ _____.
4. An _____ is formed when two point charges of opposite sign and equal magnitude are separated by a small distance.
5. The permeability of free space is given by _____.
6. The displacement current density is given by _____.
7. The vector \vec{A} is said to be solenoidal if _____.
8. The gain of an Antenna is given by _____.
9. The dominant mode of propagation in TE waves is _____.
10. An isolated magnetic charge does not exist. State True or False.

(10 × 1 = 10 marks)

Part B

Answer any five questions.

Each question carries 2 marks.

11. Express point $(5, 30^\circ, 45^\circ)$ in cartesian co-ordinate system.
12. Define electric flux and electric flux density.
13. Name few applications of Gauss law in electrostatics.
14. State Ampere's circuital law.
15. Define a uniform plane wave.
16. What do you mean by magnetic vector potential ?
17. Define homogeneous, isotropic medium.

(5 × 2 = 10 marks)

Turn over

Part C

*Answer any six questions.
Each question carries 5 marks.*

18. Explain the physical interpretation of divergence of a vector.
19. What are Laplace and Poisson's equations ?
20. Electric field is conservative. Explain.
21. Derive an expression for energy stored in a magnetic field.
22. Distinguish between TE and TM waves.
23. Derive wave equation for a conducting medium.
24. State and prove Poynting's theorem.
25. Write a short note on antenna parameters.

(6 × 5 = 30 marks)

Part D

*Answer any two questions.
Each question carries 15 marks.*

26. State and prove Divergence theorem.
27. Explain in detail Maxwell's boundary conditions.
28. Derive Maxwell's equation and obtain it in phasor form.
29. Derive an expression for the electric field due to an infinitesimal electric dipole.

(2 × 15 = 30 marks)