FACULTY OF ENGINEERING

B. E. 2/4 (Civil) II – Semester (Backlog) Examination, March/April 2021

Subject: Surveying - II

Time: 2 hours   **Max. Marks: 75**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any seven questions.   **(7x3=21 Marks)**

1. What are 'face-left' and 'face-right' observations?
2. Describe the temporary adjustments of a transit theodolite.
3. How do you adjust traverse by Bowditch method?
4. Explain briefly about consecutive coordinates with an example.
5. Define the terms long chord and deflection angle.
6. When do you prefer reverse curves in the field?
7. What are the uses of transition curves?
8. An upgrade of 1% join a down grade of 0.5%. Find the length of a vertical curve if the allowable rate of change of gradient is 0.1% per chain.
9. What are the tachometric constants? Explain them briefly.
10. How total station is different from theodolite, explain briefly?

PART – B

Answer any three questions.   **(3x18 = 54 Marks)**

11. How do you measure horizontal angle by repetition and reiteration methods? Which errors are eliminated?

12. The following are the particulars of a traverse run in the counterclockwise direction.

Line	Length(m)	Bearing
AB	145.8	$342^0 24$
BC	517.2	$143^0 35'$
CD	315.9	$137^0 20'$

Calculate the length and bearing of the closing line DA, and the angle CDA.

13. Two tangents intersect at change of 1190m, the deflection angle being 36^0. Compute all the data necessary to set out a curve of radius 300m, by deflection angle method. The peg interval is 30m.   10

14. An upgrade of 1% joins a downgrade of 0.5% at a point of chainage 885m. The RL of this point is 140.250m. Calculate the chainages of the beginning and end of a suitable vertical curve to join these gradients, and determine the reduced levels of points on the curve at 30m intervals.

15. Determine the gradient from a point P to a point Q from the following observations. The constant of the instrument was 100 and the staff was held vertically.

Inst. at	Staff point	Bearing	Vertical angle	Staff readings (m)		
				Bottom	Centre	Top
A	P	140^0	$+10^045'$	1.35	1.92	2.49
A	Q	230^0	$+5^030'$	1.08	1.90	2.72

16. (a) A theodolite is set up between two towers P and Q. The theodolite station was 6 m from P and 126m from Q. Observations were taken to P and Q, and the angles of elevation were $33^000'$ and $30^030'$, respectively. The reduced level of the instrument axis was 144m. Calculate the reduced levels of P and Q.

(b) Given that the intersection angle of a two-degree curve is 120^0, compute the various elements of a simple curve.

17. (a) A railway curve of 1350m radius is to be set out to connect two tangents. The design speed is 110 kmph. Find a suitable length of transition, and the necessary shift of the circular curve.

(b) What are the applications of GPS?

******

FACULTY OF ENGINEERING

B. E. 2/4 (EEE/Inst.) II – Semester (Backlog) Examination, March/April 2021

Subject: Solid Mechanics

Time: 2 hours   Max. Marks: 75

Note: Missing Data, if any, may be suitably be assumed.

PART – A

**Answer any seven questions.**   **(7x3=21 Marks)**

1. Define Poisson's ratio and Modulus of Elasticity.
2. State the relation between three Moduli E, C and K.
3. Define point at Contrafbxone.
4. Draw the bending Moment diagram for simply supported beam carrying UDL.
5. What are the basic assumptions of simple bending?
6. Draw the shear stress diagram for T-Section.
7. State the maximum slope and deflection for a simply supported beam carrying UDL throughout the span.
8. Explain the terms strain energy and proof resilience.
9. Define Torsional stiffness.
10. What is a spring? What are its uses?

PART – B

Answer any three questions.   **(3x18 = 54 Marks)**

11. A steel bolt 12mm diameter passes through a brass tube of 16mm internal diameter, 250mm long and 20mm external diameter. The bolt is tightened by a nut at 15^0C, so as to exert a compressive force of 20kN on the tube, calculate the stresses in each when the temperature of the bolt and tube is raised by 100^0C.

    Take $E_s = 200$ Gpa $\alpha_s = 12 \times 10^{-6}/ {}^0$C.
    $E_b = 100$ Gpa $\alpha_b = 19 \times 10^{-6}/ {}^0$C.

12. Draw the SFD and BMD for the beam shown.
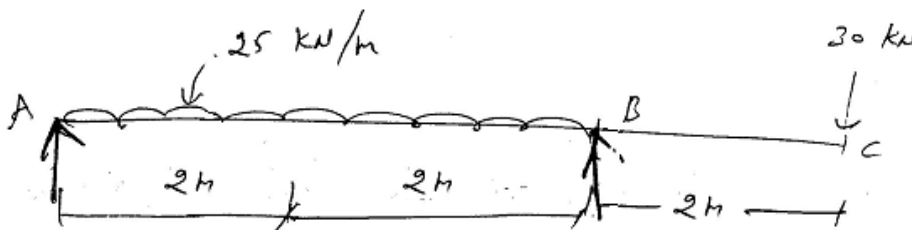
13. A simply supported beats of span 6m is subjected to a UDL of 10 KN/m over its entire span. The cross section of the beam is with T shape having a flange size 250mm x 70mm and label 220mm x 60mm. Sketch the bending stress distribution at its span.

14. A simply supported beam of span 6m carries 2 point loads of 10KN and 20 KN at 2m and 4m from left end respectively. Find the slope at supports and deflection under point loads.

   (EI = Constant).

15. A solid shaft transmits 300 kilowatt of power at 100 rpm. Determine the diameter of the shaft if the shear stress is not to exceed 75 Mpa. If this shaft is replaced by a hollow shaft whose internal diameter is 0.6 of the external diameter while the length, material and the maximum shear stress are the same, find the percentage saving in weight.

16. (a) A steel bar 150mm^2 of cross section elangatas 0.05 mm over a 50mm gauge length under an axial load of 30 KN. Determine its strain energy. If the load at elastic limit is 50 kN. Find the proof resistence and the elongation.

   (b) The coil diameter of a close coiled helical spring having 10 coils is eight time the wire diameter. The spring absorbs 60 N-M of energy when compressed by 10mm. Find the coil diameter and the wire diameter and the maximum shear stress.

17. A 100 mm x 400 mm I beam is subjected to a shear force of 15 KN. Find the transverse shear stress at the natural axis and at the top of the web what is the percentage of shear force carried by the web? Moment of Inertia of the section is 1.1 x 10^{6}mm^4 web thickness is 30mm and flange thickness is 40mm. Also draw the shear stress distribution across the section.

******

FACULTY OF ENGINEERING

BE 2/4 (ECE) II-Semester (Backlog) Examination, March/April 2021

Subject: Analog Electronic Circuits

Time : 2 Hours   **Max. Marks: 75**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

**Note: Answer any Seven Questions**   **(7x3 = 21Marks)**

1. Classify amplifiers based on type of coupling between stages and operating Requency range.

2. Three stages are connected in cascade with gain of one stage is 50 and upper cutoff frequency is 100KHz. Find overall gain and upper cutoff frequency.

3. Open loop voltage gain of an amplifier is 40dB, bandwidth = 1 MHz, feedback ratio = 0.02. Calculate gain and bandwidth with feedback.

4. Derive the input impedance of current series feedback amplifier.

5. Compare RC and LC oscillators.

6. What are the limitations of Zener voltage regulator?

7. What are the different classes of operation of power amplifiers based on efficiency?

8. Class-AB operation: explain briefly with its advantage.

9. Classify tuned amplifiers?

10. Define selectivity and bandwidth with respect to tuned amplifiers and write their relation.

PART – B

Note: Answer any Three Questions   **(3x18 = 54Marks)**

11.   Draw two stage RC coupled amplifier using FET and derive the expression of Av at mid and low frequencies.

12.   Define negative feedback in an amplifier and explain all negative feedback topologies with neat sketch.

13.   Obtain the condition for the frequency of sustained oscillations for transistor RC phase shift oscillator and also derive hfe condition.

14. a) Prove that efficiency of class-A power amplifier is 50%.
    b) What is class-D operation –explain with a circuit and give its applications?

15. Derive expressions for gain at resonance and bandwidth of double tuned RF voltage amplifier.

..2

16. For the circuit shown find Rmf, Rof and Rif, given hie = 1.1 KΩ and hfe = 100
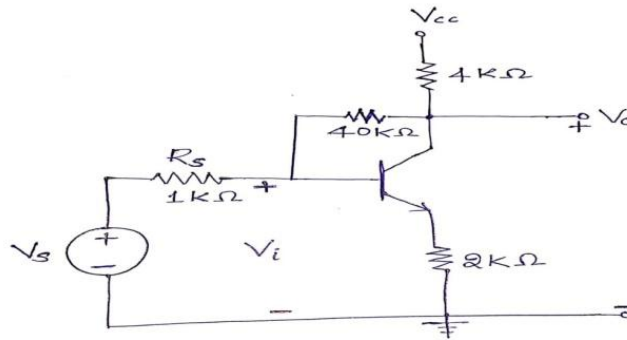
17. Write short notes on two of the following:
   a) Transistorised series regulator

   b) Neutralization and unilatirisation

   c) Complimentary symmetry power amplifier.

****

FACULTY OF ENGINEERING
BE 2/4 (M/P) II-Semester (Backlog) Examination, March/April 2021

Subject: Fluid Dynamics

Time: 2 hours   **Max. Marks: 75**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

 Answer any seven questions.   **(7x3=21 Marks)**
1 Distinguish between Newtonian and Non-Newtonian fluids.
2 Define concept of continuum.
3 Differentiate between steady and unsteady fluid flow.
4 Define streak line and path line .
5 Obtain the expression for Bernoullis equation.
6 Define Newton's law of viscosity.
7 What are different instruments used to measure the velocity?
8 What is Reynold's number. Write it's significance?
9 What is a Drag force?
10 Differentiate between compressible fluid and incompressible fluids.

PART – B

 Answer any three questions.   **(3x18 = 54 Marks)**

11 (a) Derive the equation of velocity potential function for a cylindrical polar
        coordinates for two dimensional flow.
   (b) Write the properties of Stream function.

12 Derive the Euler's equation of motion for three dimensional flow.

13 (a) Distinguish between laminar and turbulent flows
   (b) Using Hagen-poiseulle equation drive an expression for the head loss in a pipe
        of diameter D and length L in terms of Reynolds number and velocity head.

14 (a) Discuss with neat sketch about the principle and working of pressure measuring
        devices.
    (b) Explain the working principle of velocity measurement devices with neat sketch.

15 (a) What is stagnation pressure in compressible flow?
   (b) Explain the energy equation for a compressible flow.

16 What are the different types of fluid flow describe all in detail?

17 Write short notes on the following:
   (a) Ideal and real fluids.
   (b) Hagen-poiseulle equation.
   (c) Darcy's Equation.

*****

FACULTY OF ENGINEERING
BE 2/4 (AE) II-Semester (Backlog) Examination, March/April 2021
Subject: Fluid Mechanics and Machinery

Time: 2 hours   Max. Marks: 75

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any seven questions.   **(7x3=21 Marks)**

1 How does the viscosity of air vary with temperature?
2 Define (a) Surface tension (b) Capillarity
3 Distinguish between rotational flow and irrotational flow. Give one example each.
4 Derive Bernoulli's Equation from Euler's equation.
5 What are TEL and HGL? Explain.
6 Classify the flow measurement devices.
7 Briefly explain the characteristics of laminar boundary layer.
8 Define Hydraulic efficiency of a turbine.
9 What is the necessity of draft tube in reaction turbine?
10 How centrifugal pumps are classified based on casing?

PART – B

Answer any three questions.   **(3x18 = 54 Marks)**

11 The space between two square parallel plates is filled with oil. Each side of the plate is 75 cm.
   The thickness of the oil film is 10 mm. The upper plate which moves at 3 m/s requires a force
   of 100 N to maintain the speed. Determine:
   (i) The dynamic viscosity of the oil.
   (ii)The kinematic viscosity of the oil, if the specific gravity of the oil is 0.9

12 A venture meter with 150 mm diameter at inlet and 100 mm at throat is laid with its axis
   horizontal and is used for measuring the flow of oil of specific gravity 0.9. The oil mercury
   differential manometer shows a gauge difference of 200 mm. calculate discharge. Assume the
   coefficient of discharge for the venture meter as 0.98.

13 A fluid of viscosity 0.7 Ns/m^2 and specific gravity 1.3 is flowing through a pipe of diameter
   10 cm. The maximum shear stress at the pipe wall is 196.2 N/m^2. Find
      (i) The pressure gradient,   (ii) the average velocity and   (iii) Reynolds No. of the flow.

14 (a) State the importance of Reynolds number and justify the type flow.
   (b) In a pipe of 300 mm diameter and 800 m length, an oil of specific gravity
       0.8 is flowing at the rate of 0.45 m^3/s. Evaluate: (i) head lost due to friction, and
       (ii) power required maintaining the flow. Take kinematic viscosity of oil as 0.3 stoke.

15 A Pelton wheel has a mean bucket speed of 35 m/s with a jet of water flowing at the rate
   of 1 m^3/s under a head of 270 m. The buckets deflect the jet through an angle of 170°.
   Calculate the power delivered to the runner and the hydraulic efficiency of the turbine. Assume
   co-efficient of velocity as 0.98.

16 A centrifugal pump having outer diameter equal to 2 times the inner diameter and running at
   1200 rpm works against a total head of 75 m. The velocity of flow through the impeller is
   constant and equal to 3 m/s. The vanes are set back at an angle of 30º at outlet. If the outer
   diameter of the impeller is 600 mm and width at outlet is 50 mm. Determine:
   (i) Vane angle at outlet,
   (ii) Work done per second by impeller
   (iii) Manometric efficiency.

17 Write a short note on:
   (a) Double acting reciprocating pump
   (b) Gear pump

*****

FACULTY OF ENGINEERING
B.E. 2/4 (CSE) II-Semester (Backlog) Examination, March/April 2020

Subject : Object Oriented Programming Using Java

Time: 2 hours   Max. Marks: 75

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any seven questions.   **(7x3=21 Marks)**
1. Write about history of JAVA.
2. What is the purpose of Garbage Collection?
3. Define daemon threads.
4. Differentiate final and finally and finalize().
5. Outline Hierarchy of Collection Framework.
6. What is the use of String Tokenizer and write the constructors of string tokenizer class?
7. List out Layout Manager in AWT.
8. Compare Checkbox and Checkbox Group.
9. What is file class?
10. Write about Serialization and Deserialization.

PART – B

Answer any three questions.   **(3x18 = 54 Marks)**
11.(a) Explain in detail about java buzzwords.
   (b) Explain creation of a package and importing a package.

12. Write about any 5 methods of String class with the sample programs.

13. Discuss about BitSet and Date classes with example.

14. (a) Write about List class.
    (b) Explain the steps involved in creating and handling of Menus.

15. Explain briefly about Byte classes and Character Stream.

16. (a) Write short notes on Layout managers.
    (b) Write a program to copy one file content into another file.

17. Explain about
    (a) Arrays
    (b) PrintWriter class
    (c) Calendar

*****

FACULTY OF ENGINEERING
BE II/IV (IT) II-Semester (Backlog) Examination, March / April 2021

Subject: OOP Using Java

Time: 2 Hours　　　　　　　　　　　　　　　　　　　　　　　　**Max .Marks: 75**

Note: Missing data, if any, may be suitably assumed

PART – A

Answer any seven questions.　　　　　　　　　　　　　　　　**(7x3=21 Marks)**
1　Differentiate overloading and overriding.
2　Distinguish between checked and unchecked exceptions.
3　What are the different ways of defining constants in java?
4　What is the use of string tokenizer class?
5　What is the use of packages?
6　List the different collection classes and collection interfaces.
7　What is the use of 'super' keyword?
8　Differentiate vector and array list.
9　Define swing in java with example.
10 Define serialization.

PART – B

Answer any three questions.　　　　　　　　　　　　　　　　**(3x18= 54 Marks)**
11 (a) Explain interfaces concept. Give examples.
　　(b) Explain super keyword with example program.

12 (a) Explain the features and benefits of object oriented development.
　　(b) Write a java program to read 'n' numbers from console and print their sum and average.

13 (a) In detail explain collection interface and collection classes.
　　(b) Explain the methods of an object class.

14 (a) Briefly discuss about the concept of multiple catch statements.
　　(b) Briefly discuss about the control statements used in java.

15 (a) Explain various AWT components with examples.
　　(b) Write a program to implement choice class.

16 (a) What is the difference between paint () and repaint () methods?
　　(b) Compare flow layout and border layout managers.

17　　Write short notes on:
　　　　(a) Runnable interface and multiple threads.
　　　　(b) Life cycle of an applet.
　　　　(c) Inter process thread communication.

*

FACULTY OF ENGINEERING

BE (Civil) (CBCS) IV-Semester (Backlog) Examination, March / April 2021

Subject : Fluid Mechanics-II

Time : 2 Hours   **Max. Marks: 70**

Note: Missing data, if any, may be suitably assumed

PART – A

Note: Answer any Five Questions   **(5x2= 10Marks)**

1. Write the significance of Reynolds experiment

2. Mention different pipe materials used

3. Define displacement thickness

4. Write two conditions of critical flow

5. What do you understand by back water curve

6. Define Reynolds number

7. What do you understand by boundary layer

8. Explain the Concept of Drag and lift

9. Define energy correction factor

10. Explain under what situation surges will form.

PART – B

Note: Answer any Four Questions   **(4x15= 60 Marks)**

11. a) Derive an expression for loss of head in turbulent flow through circular pipes
    b) Oil of 0.2 Pas and specific gravity of 0.8 flow through a horizontal pipe of 25mm diameter. If the pressure drop per meter length of pipe is 12 Kpa, Determine
    i) Shear stress of pipe wall
    ii) Reynolds no. : of flow

12. a) Explain the phenomena of water hammer in Pipes
    b) A valve is provided at the end of cast iron pipe of diameter 15cm and thickness 10mm. The water flowing through pipe is suddenly stopped by closing the valve. Calculate maximum velocing when pressure rise due to sudden closure of Valve is 196 N/cm^2. Take K for water as 19×10^4 N/cm^2 and E for cast iron as 11×10^6 N/cm^2

13. a) Explain t he phenomena of boundary layer separation
    b) A flat plate 2m x 2m moves at 60 kmph in stationary air of density 1.2kg/m^2. If coefficient of drag and lift are 0.2 and 0.8 calculate (i) Lift force (ii) Drag force

14. a) Distinguish between pipe flow and channel flow with a neat sketch

..2

b) The discharge of water through a rectangular channel of width 8m is 15 m^3/s
   when depth of the flow of water is 1.5m. Calculate (i) Specific energy   (ii) Critical depth

15. a) Derive dynamic equation of gradually varied flow.
    b) Determine the slope of the free water surface in a rectangular channel of width
       20m having depth of flow 5m. The discharge through the channel is 50 m^3/s. The bed of the
       channel is having slope of 1 in 4000. Take chezy's constant as 60.

16. a) Derive the condition of most economical rectangular channel section
    b) Calculate the discharge through a rectangular channel of width 2m, having a bed
       slope of 1 in 4000. The depth of flow is 2M and take manning co – efficient as
       0.012.

17. Write short notes on two of the following
a) Condition of critical flow
b) Pipes in series and parallel
c) Types of hydraulic Jump

****

FACULTY OF ENGINEERING
B.E. IV Semester (CBCS) (EEE/Inst.) (Backlog) Examination, March/April 2021

Subject: Linear Integrated Circuits

Time: 2 hours   **Max. Marks: 70**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any five questions.   **(5x2 = 10 Marks)**

1 Mention the advantages of integrated circuits over discrete circuits?
2 Define CMRR?
3 What do you mean by input offset current?
4 Explain the op-amp circuit with positive voltage limiting?
5 What is Zero crossing detector?
6 State the two conditions of oscillations?
7 Draw the current fold back characteristic?
8 How the current boosting is achieved in a 723 IC?
9 Define an electric filter?
10 How do we get a notch filter from a band pass filter?

PART – B

Answer any four questions.   **(4x15 = 60 Marks)**

11 a) Show with the help of circuit diagram an op-amp used as a
       (i) scale change
       (ii) Phase shifter
       (iii) Inverting adder
       (iv) Non inverting adder. Draw an op-amp circuit whose output is $V_1 + V_2 - V_3 - V_4$.
   b) Explain the op-amp circuit with positive clipper and negative clamper?

12 (a) What is an instrumentation amplifier? Draw a system whose gain is controlled by
        an adjustable resistance?
   (b) Explain the op-amp circuit with positive clipper and negative clamper?

13 (a) Explain the operation of triangular wave generator and find out its period?
   (b) Sketch the op-amp integrator & differentiator circuit with necessary equations?

14 What is the principle of switch mode power supplies? Discuss its advantages and
   disadvantages?

15 a) Design a first order LPF for a high cut-off frequency of 2kHz and pass band gain
      of 2.
   b) Discuss the importance of switched capacitor filter?

16 What is the voltage controlled oscillator and find out the frequency of VCO using IC565?

17 a) Show the feed back arrangement to increase the gain of audio power amplifier
      and explain briefly?
   b) Discuss few applications of LM380 audio power amplifier?

****

FACULTY OF ENGINEERING
BE IV - Semester (CBCS) (ECE) (Backlog) Examination, March/April 2021

Subject: Pulse, Digital & Integrated Circuits

Time: 2 hours   Max. Marks: 70

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any five questions.   **(5x2 = 10 Marks)**

1   Explain how a high pass RC circuit works as a differentiator.
2   An ideal pulse of amplitude 10V applied to an RC low pass circuit. The width of the pulse is 3μsec. draw the output waveform if the upper cut-off frequency is 0.3M Hz.
3   Draw the diode based positive clipper and draw its waveforms.
4   Design a clamping circuit to clamp the negative peak to 5V given that $R_f = 100Ω$, $R_r = 100kΩ$, f= 2 kHz, K= 10 & V_D = 0.7V.
5   Design a transistor switch circuit for the following specifications: $h_{fe (min)}$ = 100, V_{CC} = 5V, V_{in} = 3V and $I_{C(Sat)}$ = 5mA.
6   Define storage time and transition time of a diode.
7   Draw the circuit diagram of Schmitt trigger.
8   Define the sweep-speed error and transmission error. Also, write the expression for them.
9   Explain about DL-AND gate.
10 Draw the circuit diagram of NMOS-NOR gate and verify the truth table.

PART – B

Answer any four questions.   **(4x15 = 60 Marks)**

11 (a) A 100 Hz square wave fed to an RC low pass circuit. Calculate and plot the waveform. under the following conditions, the upper 3-dB frequency is
        i) 3Hz   ii) 100Hz   iii) 300Hz
   (b) Derive the output equations and draw the output waveforms of a RC high pass circuit for Ramp input voltage.

12 (a) Draw the circuit diagram of positive slicer circuit and explain its operation with the help of its transfer characteristics
   (b) Explain the effect of Rs & R_f on clamper circuit and derive its expression for output voltage levels for square wave input.

13 (a) Draw the diode comparator circuit and explain its operation when ramp input signal is applied.
   (b) Design a collector coupled astable to produce an unsymmetrical square wave of T1 = 0.5ms and T2 = 0.4 ms. the square wave amplitude is 15V. Assume $h_{fe (min)}$ = 20, $I_{C(SAT)}$ = 5mA and $V_{CE(Sat)}$ = 0.

14 Draw the circuit diagram of Schmitt trigger and explain its operation. Derive the expression for UTP & LTP.

15 (a) Derive the expression for sweep time of sweep circuit using UJT.
   (b) Draw the circuit diagram of a 2- input TTL NAND gate with totem pole and explain its working.

16 (a) Draw and explain the circuit diagram of integrated positive RTL-NOR gate.
   (b) Draw the circuit diagram of a 2-input OR gate using diodes for
       (i) positive logic & (ii) negative logic and explain the operation of circuit.

17 Write the short notes on:
   (a) UJT relaxation oscillator
   (b) Commutating capacitors in bistable multivibrator.
   (c) Propagation delay and figure of merit

****

FACULTY OF ENGINEERING

B.E. (M/P) IV – Semester (CBCS) (Backlog) Examination, March/April 2021

Subject: Basic Electronics

Time: 2 hours   Max. Marks: 70

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any five questions.   **(5x2 = 10 Marks)**

1 Distinguish between Insulators, Semiconductors and conductors with the help of Energy Band diagram.
2 Define PIV, Ripple factor, regulation and TUF
3 Classify the regions of operation of BJT.
4 Differentiate between JFET and BJT.
5 Draw the equivalent circuit of a crystal to be used in an Oscillator.
6 State the Advantages of Negative Feedback.
7 Define the terms Slew rate and CMRR.
8 Draw the Full adder using half adders.
9 Give the symbols for DIAC and TRIAC.
10 Differentiate between Photo Diode and Photo Transistor.

PART – B

Answer any four questions.   **(4x15 = 60 Marks)**

11 a) With neat diagram explain the operation of center-tapped full wave rectifier and derive the equations for I_{rms}, I_{dc}, V_{rms}, V_{dc}, Ripple factor and Efficiency.
   b) A 230V, 60HZ voltage is applied to the primary of 5:1 stepdown center-tapped transformer used in full wave rectifier having load of 900Ω. The diode resistance and secondary coil resistance of 100Ω. Determine a) V_{dc}, b) I_{dc}, c) P_{dc}, d) PIV e) Ripple factor f) Ripple voltage, V_{rms} g) Ripple frequency.

12 a) Draw the circuit of Common Emitter configuration. Explain its input and output characteristics in detail.
   b) Analyze Common Source Amplifier with its small signal equivalent circuit and derive its Input Resistance, Output Resistance and Voltage Gain.

13 a) What are the LC type of Oscillators? Explain the principle of operation of any of those with neat diagram.
   b) Draw and explain the operation of negative feedback amplifier with neat diagram.

14 a) Explain Instrumentation Amplifier.
   b) What is Half Subtractor? Realize a Full Subtractor Using NAND gates only.

15 a) Draw the Block Diagram of CRO and explain the function of each block.
   b) With neat diagram explain the working of LVDT.
16 a) Explain the operation of full adder with the help of truth table and logic circuit.
   b) Draw and explain the working of center-tapped full wave rectifier with L-section filter and derive the equation for ripple factor.

17 Write any two of the following:
   a) Draw and explain FET along with Drain and Transfer Characteristics.
   b) Explain the summer using Op-Amp. Give its Expression.
   c) Explain the Differentiator Using Op-Amp. Give its Expression.

****

FACULTY OF ENGINEERING

B.E. IV Sem. (CBCS) (A.E.) (Backlog) Examination, March / April 2020

Subject: Automotive Chassis Components

Time: 2 hours   Max. Marks: 70

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Note: Answer any five questions.   (5 x 2 = 10 Marks)

1. Sketch the layout of the power flow for a front engine and rear wheel drive vehicle and mark the main components.
2. Compare front engine and front wheel drive vehicle with front engine and rear wheel drive vehicle.
3. Explain self alignment of steering wheel.
4. Sketch a steering knuckle and locate the main parts.
5. Discus why differential locks essential for automobile.
6. Discus why propeller shaft is made as hollow.
7. State the need of suspension system in a vehicle.
8. Discuss how a leaf spring system can be made into a variable rate spring.
9. List out the various factors affecting 'stopping distance' of a vehicle during braking.
10. List out the different materials used for brake lining?

PART – B

Note: Answer any four questions.   (4 x 15 = 60 Marks)

11. a) Explain chassis frame alignment procedure with neat sketch.
    b) Classify chassis according to Chassis frames and drive system with neat sketches.

12. a) Briefly explain power assisted steering with neat sketch.
    b) Derive fundamental equation for correct steering.

13. a) Explain radial arm drive with sketch.
    b) Explain the working principle of differential with neat sketch.

14. a) Explain about telescopic shock absorber with neat sketch.
    b) Sketch and explain front end independent suspension system.

15. a) Explain Exhaust braking system with a neat sketch.
    b) Explain the construction and working of simple master cylinder.

16. a) Explain toe-in, toe-out, camber and caster with neat sketches.
    b) Sketch a universal joint and state two applications in drive system.

17. a) Sketch Torsional bar and sate two advantages.
    b) Distinguish between leading and trailing shoe.

* * *

FACULTY OF ENGINEERING

B.E (CSE) IV-Semester (CBCS) (Backlog) Examination, March/April 2021
Subject: COMPUTER ORGANIZATION

Time: 2 hours   Max. Marks: 70
Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any five questions.   **(5x2 = 10 Marks)**

1. Why 2's complement is used in Binary Subtraction?
2. How to handle overflow problem in arithmetic subtraction?
3. Write symbolic notation for Register transfer?
4. Draw graphic symbol for 3-stage buffer?
5. Write the differences between RISC and CISC?
6. Define Pipeline Register?
7. Write about Bootstrap Loader?
8. Define page fault?
9. Define handshaking in Asynchronous data transfer?
10. Write about cycle stealing in DMA?

PART – B

Answer any four questions.   **(4x15 = 60 Marks)**

11 a) Explain Computer Components with Functional Diagram?
   b) Explain traditional and High performance bus structures with diagrams?

12 a) Explain 4-bit adder, 4-bit adder-subtractor with diagrams?
   b) Explain Shift Micro-operations with circuit diagram?

13 a) Explain mapping from instruction code to microinstruction address?
   b) Explain Register stack and Memory stack in stack organization?

14 a) Explain Memory hierarchy in a Computer System?
   b) Explain RAM and ROM Chips briefly?

15 a) Explain Circuit diagram of 4x4 FIFO buffer?
   b) Explain Daisy chain priority interrupt?

16 a) Explain the interrupt cycle with an example?
   b) Differentiate between indirect and direct addressing modes?

17 Write short note on
   a) Input-Output processor
   b) Virtual Memory

****

FACULTY OF ENGINEERING

B.E. (IT) IV – Semester (CBCS)(Backlog) Examination, March/April 2021

Subject: Scripting Languages

Time: 2 hours   **Max. Marks: 70**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any five questions.   **(5x2 = 10 Marks)**

1. Mention the Origin of Scripting.
2. How Scripting languages differ from the non-scripting language?
3. List the steps for installation of python.
4. Define python version 2.x.
5. What is the use of continue?
6. How to use use of pass statement?
7. What are Build in functions?
8. Discuss closing a file.
9. Explain docstrings.
10. What are opening modes?

PART – B

Answer any four questions.   **(4x15 = 60 Marks)**

11. a) List types of scripting languages and what are the uses of each scripting languages.
    b) What are the characteristics of scripting languages?

12. a) How many data types are there in Python discuss each unit with an example?
    b) Define variable? Explain Expressions with an example.

13. a) Write a program on while statement using Python.
    b) Explain formatting string with format() in Python.

14. a) Define Tuples? Write a program on Tuple concept using Python.
    b) Define Docstrings? How local variables and global variables declare in python
       Explain with an example.

15. a) Discuss file read position in python with an example.
    b) How to renaming and deleting files in python?

16. a) Define Python? Discuss history language features.
    b) What are python file object methods?

17. What are python operators? Explain each with example.

****

FACULTY OF ENGINEERING

B. E. (CE/EE/EIE/CSE) IV – Semester (AICTE) (Backlog) Examination, March/April 2021

Subject: Finance and Accounting

Time: 2 hours   Max. Marks: 70

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any five questions.   **(5x2 = 10 Marks)**

1. Recall Accounting cycle
2. Define Petty cash book
3. Define revenue expenditure
4. Define Current assets
5. What is Discounting principle
6. Illustrate Benefit – Cost ratio
7. What is Capital market
8. Recall Mutual funds
9. What are the uses of ratio analysis
10. Define Turnover ratio

PART – B

Answer any four questions.   **(4x15 = 60 Marks)**

11. From the following information, prepare BRS of Raju traders as on Dec 31, 2019

    (a) Cash book balance as on 31.12.2019 is Rs.1,16,000

    (b) Cheque amounts into Rs.50,000 issued on 25.12.2019 was presented for payment on 5.1.2020

    (c) A Cheque for Rs.40,000 deposited on 21.12.2019 was returned dishonored on 8.1.2020

    (d) Interest on investment Rs.3,000 was collected and credited by bank but no entry is in the cash book

    (e) Bank charges debited in pass book entry Rs.240.

12. (a) What are the advantages of trading account?

    (b) Prepare balance sheet of Raghu from the following particulars.

Capital	Rs.50,000
Debtors	7,000
Machinery	6,000
Investments	24,000
Creditors	14,000
Bills receivable	20,000
Bills payable	4,000

……2

Loose tools	5,000
Net profit	10,000
Drawings	8,000
Closing stock	8000

13. Discuss the role of financial system in promoting economic development.

14. The cost of the project is Rs.1,00,000 and has expected life of 5 years. The cash inflows after the taxes are Rs.48,000; Rs.40,000; Rs.52,000; Rs.34,000 and Rs.32,000. Determine the Pay Back period and ARR.

15. (a) How to calculate profitability ratio? Explain all types of it.

(b) X Limited has a current ratio of 2.5:1 and quick ratio of 1.5:1. Its current assets are Rs.2,00,000. Calculate the value of stock.

16. (a) Define accounting. Discuss the conventions of accounting.

(b) What are the uses of accounting?

17. What are the functions of SEBI. Explain its role in regulating capital market?

* * *

FACULTY OF ENGINEERING
B.E. (ECE/MP/AE) (AICTE) IV – Semester (Main & Backlog) Examination, March/April 2021

Subject: Industrial Psychology

Time: 2 hours   Max. Marks: 70

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any five questions.   **(5x2 = 10 Marks)**

1   Define an "Organization" and mention types of organizations.
2   What are the main departments in any manufacturing industry?
3   What is positive and negative motivation?
4   Mention the purpose and advantages of advertising.
5   Draw the block diagram for the process of employee selection.
6   What is "work curve"? Sketch the same with a neat labelling.
7   Name the factors which hinder job satisfaction.
8   What is TIME and MOTION study?
9   What is JOB evaluation?
10 Mention few causes for accidents in a factory environment.

PART – B

Answer any four questions.   **(4x15 = 60 Marks)**

11 a) Give the definition of "Industrial Engineering" and give a brief history of the developments in the field of Industrial Engineering.
   b) Write in detail about the various theories of organizations.

12 What are the various types of organizations? Write in detail about each type with suitable examples.

13 a) What is the need for motivation? Indicate the various factors which can motivate a person.
   b) Assume that you are the MD of your Company, explain with a block diagram, the process of selecting an employee to suit your companies requirements.

14 a) Why should a company study the Customer's preferences? What is the role of advertising in a company's success?
   b) How is 'morale' important in an organization?

15 a) Define 'Efficiency" and "Work Curve". Why are rest pauses important in a workers schedule for a day?
   b) Write in detail about the effects of:
       i)   Illumination
       ii) Noise and
       iii) Pollution on the efficiency of a worker.

16 a) What is "Methods Design"? Write a short note on how are human factors important in the design of a job.
   b) What is an accident? How can it be prevented? What are the costs of an accident?

17 Write short notes on:
   a) Span of Authority
   b) Theory of Human needs
   c) Types of incentives and
   d) Selection, Training and Placement.

****

FACULTY OF ENGINEERING
B.E. (I.T.) (AICTE) IV – Semester (Backlog) Examination, March / April 2021

Subject: Operations Research

Time: 2 hours   **Max. Marks: 70**

Note: Missing Data, if any, may be suitably be assumed.

PART – A
Note: Answer any five questions.   **(5 x 2 = 10 Marks)**

1. Explain the scope and methodology of Operations research.
2. What is linear programming? What are its major assumptions and limitations.
3. What is the principle of duality in linear programming? Explain its advantages.
4. What is the essential difference between regular simplex method and dual simplex algorithm.
5. How is Hungarian method applied for obtaining a solution if matrix is rectangular.
6. Explain how to resolve degeneracy in a transportation problem.
7. State major limitations of game theory.
8. What are the situations which make the replacement of items necessary.
9. Define queue discipline.
10. Explain principal assumptions made while dealing with sequencing problem.

PART – B
Note: Answer any four questions.   **(4 x 15 = 60 Marks)**

11. (a) Discuss three operations research models.

    (b) Solve by graphical method

        Max $Z = X_1 + X_2$

        STC $X_1 + 2X_2 \leq 2000$

            $X_1 + X_2 \leq 1500$

            $X_2 \leq 600$

            $X_1, X_2 \geq 0$

12. (a) Explain the procedure followed in simplex method of solving linear programming problem.

    (b) Obtain the dual of following LPP

        Max $Z = 2X_1 + 5X_2 + 6X_3$

        STC $5X_1 + 6X_2 - X_3 \leq 3$

            $-X_1 + X_2 + 3X_3 \geq 4$

          $7X_1 - 2X_2 - X_3 \leq 10$

          $X_1 - 2X_2 + 5X_3 \geq 3$

         $4X_1 + 7X_2 - 2X_3 = 2$

             $X_1, X_2, X_3 \geq 0$

13. (a) Explain the process of solving a transportation problem.

    (b) Determine optimum assignment schedule

160	130	115	190	200
135	120	130	160	175
140	110	125	170	185
50	50	80	80	110
55	35	80	80	105

14. (a) Explain different types of replacement problems by giving examples.

    (b) Find the solution of game whose payoff matrix is given.

		B			
		I	II	III	IV
A	I	2	-4	-3	4
	II	4	-3	-3	4

15. (a) What assumptions are made in game theory?

    (b) The maintenance cost per year of a truck whose purchase price is Rs.8000 are given below. Determine at which time it is profitable to replace the truck.

Year	1	2	3	4	5	6	7	8
Maintenance Cost	1000	1300	1700	2000	2900	3800	4800	6000
Resale Price	4000	2000	1200	600	500	400	400	400

16. (a) Explain with suitable examples about the queue.

    (b) Determine a sequence for the jobs that will minimize the elapsed time in hours.

Job	1	2	3	4	5
Machine A	2	6	4	8	10
Machine B	3	1	5	9	7

17. Write short notes on

    (a) NSGA technique

    (b) Two person Zero Sum game giving a suitable example.

* * *