# FACULTY OF ENGINEERING

**B.E. (Civil) IV - Semester (CBCS) (Suppl.) Examination, December 2018 /January 2019**

### Subject : Fluid Mechanics - II

**Time : 3 Hours**                                                                 **Max. Marks: 70**

*Note: Answer all questions from Part-A & any five questions from Part-B.*

### PART – A (20 Marks)

| | | |
|---|---|---|
| 1 | Define the criteria to distinguish between laminar and turbulent flow in pipes and indicate the value. | 2 |
| 2 | List out the minor losses in a pipe flow. | 2 |
| 3 | What is a compound pipe? | 2 |
| 4 | In a rigid pipe of length 2500m, the water flows with a velocity of 1.5 m/s. Find the rise in pressure if the valve is closed gradually in 25 seconds. | 2 |
| 5 | Differentiate between hydro dynamically smooth and rough pipes. | 2 |
| 6 | Define streamlined body and bluff body. | 2 |
| 7 | Differentiate between pipe flow and channel flow. | 2 |
| 8 | Define hydraulic radius and hydraulic depth. | 2 |
| 9 | Define gradually varied flow with examples. | 2 |
| 10. | Sketch the surface profile for mild slope. | 2 |

### PART- B (50 Marks)

11 (a) Derive and explain Darcy Weisbach equation.                                   5
   (b) Draw and explain Moody's diagram.                                             5

12 (a) Derive the equation for pressure rise due to sudden valve closure.            5
   (b) Glycerine of viscosity 0.85 N/m$^2$ and specific gravity 1.26 is pumped
       through a horizontal pipe of diameter 20mm at a flow rate of 45 lit/min.
       Determine whether the flow is laminar or turbulent. Find also the pressure
       loss due to frictional resistance in a length of 10m.                        5

13 (a) Discuss the development of boundary layer on a flat plate with a neat
       sketch.                                                                       5
   (b) A plate 1m x 1m moves through air of density 1.15 Kg/m$^3$ at 36 Km/hr.
       Determine (i) Drag force. (ii) Lift force (iii) Resultant force.              5

14 (a) Derive the condition for the most economical trapezoidal channel section.     5
   (b) A drainage pipe 1m in diameter conveys water at a depth of 0.4m. The pipe is
       laid at a slope of 1 in 1000. Find the discharge, taking manning's coeff.
       n=0.015.                                                                      5

15 (a) Explain in detail, the various gradually varied flow profiles and their
       characteristics.                                                             5
   (b) In a channel of width 10m, water flows at the rate of 16 m$^3$/s, with a velocity
       of 1.6 m/s. Calculate the specific energy head. Find also the critical depth,
       critical velocity and the minimum specific energy head corresponding
       to this discharge of channel.                                                5

16 (a) Derive the momentum equation for a jump in horizontal rectangular channel.    5
   (b) What is an airfoil? Define and explain the following terms of airfoil.
       (i) Chord length (ii) Angle of attack (iii) Aspect ratio.                     5

17 Write short notes on:                                                             10
   (i) Specific energy diagram
   (ii) Surges
   (iii) Reynolds experiment.

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# FACULTY OF ENGINEERING

## B E IV-Semester (CBCS) (EE/Inst.) Examination, December 2018 / January 2019

### Subject: Linear Integrated Circuits

**TIME: 3 Hours**                                                                                           **Max. Marks: 70**

Note: Answer All Questions From Part-A & Any Five Questions From Part-B

### PART-A (20 MARKS)

| | |
|---|---|
| 1. What is slew rate? Explain its significance. | (2) |
| 2. What is voltage follower? Give one application of it. | (2) |
| 3. Distinguish between astable, bistable and monostable multivibrators. | (2) |
| 4. What is a precision diode? | (2) |
| 5. Draw the pin diagram of 555 timer and explain the importance of each pin. | (2) |
| 6. List out the various applications of timer. | (2) |
| 7. List and explain the characteristics of three terminal IC regulators. | (2) |
| 8. Write the limitations of linear voltage regulators. | (2) |
| 9. Define a Notch filter. | (2) |
| 10. Explain the characteristics of a Butterworth filter. | (2) |

### PART-B (50 MARKS)

11. (a)  Explain the working of an ideal integrator by drawing its circuit diagram and frequency response graph. (5)
    (b) Draw the circuit of a voltage to current converter. Explain its operation. (5)

12. (a) Explain the working of a stable multivibrator. (5)
    (b) What is an instrumentation amplifier? Draw a system whose gain is controlled by an adjustable resistance. (5)

13. (a) Draw and explain the operation of Wien bridge oscillator. Derive the equation for frequency of oscillations. (5)
    (b) Draw and explain the operation of triangular wave generator. (5)

14. (a) Explain the current limiting feature of 723 regulator. (5)
    (b) Draw and explain the operation of a series voltage regulator using Op-Amp. (5)

15. (a) Design a wide band pass filter having $f_L$ = 400Hz, $f_h$ = 2kHz and pass band gain of 4. Find the value of Q of the filter. (5)
    (b) Draw neat circuit of first order low pass filter and describe it in detail. (5)

16. (a) Explain the operation of positive clipper and positive clamper by drawing necessary waveforms. (5)
    (b) Explain the Quadrature oscillator in detail. (5)

17. Write short notes on
    (a) Universal filter. (5)
    (b) Zero crossing detector. (5)

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# FACULTY OF ENGINEERING

**B.E. (ECE) IV – Semester (CBCS) (Suppl.) Examination, December 2018/January 2019**

### Subject: Pulse Digital and Integrated Circuits

**Time: 3 Hours**                                                **Max.Marks: 70**

**Note: Answer all questions from Part – A and any five questions from Part – B.**

### PART – A (10x2 = 20 Marks)

1  Derive the expression for % tilt of a High pass RC circuit excited by a symmetrical square wave.
2  Prove that Low pass RC circuit acts as an integrator
3  Draw the circuit of compensating attenuator and give the relation of perfect compensation.
4  Compare the performance of series clipper with shunt clipper.
5  Define the three types of errors that occur in time base generators.
6  What are the applications of a bistable multivibrator?
7  What is noise immunity? Define Noise Margin with respect to a TTL logic Gate.
8  Explain the terms $t_{PHL}$ and $t_{PLH}$ for a Logic Gate with illustrative diagram.
9  Draw the circuit diagram of CMOS INVERTER and explain.
10 What makes MOS circuitry so well suited for LSI and VLSI?

### PART – B (50 Marks)

11 a) Prove that High Pass RC circuit can function as a differentiator and give the criterion for good differentiator.       5

    b) A square wave of 20 $V_{p-p}$ is impressed on a High Pass RC circuit with a time constant of 1ms. Determine the maximum and minimum values of output waveform. Prove that the average value of output is zero.       5

12 a) Sketch the output response for the following clipper circuit when the input is linearly varying from 0 to 150 V. Assume diodes are ideal.       5
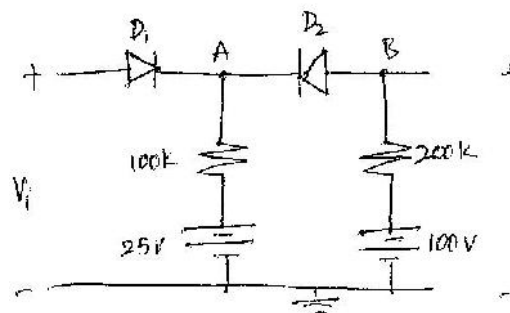
b) Design a circuit to obtain the following transfer characteristic:
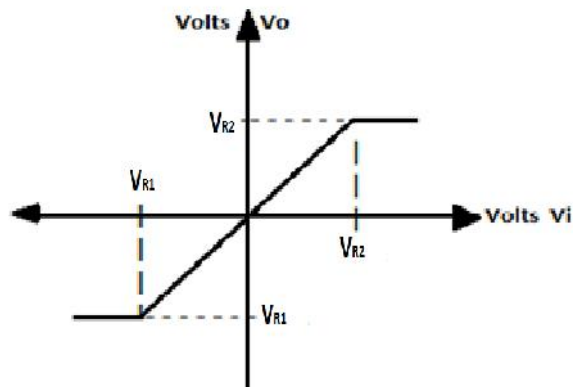


13 What is a mono-stable multivibrator? Explain the principle of operation of mono-stable multivibrator with the help of a diagram and derive an expression for pulse width. Draw the waveforms at collector and base of transistors.     10

14 a) Draw the circuit diagram of a 3 input CMOS NOR gate and explain its operation with truth table.     5

   b) What are the electrical characteristics of standard TTL logic family? What are the advantages of totempole circuit in TTL Gates.     5

15 a) What is meant by Tri-state logic? Draw the circuit of a TTL tri-state INVETER and explain the operation with the help of a Truth table.     6

   b) Explain the operation of CMOS transmission gate and write its applications.     4

16 a) State the clamping circuit theorem, what is its significance.     4

   b) Write about UJT and show how it works as a UJT relaxation oscillator. Obtain the expression for frequency of oscillation     6

17 Write short notes on:     10
   a) CMOS Technology
   b) Transistor as a switch
   c) Time base waveform generators.

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# FACULTY OF ENGINEERING

**B.E. (M/P) IV – Semester (CBCS) (Suppl.) Examination, December 2018/January 2019**

## Subject: Basic Electronics

**Time: 3 Hours**                                                            **Max.Marks: 70**

**Note: Answer all questions from Part – A and any five questions from Part – B.**

### PART – A (20 Marks)

| | | |
|---|---|---|
| 1 | What is zener breakdown and what is the use of it? | 2 |
| 2 | What is drift current? | 2 |
| 3 | What is alpha beta and Gama with respect to BJT? Derive relation between them? | 2 |
| 4 | What is pinch off voltage with respect to JFET? | 2 |
| 5 | Which type of feedback is used in Amplifiers and why? | 2 |
| 6 | What is Bark Hausen criteria for stable oscillations? | 2 |
| 7 | Draw the circuit for OP-AMP as Differentiator. Write the final equation of its output. | 2 |
| 8 | Draw Half adder and write its truth table. | 2 |
| 9 | What is LVDT? | 2 |
| 10 | What is thermocouple? | 2 |

### PART – B (50 Marks)

11 a) Define Hall effect and derive an equation for Hall voltage of semiconductors diode. 5

   b) Mention the applications of diode.                                                                      5

12 a) Draw and explain the Drain and Transfer characteristics of common source JFET. 5

   b) What is the biasing of BJT and explain the significance of stability factor.                5

13 Draw a neat circuit diagram of the Hartley oscillator and derive the frequency
of oscillations and condition for Oscillations.                                                             10

14 a) Draw the Full Subtractor using basic logic gates and write the truth table.          5

   b) What are the characteristics of Ideal OP-AMP? Explain the importance of CMRR? 5

15 a) Draw a neat circuit diagram and explain the formation of SCR.                            5

   b) Explain the V-I Characteristics of SCR.                                                                 5

16 Explain the construction working of CRO with the help of a neat circuit diagram    10

17 Write short notes on:
   a) Transducers                                                                                                           3
   b) Photo diode                                                                                                           3
   c) Instrumentation amplifier                                                                                      4

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# FACULTY OF ENGINEERING

**B.E. (A.E) IV – Semester (CBCS) (Suppl.) Examination, December 2018 / January 2019**

## Subject: Automotive Chassis Components

**Time: 3 Hours**                  **Max.Marks: 70**

**Note: Answer all questions from Part – A and any five questions from Part – B.**

## PART – A (10x2 = 20 Marks)

1. Define chassis.
2. State the reasons for testing of chassis frame.
3. List out the types of drive line used in automotive vehicles.
4. Draw and explain differential working principle.
5. List out the types of front axles with neat sketches.
6. Draw a steering linkage for conventional type chassis frame.
7. List out the advantages of independent over dependent suspension system.
8. List out the types of suspension springs with neat sketch.
9. State the requirements of brakes system.
10. State working of antilock braking system.

## PART – B (50 Marks)

11. a) Explain the types of chassis layout with reference to power plot locations and drives.
    b) Explain the types of frames used in automobiles.

12. a) Explain conditions for true rolling motion of wheels during steering.
    b) List out the types of steering gear boxes and explain any one in detail with a neat sketch.

13. a) What is the difference between Hitchcock drive and tongue tube drive.
    b) List out the types of final drive explain any one with neat sketch.

14. a) Explain the suspension system for car (LMV).
    b) Explain with neat sketch of torsion bar.

15. a) Explain briefly hydraulic braking system.
    b) Draw a layout for air brakes.

16. a) Explain power assisted steering system.
    b) Explain power assisted braking system.

17. Explain the following:
    i) Fundamental equation for correct steering
    ii) Centre point steering
    iii) Anti rolling bar.

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# FACULTY OF ENGINEERING

### B.E. IV-Semester (CBCS) (CSE) (Suppl.) Examination, Dec. 2018/ January 2019

### Subject: Computer Organization

**Time: 3 Hours**                                                                                   **Max. Marks: 70**

**Note: Answer all questions from Part-A and Any five questions from Part-B.**

### PART – A (20 Marks)

| | |
|---|---|
| 1  What is r's complement? How do you implement complement system? | 2 |
| 2  What is bus transfer? Explain different mechanisms to construct buses. | 2 |
| 3  What is register transfer? Give an example. | 2 |
| 4  What are different types of shift micro operations. | 2 |
| 5  Draw the instruction word format and indicate number of bits in each part. | 2 |
| 6  List different addressing modes. | 2 |
| 7  Classify CPU organizations. | 2 |
| 8  What is cache hit ratio? | 2 |
| 9  What is CAM? | 2 |
| 10 Differentiate between RISC and CISC. | 2 |

### PART – B (50 Marks)

11 a) Show the inter connection structure of different components of a computer. Explain their functions.                                                                          4

   b) Draw Instruction cycle flow chart. Explain its operations.                          6

12 a) What is a micro operation? Discuss different kinds of operations implemented on a shift register.                                                                              6

   b) Illustrate Interrupt cycle with an example.                                         4

13 a) Write a program to evaluate the arithmetic statement
   $X = \{A + B * C – (D * E – F)\} / \{G+H * K\}$
   Using i) Three address      ii) Two address      iii) One address      iv) Zero address instructions                                                                              6

   b) An instruction is stored at location 300 with its address field at location 309. The address field has value 500. A processor register contains number 200. Evaluate the effective address if the addressing mode of the instruction is
   a) direct     b) immediate    c) register indirect    d) Index with processor register as the index register                                                                     4

14 a) What is associative mapping? How is it implemented to improve performance?      4

   b) What are the different types of data transfer? Explain.                            6

15 a) Explain how the communication takes place between  CPU and IOP.                   6

   b) Draw the block diagram of RAM chip and explain with the help of function table.   4

16 a) What are the six basic I/O operations? Explain.                                    6

   b) Differentiate between Isolated and Memory mapped I/O.                              4

17 Explain in detail different kinds of asynchronous data transfer methods with the help of block and timing diagrams.                                                              10

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# FACULTY OF ENGINEERING

**B.E. (IT) IV – Semester (CBCS) (Suppl.) Examination, December 2018/ January 2019**

### Subject: Scripting Languages

**Time: 3 Hours**                                                                 **Max.Marks: 70**

**Note: Answer all questions from Part – A and any five questions from Part – B.**

### PART – A (10x2 = 20 Marks)

1  Differentiate between scripting and non-scripting languages.

2  Discuss any two applications of scripting languages.

3  What is the significance of indentation in python?

4  Define variable and describe the ways to assign values to variables.

5  Write short note on pass statement.

6  Give the syntax of "else" in loops.

7  Write the basic difference between lists and tuples.

8  Discuss the scope of variables.

9  Give the syntax of rename () method.

10 How to delete a file in python? Give an example.

### PART – B (10x5 = 50 Marks)

11 Explain the different types of scripting languages.

12 a)  Discuss the steps to setup python environment.

   b)  Write about built-in data types in python.

13 a)  Explain the various symbols used with string format operator %.

   b)  Write about string formatting with format ( ).

14 Write a python program to demonstrate various operations on dictionary.

15 Explain about list methods with examples.

16 Discuss the different modes of opening a file with an example program for any one mode.

17 Write a python program to perform arithmetic operations using user-defined functions.

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