

FACULTY OF ENGINEERING

B.E. II/IV II - Semester (CE) (Backlog) Examination, October 2021

Subject: Electrical Technology (Part-A)

Time: 1 Hour

Max.Marks: 38

Missing data, if any, may be suitably assumed

PART – A

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

- 1 Two resistors of 4Ω and 6Ω are connected in parallel. If the total current is 30A, find the current through each resistor.
- 2 List out the advantages of three phase systems.
- 3 What is a transformer?
- 4 Define efficiency and regulation of transformer.
- 5 What are the types of three phase induction motors?
- 6 Define luminous flux and plane angle

PART – B

Note: Answer any two questions.**(2x14=28 Marks)**

- 7 a) A circuit consists of three resistors of 3Ω , 4Ω and 6Ω in parallel and a fourth resistor of 4Ω in series. A battery of e.m.f. 12V and internal resistance 6Ω is connected across the circuit. Find the total current in the circuit and terminal voltage across the battery.
b) Derive the expression for current, phase-angle and power for R-C series circuit and draw the phasor diagram.
- 8 a) The net cross-sectional area of the core of 400/3000V, 50Hz transformer is 600cm^2 . If the maximum flux density in the core is 1.3 Wb/m^2 , find the number of turns on the primary and secondary.
b) Derive the condition for maximum efficiency of a transformer.
- 9 a) Discuss about star-delta starting method of three phase induction motor.
b) Distinguish between squirrel cage & phase wound rotor of an induction motor.
- 10 a) What are the illumination laws? Explain.
b) A 250V lamp has a total flux of 1500 lumens and takes a current of 0.4A. Calculate (i) lumens per watt. (ii) M.S.C.P. per watt.
- 11 Write short notes on:
 - a) Approximate equivalent circuit of transformer.
 - b) Series-parallel circuits with dc sources.

FACULTY OF ENGINEERING

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

Subject: Mechanical Technology

Time: 1 hours

Max. Marks: 37

Note: (Missing data, if any, may be assumed suitable)

PART – A

Answer any two questions

(2 x 6 = 12 Marks)

- 1 Enlist various types of conveying equipments
- 2 Write applications of Earth compactors?
- 3 Where Paving breaker is used?
- 4 Write the advantages & disadvantages of Belt conveyor?
- 5 Give the application of Revolving Screen & Vibrating Screen.

PART – B

Answer any two questions

(25 Marks)

- 6 (a) Write the working principle and uses of Bucket Wheel Excavator?
(b) Explain Shovels and Dragline.
- 7 (a) Differentiate between Screw Conveyor and Apron Conveyor.
(b) Explain the operation and applications of a Aerial Ropeway.
- 8 (a) Explain with a neat sketch the functioning of a Pneumatic jack hammer.
(b) Briefly bring out the use of Reciprocating air compressor.
- 9 (a) Discuss the working principle of a Concrete mixer?
(b) Differentiate Jaw crusher and Gyratory crusher.
- 10 (a) Explain the construction features and working of a Whirled crane with a neat sketch.
(b) Explain the usage of (i) Cable Excavator & (ii) Bull dozer.

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FACULTY OF ENGINEERING**B.E 2/4 (EEE) II-Semester (Backlog) Examination, October 2021****Subject : Electrical machines-I****Time : 2 Hours****Max. Marks: 75****Missing data, if any, may be suitably assumed****PART – A****Note: Answer any Seven Questions****(7x3 = 21 Marks)**

1. Draw the diagram indicating the flow of energy in electromechanical devices
2. Differentiate between singly & multiple excited systems.
3. Classify the DC generators & list the application of each of them
4. What is meant by dummy coils and for what purpose these coils are used?
5. Draw the speed torque characteristics of shunt & series motor
6. When D.C. shunt motor is operating under normal condition, what happens when suddenly field winding opened?
7. Differentiate between ideal & practical transformer
8. Which method of speed control is suitable for speeds above normal value & Why?
9. Draw the equivalent circuit of transformer & what is the use of equivalent circuit
10. Can Swinburne's test be conducted on series motor? If Yes / No then Why?

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

11. a) Derive the equation of mechanical force in singly excited system
b) Explain the concept of magnetically induced EMF
- 12 a) Explain methods of improving commutation in a dc machine
b) A D.C shunt machine runs as a generator at 500 rpm delivers 40KW at 250V. What will be the speed of the machine when running as motor from 250V mains & drawing 40KW The resistances of armature & shunt field are 0.02Ω & 50Ω respectively. Take brush drop as 1 Volt per brush
- 13 a) Derive an expression for torque of D.C motor. Draw the torque vs current curve of D.Cshunt& D.Cseries motor
b) A 250V DC shunt motor has $R_f = 150\Omega$ & $R_a = 0.6\Omega$.The motor operates on no load with full field flux at its base speed of 1000 rpm with armature current of 5A.If the machine drives a load torque of 100Nm Calculate the armature current & speed of motor .If motor is required to develop 10KW at 1200rpm. What is therequired value of external series resistance in the field circuit. Neglect saturation& armature reaction.
- 14 a) Write a short note on all day efficiency
b) Hopkinson's test on two identical shunt machines gave the following readings:

Supply voltage = 240 V; Field currents = 6A and 5A;
 Line current = 40 A; Armature current of motor = 240 A;
 Armature resistance of each machine = 0.014 Ω ;
 Voltage drop/brush = 1 V.
 Calculate efficiency of each machine

15. A single phase 10 kVA, 2000/200 V, 50 Hz transformer has following test results:

OC test (LV side) :	200 V	0.8 A	60 W
S.C. Test (HV side)	40 V	4 A	1 70 W

Evaluate the following:

- Find out all circuit parameters. and draw its equivalent circuit of transformer.
 - Efficiency of transformer at Y2load and at 0.8 p.f. lagging.
 - The load kVA at which maximum efficiency occurs and also maximum efficiency at 0.8 p.f. lagging.
 - Voltage regulation at 0.8 p.f. lagging and 0.8' p.f. loading at full load condition.
16. a) What is energy loss in a machine & What are the different types of losses in D.C Machine.
- b) A 4 pole DC series motor has wave connected winding with 600 conductors. Total resistance of motor 0.8 Ω . When fed from 250V dc source the motor supplies a load of 10kW and takes 50A with a flux per pole of 3mWb. For these operating conditions, calculate the developed torque and shaft torque
- 17 a) Explain the working of 3 point starter with neat diagram
- b) A 200V shunt motor takes 10A when running on NO LOAD .At higher loads the brush drop is 2V & at light loads it is negligible .The stray losses at a line current of 100A is 50% of No LOAD loss . Calculate the efficiency at line current of 100A if armature & field resistances are 0.2 Ω & 100 Ω .

FACULTY OF ENGINEERING**B. E. 2/4 (EIE) II – Semester (Backlog) Examination, October 2021****Subject: Electrical Machines****Time: 2 hours****Max. Marks: 75****Note: (Missing data, if any, may be assumed suitable)****PART – A****Answer any seven questions****(7 x 3 = 21 Marks)**

- 1 Draw the circuit diagram of series motor and shunt motor
- 2 Why a rotor is required in DC motor
- 3 What are the losses in transformer?
- 4 Draw the exact equivalent circuit of transformer
- 5 Mention two applications of synchronous generator
- 6 What is meant by synchronous condenser?
- 7 What is meant by Armature reaction of an alternator?
- 8 Write applications of 3 phase Squirrel cage IM
- 9 Why 1 phase IM are not self-starting
- 10 List the applications of Stepper motor

PART – B**Answer any three questions****(3 x 18 = 54 Marks)**

- 11 (a) Derive the torque equation of DC motor. What are lap and wave windings?
(b) Explain different types of DC motors.
- 12 Explain working of transformer on connections with neat diagrams and their applications.
- 13 (a) A 50Hz, 3 phase star connected alternator which generates 10,000V between lines on open circuit, has a flux/pole of 0.15Wb. If the distribution factor of the full pitch coil is 0.96, find the number of armature conductors in series per phase.
(b) Explain how a synchronous motor can be used for P.F improvement with a neat sketch.
- 14 Discuss the various speed control methods of 3 phase Induction motor.
- 15 Explain in detail about the following
(i) Universal motor (ii) Three point starter
- 16 (a) Derive torque equation of DC motor.
(b) Explain the working of 3-point stator for DC motor with a neat diagram.
- 17 (a) Why a single-phase induction motor is not self-starting explain by double field method.
(b) Explain Scott connection in transformer.

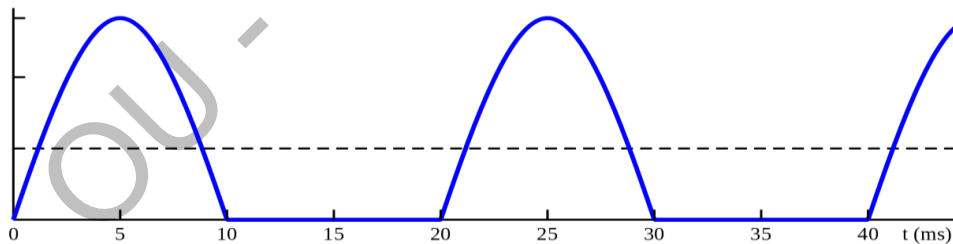
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FACULTY OF ENGINEERING**BE 2/4-II Semester (ECE) (Backlog) Examination, October 2021****Subject: Signal analysis and transform techniques****Time: 2 Hours****Max marks: 75****Missing data, if any, may be suitably assumed****PART – A****Note: Answer any seven questions.****(7x3=21 Marks)**

1. State Dirichlet's condition.
2. Examine whether the signal are periodic or not
 - i) $x(t) = 3 \sin 3t + 3u(t)$
 - ii) $x(t) = \cos(t) + \sin(t)$
3. State properties of Power spectral density(PSD).
4. State and prove parseval's theoerm .
5. Find the Z-transform of $y(n) = x(n-2)u(n)$
6. Find out the linear convolution of $x(n) = \{ 1, 2, 3\}$ with $h(n) = \{4, 5, 6\}$.
7. Find the Fourier Transform of $x(t) = (0.2)u(t)$.
8. Write the properties of cross correlation
9. What is sampling ?
10. Write the properties of a discrete time system .

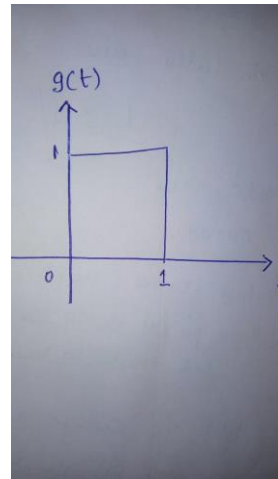
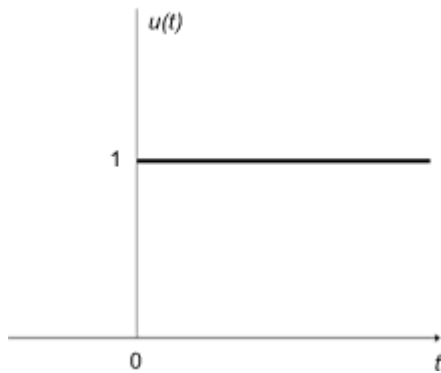
PART B**Note: Answer any three questions.****(3x18=54 Marks)**

- 11 a) Find the exponential fourier series of half wave rectifier



- b) what are orthogonal signals?

- 12 a) Write five properties of fourier transform.
- b) Find the fourier transform of rectangular signal ?
- 13 a) Find the convolution of the two signals below ?



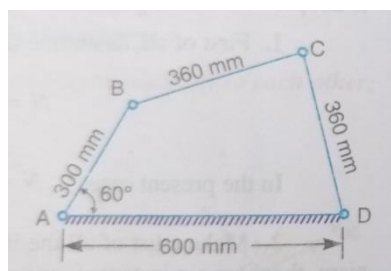
- b) Solve the differential equation of laplace transform
 $\frac{d}{dt} y(t) + 5y(t) = x(t)$ with initial condition $y(0+) = -2$ and input $x(t) = 3 \exp(-2t) u(t)$.
- 14 a) State and prove differentiation and integration properties of z transform .
 b) Find the z transform of $\delta(n)$, $x(n) = a^n (u(n) - u(n-10))$, $x(n) = a^n u(n)$
- 15 a) State and prove Autocorrelation function properties of $R_{xx}(\tau)$?
 b) Distinguish between s-plane and z-plane mapping ?
- 16a) Find the impulse and step response of the system
 $y(n) = 2x(n) - 2x(n-1) + x(n-2)$
 b) Classify discrete time system and discrete time signal in detail .
- 17a) Find the fourier transform of $x(t) = \cos \omega_0 t$ and its spectrum .
 b) Find the laplace transform of $x(t) = \sin \omega t u(t)$.

FACULTY OF ENGINEERING**BE 2/4 II-Semester (Mechanical / Prod.)(AE) (Backlog) Examination,****October 2021****Subject : Kinematics of Machines****Time : 2 Hours****Max. Marks: 75****Missing data, if any, may be suitably assumed****PART – A****Note: Answer any Seven Questions****(7x3 = 21Marks)**

1. Define Kinematic chain?
2. What is Grubler's criterion?
3. Differentiate between uniform pressure & uniform wear criteria.
4. What is centre? Define space centre?
5. Define Kennedy's Theorem?
6. What is friction circle?
7. What is a cam? Classify different types of cam?
8. Draw displacement diagram of a follower following SHM.
9. State law of gearing?
10. What is gear train? What are the different types of gear trains?

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

11. Explain inversions of single slider crank mechanism?
12. In a pin jointed four bar mechanism as shown in figure, $AB = 300\text{mm}$, $BC = CD = 360\text{mm}$ and $AD = 60\text{mm}$. The angle $BAD = 60^\circ$. The crank AB rotates uniformly at 100rpm . Locate all instantaneous centres and find the angular velocity of line BC .



13. A vertical shaft 150mm diameter rotating at 100rpm rests on a flat end footstep bearing (Flat pivot bearing). The shaft carries a vertical load of 20kN. Assuming uniform power distribution and co-efficient of friction as 0.05, Estimate power lost in friction?
14. A 600mm diameter of the pulley rotating at 1200rpm. The angle of contact of belt over pulley is 190° . The co-efficient of friction between pulley and belt is 0.3. The power transmitted is 9KW. Find tensions in the belt?

15. A cam is to be designed for a knife edge follower with the following data:
1. Cam lift = 40mm during 90° of cam rotation with SHM,
 2. Dwell for the next 30° ,
 3. During the next 60° of cam rotation, the follower returns to its original position with SHM,
 4. Dwell during the remaining 180° .
- Draw the profile of the cam when the line of stroke of the follower passes through the axis of cam shaft.
16. A pinion having 30 teeth drives a gear having 80 teeth. The profile of the gears is involute with 20° pressure angle, 12mm module and 10mm addendum. Find the length of path of contact, arc of contact and contact ratio.
17. a) What is gear train? Mention different types of gear train with sketch?
b) Explain the straight line motion mechanism with neat sketch?

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FACULTY OF ENGINEERING
B.E. 2/4 (CSE) II-Semester(Backlog) Examination, October 2021

Subject: Principles of Programming Languages

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 What is orthogonality? Which language used orthogonality as a primary design criteria?
- 2 What three extensions are common to most EBNFs?
- 3 Writes notes on referencing environments.
- 4 What are the design issues of pointers?
- 5 What is an overloaded subprograms?
- 6 Explain Multiple selection statement with an example.
- 7 List out the Object Oriented Programming concepts.
- 8 What is Exception Handling? Explain with example.
- 9 List out the applications of Functional Programming Languages.
- 10 Define functional form, and referential transparency.

PART – B

Answer any three questions.

(3x18 = 54 Marks)

- 11 (a) Explain the reasons for studying concepts of programming languages.
 (b) Discuss Language evaluation criteria.
- 12 (a) Prove the following grammar is ambiguous?

$$\langle S \rangle \rightarrow \langle A \rangle$$

$$\langle A \rangle \rightarrow \langle A \rangle + \langle A \rangle \mid \langle id \rangle$$

$$\langle id \rangle \rightarrow a \mid b \mid c$$
 (b) Convert the following expression into prefix and postfix?

$$a + b - c^*/(e - f) + g$$

$$a^*(b - c)/d^*(e - f)/g$$
- 13 (a) Define variable as a sextuple. Differentiate lifetime and scope.
 (b) What are the design issues of pointers? What are the two problems with pointers?
- 14 (a) Explain Generic Subprograms.
 (b) What is ADT? How is it helps to achieve encapsulation explain with example?
- 15 (a) Explain the design issues of object oriented programming languages.
 (b) How concurrency is achieved using threads in Java? Explain.
- 16 (a) Compare functional and imperative Programming Languages.
 (b) Write the applications of logical Programming.
- 17 (a) Write the following statement in Prolog?
 If X is your parent then X is your father or X is your mother.
 (b) Discuss the different implementation models of parameter passing with Examples.

FACULTY OF ENGINEERING

BE 2/4 II-Semester (IT) (Backlog) Examination, October 2021

Subject: Data Communication

Time: 2 Hours

Max marks: 75

Missing data, if any, may be suitably assumed

PART – A

Note: Answer any seven questions.

(7x3 = 21 Marks)

1. Difference between Analog and Digital transmission.
2. What is Asynchronous Transmission?
3. Define Error Detection.
4. What is Circuit Switching?
5. Distinguish between Switched and Full duplex Ethernets.
6. What is the mAC sub Layer of Gigabit Ethernet?
7. Explain the First Generation Analog systems.
8. List the different topologies.
9. What is Interfacing?
10. How is the transmission done in ATM cells?

PART - B

Note: Answer any three questions.

(3x18=54 Marks)

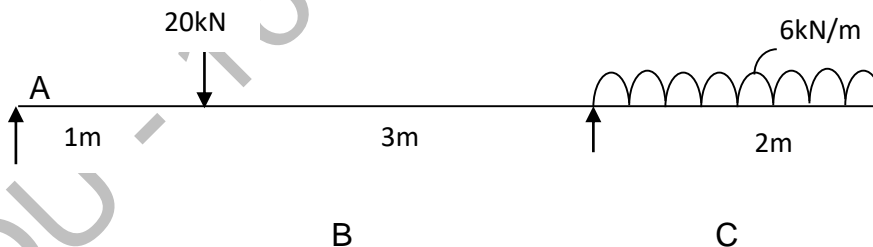
11. Explain in detail about the Communication model and Modulation Techniques.
12. Describe clearly about the Data Transmission techniques.
13. Illustrate neatly the working of the Data Link Control.
14. Describe the Synchronous Time Division Multiplexing and Statistical Time Division Multiplexing.
15. Discuss in detail the Physical Layer, Bridged, Switched and full duplex Ethernets.
16. Draw and explain with neat diagram the IEEE 802.11 Architecture and Services.
17. Write short notes:
 - (a) Cellular Wireless Networks
 - (b) Digital Data-Analog Signals.

FACULTY OF ENGINEERING**BE (AICTE) IV-Semester(Civil) (Main &Backlog) Examination, October 2021****Subject: Mechanics of Materials and Structures****Time: 2 Hours****Max marks: 70****Missing data, if any, may be suitably assumed****PART – A****Note: Answer any five questions.****(5x2=10 Marks)**

- 1 Define Mohr's theorems I and II.
- 2 Explain how the fixed end and free end of a real beam change in a conjugate beam.
- 3 What are the limitations of Euler's theory for long columns?
- 4 Define slenderness ratio. Explain its importance.
- 5 Find the static indeterminacy for propped cantilever and fixed beams.
- 6 How will you apply clapeyron's theorem of three moments to a continuous beam with fixed support?
- 7 At what condition the frame acts as a redundant frame?
- 8 A cantilever beam carries a UDL of 'w' per unit length over the entire span 'L'. What is the strain energy of the beam?
- 9 Find the horizontal thrust for three hinged parabolic arch subjected to UDL over the entire span.
- 10 Differentiate between two hinged and three hinged arches.

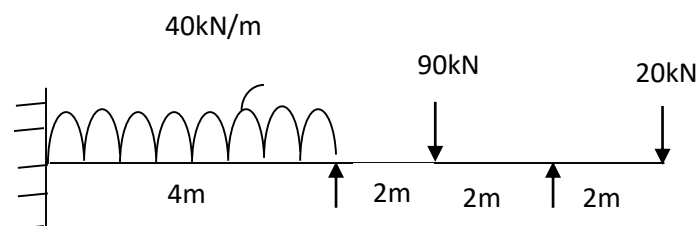
PART - B**Note: Answer any four questions.****(4x15=60 Marks)**

- 11 An overhanging beam ABC is loaded as shown below. Find the deflection at the point 'C' and slopes at 'A' and 'B'. Take $EI=20,000 \text{ kN-m}^2$.



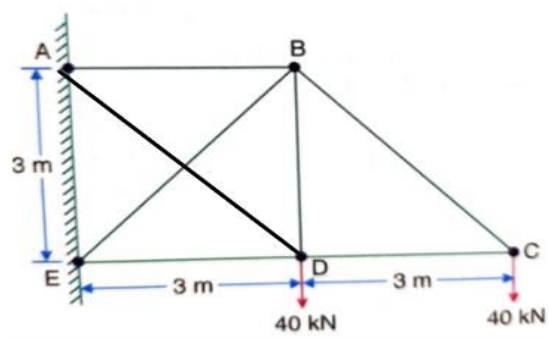
- 12 A long column of length 4m is built up fixed at both the ends. The cross section of the column is of an I section with 300mm X 20mm flanges and 12mm X 320mm web. Determine the Euler's critical load for the column. Take $E= 200 \text{ GPa}$. Compare this with Rankine's formula. Take $f_c= 550 \text{ MPa}$ and Rankine's constant as $1/1600$.

- 13 Draw the SFD and BMD for the continuous beam for the figure shown below.

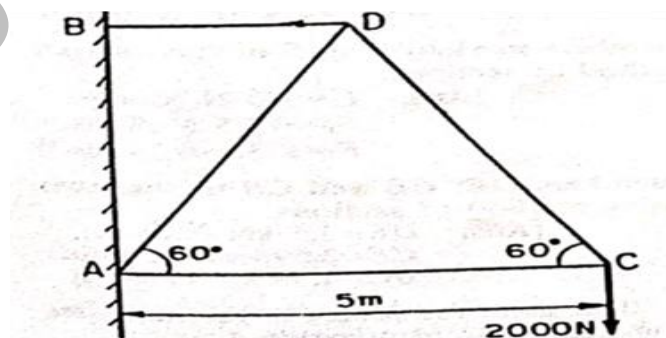


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- 14 Find the magnitude and nature of force in the truss members as shown in the figure below. Take L/AE as constant.



- 15 A three hinged parabolic arch of span 30m and central rise 4m subjected to a point load of 60kN at a distance of 10 m from right end and an UDL of 30kN/m run over its left half of the span. Find the normal thrust, radial shear and bending moment under the point load.
- 16(a) A Cantilever beam of length 3m subjected to a point of 12kN at a distance of 1m from free end. Using moment area method, find slope and deflection at the free end.
- (b) A fixed beam of length 6m subjected to an UDL of 18kN/m over its left half of the portion. Draw BMD.
- 17(a) A suspension cable of 60m span and 6m central dip having supports at the same level and carries a UDL of 20kN/m over its full span. Determine the length of the cable and maximum tension in the cable.
- (b) Find the vertical deflection of joint 'C' of the truss shown below. Take $\Sigma (L/AE) = 0.01$.



FACULTY OF ENGINEERING

**B.E. (EEE) IV-Semester (AICTE) (Main & Backlog) Examination,
October 2021**

Subject: Electrical Machines – I

Time: 2 Hours

Max marks: 70

Missing data, if any, may be suitably assumed

PART – A

Note: Answer any five questions.

(5x2=10 Marks)

- 1 State Faraday's laws of electromagnetic induction.
- 2 Write energy balance equation of d.c motor and generator from the fundamentals of electromechanical energy conversion principles.
- 3 Differentiate between lap and wave windings.
- 4 Classify types of d.c motors with circuit models.
- 5 What are the conditions for build up of voltage in a self excited generator.
- 6 Define critical field resistance and critical speed.
- 7 What are the advantages and disadvantages of swinburne's test?
- 8 What is the frequency of induced emf in the armature conductors of an 8 pole d.c generator run at 750 rpm?
- 9 Explain working of Auto transformer.
- 10 Draw equivalent circuit of transformer.

PART – B

Note: Answer any four questions.

(4x15=60 Marks)

- 11 A doubly excited magnetic system has following data $L_s=0.6+0.2\cos 2\theta$ H; $L_r=0.75+0.3\cos 2\theta$ H; $M_{sr}=0.8\cos \theta$ H; the winding resistances are negligible. For stationary at an angular position of $\theta=60^\circ$. Find the magnitude and direction of torque when currents $i_s=20$ A d.c and $i_r=-10$ A d.c.
- 12 a) Explain armature reaction and methods to minimize its effects.
b) A 6 pole, 148 A d.c shunt generator has 480 conductors and is wave wound. It's field current is 2 A. find the demagnetizing and cross magnetizing ampere-turns per pole at full load if brushes are shifted from GNA by 5° electrical.
- 13 a) Explain speed control methods of D.C shunt motor.
b) Derive torque equation of D.C motor.
- 14 Two identical d.c shunt machines when tested by Hopkinson' method, gave the following data: Line voltage 230 V; line current excluding both the field currents 30 A motor armature current 230 A, field currents 5 A and 4 A. If the armature Resistance of each machine (including brushes) is 0.025Ω , calculate efficiency of both machines.

- 15 a) Draw and explain torque – speed characteristics of shunt, series and compound motors.
b) Draw phasor diagram of transformer at lagging load?
- 16 Explain how to find efficiency, voltage regulation and equivalent circuit parameters of transformer by conducting O.C. test and S.C. test with neat circuit diagram.
- 17 a) Derive EMF equation of D.C Generator.
b) A 4 pole long shunt, lap wound generator supplies 25 kW at a terminal voltage of 500 V. The armature resistance is $0.03\ \Omega$, series field resistance is $0.04\ \Omega$ and shunt field resistance is $200\ \Omega$. The brush drop is 1 V per brush. Determine emf generated.

FACULTY OF ENGINEERING**BE (EIE) (AICTE) IV-Semester (Main & Backlog) Examination, October 2021****Subject: Transducer Engineering****Time: 2 Hours****Max marks: 70****Missing data, if any, may be suitably assumed****PART – A****Note: Answer any five questions.****(5x2=10 Marks)**

1. List any two differences between threshold and Resolution
2. A transducer is connected to a multimeter with full scale deflection of 150V; it is having a guaranteed accuracy of 1% of full scale reading. If the meter reads 66V against then its limiting error in % is.
3. Differentiate between Active and Passive transducer.
4. Explain how force can be measured using strain gauges
5. Why inductive proximity transducer is suitable for only metallic contact?
6. Define the working of Hygrometer
7. State the principle of bimetallic strip thermometer. Give its range of measurement
8. Write the general equation of resistance dependence on temperature of Thermistor
9. Using suitable diagram describe the operation of U-tube manometer
10. State the principle of Knudsen gauge

PART - B**Note: Answer any four questions.****(4x15=60 Marks)**

11. Explain the terms : Linearity, Hysteresis, Repeatability, Reliability and maintainability
12. Find the impulse response of the first order system given $T(s) = \frac{20}{1+3s}$ Also plot the response curve
13. a) Derive the equation of Gauge factor of strain gauge
b) A 100Ω strain gauge of gauge factor 2 is connected to one of the arm of a wheat stone bridge. Under no strain condition, all the arms have equal resistance. When the gauge is subjected to a strain, one of the arm resistances is changed to 100.56Ω to obtain the balance. Find the value of the strain
14. Explain the operating principle and construction of any two variable capacitance transducers. Also derive the derivations of their measurement
15. a. Explain the Laws of thermocouple
b. Explain the term triple point use in the calibration of temperature indicators
16. Discuss any four sensing elements use for the measurement of medium pressure
17. With short notes on:
 - a) Elements of pressure measurement
 - b) LM 335 ICs or any other IC for temperature measurement

FACULTY OF ENGINEERING

BE IV-Semester (ECE) (AICTE) (Main & Backlog) Examination, October 2021

Subject: Computer Organization & Architecture

Time: 2 Hours

Max marks: 70

Missing data, if any, may be suitably assumed

PART – A

Note: Answer any five questions.

(5x2=10 Marks)

1. Show the hardware for Booth's multiplier.
2. Draw IEEE 754 formats of floating point representation.
3. What is direct and indirect address instructions.
4. What is stored program organization?
5. Distinguish between RISC&CISC processors.
6. What is the role of PC and IR registers?
7. Compare and contrast between synchronous and Asynchronous communication.
8. Explain the need for an I/O interface.
9. Distinguish between SRAM and Associative memory.
10. Explain the terms tag, index and block in relation to cache memory.

PART - B

Note: Answer any four questions.

(4x15=60 Marks)

- 11(a) Draw the flow chart for signed addition/subtraction and also draw the hardware required for that.
(b) Differentiate between Restoring and Non Restoring division algorithm.
- 12(a) Explain the common bus system of computers with a neat sketch.
(b) Explain various phases of an Instruction cycle in detail.
- 13(a) Explain possible pipeline hazards with its resolving technique.
(b) What is the basic advantage of using interrupt-initiated data transfer over transfer under program counter without an interrupt?
- 14(a) Explain the operation of Daisy chaining method of priority interrupt.
(b) What are the merits and demerits of programmed I/O data transfer?
- 15(a) Explain Set Associative mapping in detail.
(b) Explain the virtual memory in details.
- 16(a) Describe in detail about IOP organization.
(b) Explain the Interrupt cycle with flow chart.
- 17(a) Explain the design of control unit. How to decode the micro-operation fields?
Explain the process.
(b) Explain Vector processing in detail.

FACULTY OF ENGINEERING

B. E. IV – Semester (M/P/AE) (AICTE) (Main & Backlog) Examination,
October 2021

Subject: Mechanics of Materials

Time: 2 hours

Max. Marks: 70

Note: (Missing data, if any, may be assumed suitable)

PART – A

Answer any five questions

(5 x 2 = 10 Marks)

- 1 State Hook's Law
- 2 Write expression for major and minor principle stresses when member is subjected to direct stress in two mutually perpendicular directions
- 3 Explain briefly bending stresses in Unsymmetrical sections
- 4 What are different types of beams?
- 5 What do you understand by simple bending?
- 6 Explain the terms for a circular shaft subjected to torsion
- 7 A spherical vessel 1.5 m diameter is subjected to an internal pressure of 2 N/mm^2 find the thickness of the plate if max stress 150 N/mm^2 and joint efficiency is 75%.
- 8 When a circular shaft is subjected to a torsion show that the shear stress varies linearly from the axis to the surface
- 9 State Maxwell theorem
- 10 Write the expression for energy stored in a spring when subjected to Axial twist

PART – B

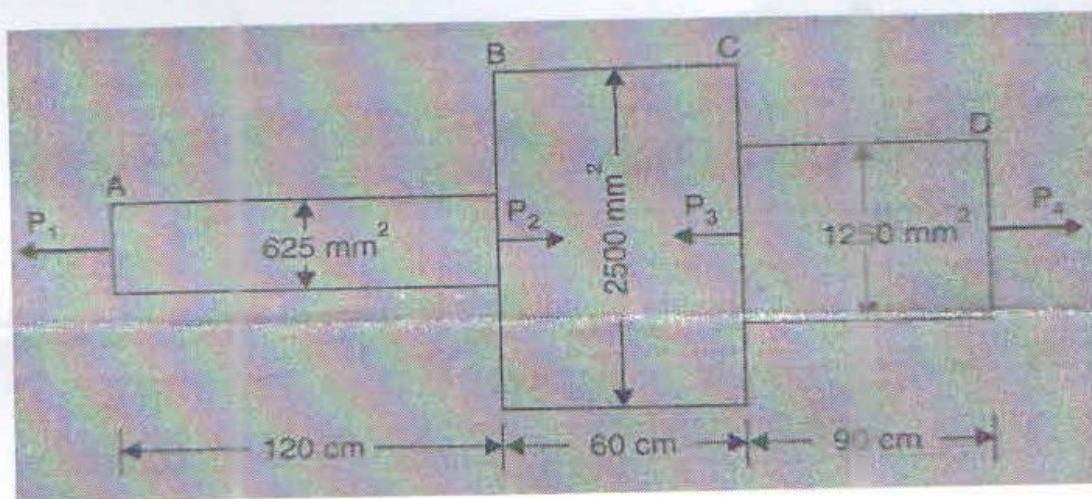
Answer any four questions

(4 x 15 = 60 Marks)

- 11 A bar of cross section $8 \text{ mm} \times 8 \text{ mm}$ is subjected to an axial pull of 7000 N . The lateral dimensions of the bar is found to be changed to $7.99 \text{ mm} \times 7.99 \text{ mm}$. If the modulus of rigidity of the material is 0.8×10^5 , Determine the Poisson's ratio and modulus of rigidity?
- 12 A horizontal beam AB of length 4 m is hinged at A and supported on rollers at B. The beam carries inclined loads of 100 N , 200 N and 300 N inclined at 60° , 45° , 30° to the horizontal and which acts at 1 m , 2 m and 3 m from point A respectively. Draw SF, BM and Thrust diagram for the beam.
- 13 A cast iron is of T section flange – $100 \text{ mm} \times 200 \text{ mm} \times 80 \text{ mm}$. The beam is simply supported at a span of 8 m . The beam is of T section flange- $100 \text{ mm} \times 200 \text{ mm}$ web- $20 \text{ mm} \times 80 \text{ mm}$. The beam is simply supported at a span of 8 m . The beam carries UDL of 1.5 kN/m^2 . Determine the maximum tensile and maximum compressive stresses?

-2-

- 14 A hollow shaft of external diameter 120mm transmits 300 kW power at 200 r.p.m. Determine the maximum internal diameter if the maximum stress in the shaft is not to exceed 60N/mm^2 .
- 15 A cantilever of length 2m carries a point load of 20kN at the free end and another load 20kN at its center. If $E=105\text{N/mm}^2$ and $I=108\text{mm}^4$. Determine the slope and deflection at the free end.
- 16 Calculate the change in diameter, change in area, and change in volume of a thin cylinder shell 100cm dia 1cm thick and 5m long when subjected to internal pressure 3N/mm^2 . Take $E=2 \times 10^5 \text{ N/mm}^2$ and $\mu=0.3$
- 17 A member ABCD is subjected to a point loads P_1 , P_2 , P_3 and P_4 as shown in figure. If $P_1=45\text{kN}$, $P_3=450\text{kN}$ and $P_4=130\text{kN}$ find $P_2=?$ Also Determine the total elongation of member. Take $E=2.1 \times 10^5 \text{ N/mm}^2$.



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FACULTY OF ENGINEERING

B.E. (CSE) (AICTE) IV-Semester (Main&Backlog) Examination, October 2021

Subject: OOP Using JAVA

Time: 2 hours

Max. Marks: 70

Note: (Missing data, if any, may be assumed suitable)

PART – A

Answer any five questions

(5 x 2 = 10 Marks)

1. What are the different types of variables in java?
2. Explain the significance of String Builder.
3. How method overriding is useful in java?
4. Differentiate classes and interfaces.
5. Outline Exception hierarchy in JAVA.
6. Explain the life cycle of a thread.
7. What is the use of Pattern class?
8. Write a java program by using Timer class.
9. List the limitations of AWT.
10. What are Event Listeners?

PART – B

Answer any four questions

(4 x 15 = 60 Marks)

11. (a) Explain this() and super() constructor with sample programs.
(b) Discuss about operators in JAVA in detail.
12. (a) Why multiple inheritance is not supported by java? Explain with an example Program.
(b) Explain creation of a package and importing a package with an example.
13. Explain about keywords used in Exception handling with examples.
14. Discuss about matcher class and split method with an example programs.
15. Explain the concept of handling mouse events with an example.
16. Write about:
(a) scope and life time of variables in java
(b) member access rules
17. Explain about:
(a) daemon threads
(b) Wrapper class
(c) scroll bars in AWT

FACULTY OF ENGINEERING
B.E. IV - Semester (CME) (Main) Examination, October 2021

Subject: OOP Using Java

Time: 2 Hours

Max. Marks: 70

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer any five questions.

(5x2 = 10 Marks)

- 1 Why java is architectural neutral?
- 2 Differentiate overloading and overriding.
- 3 Write java program using Interface.
- 4 What is the use of exception handling?
- 5 How can you create multiple threads?
- 6 What are the different collection classes and collection interfaces?
- 7 What are Event Listeners?
- 8 List the different AWT controls.
- 9 Define the concept of swing in java with example.
- 10 Explain about server socket and client socket.

PART – B

Note: Answer any four questions.

(4x15 = 60 Marks)

- 11 (a) Explain the basic concepts of object oriented programming.
(b) Write a java program to simulate the operation of calculator to perform the functions Addition (+), Subtraction (-), Multiplication (*), Division (/).
- 12 (a) What is the difference between Multi-threading and Multitasking?
(b) Explain about exception hierarchy with an example.
- 13 (a) What are the mouse and keyboard events?
(b) Write a Java program to handle Key Events in a JFrame.
- 14 (a) Briefly discuss about the concept of multiple catch statements.
(b) Briefly discuss about the control statements used in java.
- 15 (a) What is a File? What are the different types of File Constructors? Explain file creation with an example.
(b) Write a program to copy one file content in to another file.
- 16 (a) Differentiate between NavigableSet and NavigableMap in collections.
(b) Explore lang package with any five suitable methods.
- 17 Write short note on the following:
 - (a) String Tokenizer
 - (b) Super and Final keyword
 - (c) Frame.

FACULTY OF ENGINEERING

B. E. (IT) IV – Semester (AICTE) (Main&Backlog) Examination,

October 2021

Subject: Java Programming

Time: 2 hours

Max. Marks: 70

Note: (Missing data, if any, may be assumed suitable)

PART – A

Answer any five questions

(5 x 2 = 10 Marks)

- 1 What is an array?
- 2 What is string tokenizer?
- 3 What is the difference between throw and throws?
- 4 What is multithreading? What are two different ways to create multithread program?
- 5 What is the difference between Array List and vector?
- 6 What is the difference between Iterator and List Iterator?
- 7 Write short notes on packages
- 8 Give the difference between exception and error
- 9 List the types of Layouts
- 10 What is the difference between string and string Buffer classes and give example code

PART – B

Answer any four questions

(4 x 15 = 60 Marks)

- 11 Explain in detail the concept of object-oriented programming with simple examples.
- 12 What are the methods supported by Mouse listener interface?
- 13 Explain about
 - (a) Delegation even model
 - (b) Serialization concept
- 14 Explain the following classes with suitable example
 - (i) Buffered Reader
 - (ii) File Input Stream
 - (iii) Print Writer
- 15 What is event delegation model? Explain with suitable example.
- 16 What is thread synchronization? Write a java program to demonstrate Thread Synchronization.
- 17 List three components of AWT and their classes and constructors.

FACULTY OF ENGINEERING**BE IV - Semester (CBCS) (Civil) (Backlog) Examination, October 2021****Subject: Hydrology and Water Management****Time: 2 Hours****Max marks: 70****Missing data, if any, may be suitably assumed****PART – A****Note: Answer any five questions.****(5x2=10 Marks)**

1. State the factors affecting precipitation.
2. What do understand by mean aerial rainfall?
3. Define the terms Runoff and Flood peak
4. A catchment which has 248 sq. km. area has 7-hour unit hydrograph of a storm which can be approximately by a triangle. If its time base is 75 hours and peak value of 60 cumecs. Compute the effective rainfall for the storm.
5. List few statistical methods used in Hydrology.
6. State the concept of yield of open wells.
7. A 4-hour storm on a drainage area 450 sq.km. with total runoff 1340 cumecs. Compute the depth of rainfall excess.
8. Differentiate between Confined and unconfined aquifers.
9. Determine the radius of influence when draw down is restricted to 5m and coefficient of permeability is 0.018 m/sec.
10. Mention some factors that are affecting duty.

PART - B**Note: Answer any four questions.****(4x15=60 Marks)**

11. a) The table below corresponds to a catchment. Find the average depth of annual precipitation over a basin using Arithmetic Method and Isohyetal method.

Isohyets	55-65	65-75	75-85	85-105	105-135
Area enclosed Sq.Km.	85	120	1100	1800	2300

- b) Write in detail about Weighing bucket type rain gauge with a neat sketch.
12. a) Find the ordinates of a flood hydrograph resulting from a storm with rainfall of 2.5, 6.85 and 3.75 cm each during successive 3 hours. Assume an intail loss of 5mm, infiltration index $\phi = 2.5$ mm per hour and base flow of 12 cumecs. The ordinates are given below:

Time (hrs)	03	06	09	12	15	18	21
Ordinates of unit hydrograph (cumec)	0	115	370	510	395	315	252

- b) Mention various types of Precipitation. Discuss in detail about Orographic Precipitation.

13. a) Derive Gumbel's extreme value method of estimating flood.
b) Explain concept of Darcy's law with the help of a sketch. Derive the expression for steady state radial flow discharge into a confined aquifer
14. a) The annual runoff of a stream is found to follow Normal Distribution with mean 3400 cumecs and Standard deviation of 1200 cumecs. Determine the probability that its value in any year is more than 7600 cumecs. Also determine the range symmetrical about the mean with which its value of probability is exactly 0.5.
b) Enumerate the different factors affecting Runoff. How unit hydrograph is used to calculate Runoff.
15. a) Design a tube well to provide a yield of 14 cumecs of water with a coefficient of Permeability 90 meters per day. The draw down is limited to 6 meters in the area. The thickness of aquifer is 42 meters and the radius of influence is 320 meters.
b) Explain the constant level pumping test importance and derive expression for safe yield based on this test.
16. a) Define Irrigation Mention necessity of irrigation along with its advantages and disadvantages.
b) Estimate after how many days irrigation is necessary to ensure healthy growth of crop with the following data. (i) Field capacity of crop = 36% (ii) Permanent Wilting Point = 14% (iii) Density of soil = 1200 kg/m³ (iv) Effective Root depth=740mm (v) Daily consumptive use of water = 12 mm. Assume for health growth of crop moisture should not fall below 25% of water holding capacity.
17. Write notes on any two of the following
- Perched Aquifer
 - Recuperation test
 - Soil moisture stress
 - Empirical methods to compute Maximum floods.

FACULTY OF ENGINEERING

B.E. (EEE) (CBCS) IV - Semester (Backlog) Examination, October 2021

Subject: Electrical Circuits - II

Time: 2 Hours

Max marks: 70

Missing data, if any, may be suitably assumed

PART - A

Note: Answer any five questions.

(5x2=10 Marks)

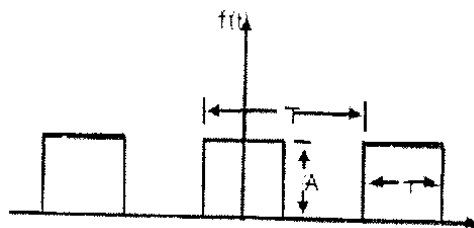
1. List the properties of Fourier analysis.
2. What is the difference between Fourier integrals and Fourier transforms.
3. Inverse Laplace transform of $\frac{1}{(s+1)(s-1)(s+2)}$
4. Write initial value theorem in Laplace transform
5. Give the expressions for symmetry and reciprocity in case of impedance parameters.
6. Represent a Two Port Network in T and π Sections.
7. What is a positive real function?
8. List the properties of incidence matrix
9. Distinguish between Network analysis and synthesis
10. Draw the first cauer form of RL representation.

PART - B

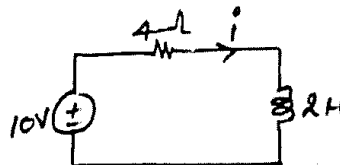
Note: Answer any four questions.

(4x15=60 Marks)

- 11 Find the Fourier series expansion for the given signal.



12. Determine the current i for $t \geq 0$ if the initial current $i(0) = 1$ for the circuit shown below by Laplace transform



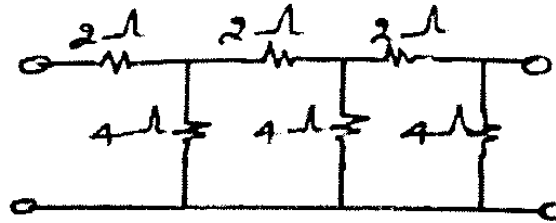
13. Derive the open circuit impedance parameters of a two port network?

14. Explain the procedure of testing the given polynomial for positive realness and Test whether the polynomial $P(s) = s^4 + 3s^3 + 4s^2 + 5s + 9$

15. Realize foster forms of the following LC impedance function

$$Z(s) = \frac{(s^2 + 1)(s^2 + 3)}{s(s^2 + 2)(s^2 + 4)}$$

16. Find the ABCD parameters of the network shown in $F(s) = \frac{8(s+3)(s+1)}{s(s+2)(s+4)}$



17. Find $f(0)$ and $f(\infty)$ if they exist, when $F(s) = \frac{8(s+3)(s+1)}{s(s+2)(s+4)}$

FACULTY OF ENGINEERING**B. E. (EIE) IV – Semester (CBCS) (Backlog) Examination, October 2021****Subject: Electrical Machines****Time: 2 hours****Max. Marks: 70***Note: (Missing data, if any, may be assumed suitable)***PART – A****Answer any five questions****(5 x 2 = 10 Marks)**

- 1 Draw the circuit diagram of series generator and series motor
- 2 Why a stator is required in DC motor
- 3 What is meant by ideal transformer?
- 4 Draw the exact equivalent circuit of transformer
- 5 Mention two applications of Synchronous motor
- 6 What is meant by synchronous condenser?
- 7 What is meant by Armature reaction of an alternator?
- 8 Write applications of 3 phase Squirrel cage IM
- 9 Why single phase IM are not self-starting
- 10 List the applications of Micro meter

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

- 11 (a) Derive the EMF equation of DC generator. What are lap and wave windings?
(b) A DC generator has an armature EMF of 100 V when the useful flux/pole is 20mWb, and the speed is 800 rpm. Calculate the generated EMF (i) with the same flux and a speed of 1000 rpm and (ii) with a flux / pole of 24mWb, and a speed of 900rpm.
- 12 Explain different three phase transformer connections with neat diagrams and their applications.
- 13 (a) A 50Hz, 3 phase star connected alternator which generates 10,000V between lines on open circuit, has a flux/pole of 0.15Wb. If the distribution factor of the full pitch coil is 0.96, find the number of armature conductors in series per phase.
(b) Explain how a synchronous motor can be used for P.F improvement with a neat sketch.
- 14 (a) A 3 phase, 4 pole 50Hz IM has full load speed of 1440 rpm for this motor, calculate the following
 - (i) Full load slip and rotor frequency
 - (ii) Speed of stator field with respect to stator structure and rotor structure
 - (iii) Speed of rotor field with respect to rotor structure, stator structure and stator field.
 (b) Explain the terms (i) Max torque (ii) Full load torque (iii) Starting torque (iv) No load torque of 3 phase induction motor.

- 15 Write short notes on the following
- (i) Stepper motors
 - (ii) Micron motors
- 16 (a) Derive torque equation of DC motor.
(b) Explain the working of 3-point stator for DC motor with a neat diagram.
- 17 (a) Why a single-phase induction motor is not self-starting explain by double field method.
(b) Explain the conversion of 3 phase to 2 phase Scott connection in transformer.

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FACULTY OF ENGINEERING**B.E. IV - Semester (CBCS) (ECE) (Backlog) Examination, October 2021****Subject: Electromagnetic Theory & Transmission Lines****Time: 2 Hours****Max. Marks: 70****(Missing data, if any, may be suitably assumed)****PART – A****Note: Answer any five questions.****(5x2 = 10 Marks)**

- 1 Define gradient vector.
- 2 Write the integral form of Gauss Law and explain its meaning.
- 3 Define magnetic scalar potential. What is its limitation?
- 4 State Ampere's circuital law. Write its integral and differential forms.
- 5 Define surface current density. Mention its unit.
- 6 Define loss tangent.
- 7 The electric field intensity of a uniform plane wave in a perfect dielectric medium is given by $E = E_0 \cos[(\pi \times 10^8)t + 1.6z]$. If the relative permeability of the medium is unity, find its relative permittivity.
- 8 Define Campbell's formula for loading of transmission lines.
- 9 What are the benefits of matching the characteristic impedance of a transmission line with the load impedance?
- 10 What is single-stub matching of a transmission line?

PART – B**Note: Answer any four questions.****(4x15 = 60 Marks)**

- 11 (a) State and explain Coulomb's law.
(b) Three equal positive charges of $4nC$ each are located at the three corners of a square of $20cm$ side each. Determine the magnitude and direction of the electric field intensity at the vacant corner.
- 12 (a) Derive an expression for energy stored in an electric field.
(b) Three point charges $Q_1 = 0.2 \mu C$ and $Q_2 = -0.15 \mu C$ and $Q_3 = 0.35 \mu C$ are located at $P_1 (1.5m, 0.75m, 0.4m)$, $P_2 (0.75m, 0.5m, 0.3m)$ and $P_3 (0.1m, 0.8m, 0.6m)$ respectively in free space. Compute the energy stored in the fields of the charges.
- 13 (a) List the Maxwell's equations for matter.
(b) The mean radius of a circular coil of 50 turns is $8 cm$. It carries a current of $3A$. The coil is located on the yz -plane in air. Determine the magnetic field at point $P(20 cm, 0,0)$. Derive any formula used.

..2..

- 14 (a) State and prove Poynting's theorem. How do you interpret Poynting's Vector?
 (b) Let the electric field intensity in a lossless medium be given by

$$E(t) = E_{x_0} \cos(\omega t - \beta z) u_x$$
 where $E_{x_0} = 150 \frac{V}{m}$, $\omega = 2\pi \times 10^8 \text{ rad/s}$, $\beta = \frac{4\pi}{3} \text{ rad/m}$.
 Find (a) the instantaneous Poynting vector
 (b) the complex Poynting vector using the phasor forms of the field intensities and (c) the power flow through an area $S = 5 \text{ uz m}^2$.
- 15 (a) explain the primary and secondary constants of a transmission line. Also show that, the characteristic impedance Z_0 of a two-conductor, uniform ideal transmission line is equal to $\sqrt{L/C}$.
 (b) A two-conductor transmission line is excited by a 50MHz source. The inductance and capacitance per metre length of the line are 300nH and 120 pF respectively. Calculate the characteristic impedance of the transmission line. Also calculate the phase constant and phase velocity of the voltage wave.
- 16 (a) Define input impedance of a transmission line having both incident and reflected waves. What are the quantities on which the value of input impedance depends?
 (b) A 2m long transmission line operating at $10^6 \frac{\text{rad}}{\text{s}}$ has
 $\alpha = 8 \text{ dB/m}$, $\beta = 1 \text{ rad/m}$ and $Z_0 = 60 + j40 \Omega$. If the line is connected to a source of $10 \angle 0^\circ \text{ V}$ with source impedance of 40Ω and terminated by a load of $20 + j50 \Omega$, determine the input impedance and the sending end current.
- 17 (a) Write short notes on Brewster angle and total internal reflection.
 (b) What is the inconsistency in Ampere's law? How is it overcome?

FACULTY OF ENGINEERING**B.E. IV - Semester (M/P/AE) (CBCS) (Backlog) Examination, October 2021****Subject: Kinematics of Machines****Time: 2 Hours****Max. Marks: 70****(Missing data, if any may be suitably assumed)****PART – A****Note: Answer any five questions.****(5x2 = 10 Marks)**

- 1 Define the terms with examples (i) Lower Pairs (ii) Higher Pair (iii) Kinematic chain (iv) Inversions.
- 2 Differentiate Machine and Mechanism.
- 3 Write different types of Instantaneous centres for finding velocity of mechanism.
- 4 What is rubbing velocity?
- 5 Explain about 'slip' and 'creep' in the belt drive.
- 6 Find the total number of Instantaneous centres for a mechanism consisting of 5 links.
- 7 State the Law of gearing.
- 8 Explain the advantages of Ackerman steering gear over Davis steering gear mechanism.
- 9 Write different types of Gear Trains.
- 10 Draw the displacement diagram neatly of a follower moving with cycloidal motion.

PART – B**Note: Answer any four questions.****(4x15 = 60 Marks)**

- 11 Explain with neat sketches the various inversions of a double slider crank chain.
- 12 In a pin jointed four bar mechanism ABCD the lengths of various links are as follows, AB = 30mm: BC = 95mm: CD = 50mm and AD = 90mm. The link AD is fixed. If the angle BAD = 135° and the velocity of B is 2m/s find (a) velocity and acceleration of the mid point of BC (2) Angular velocity and angular acceleration of link CB and CD.
- 13 A shaft has number of collars integral with it. The external diameter of the collar is 400mm and the shaft diameter is 250mm, if the uniform intensity of pressure is 0.35 N/mm² and the coefficient of friction is 0.05 estimate (i) Power absorbed in overcoming the friction when the shaft runs at 150 r.p.m and carries a load of 150KN (ii) Number of collars required.
- 14 (a) What are the different types of motions with which a followers can move?
(b) A cam rotating clockwise with a uniform speed to give the roller follower of 20mm diameter with the following motion (i) Follower to move outwards through a distance of 30mm during 120° of cam rotation (ii) Follower to dwell for 60° of cam rotation (iii) Follower to return its initial position during 90° of cam rotation (iv) Follower to dwell for the remaining 90° of cam rotation. The minimum radius of the cam is 45 mm and the displacement of the follower SHM in both outward and return strokes. Draw the CAM profile.

..2..

15 (a) A pinion having 40 teeth drives a gear having 85 teeth the profile of the gears is involute with 20° pressure angle, 13mm module and 10mm addendum. Find the length of path of contact, arc of contact and the contact ratio.

(b) An Epicyclic gear train consist of a sun wheel S and a stationary internal gear G and then identical planet wheels P carries a triangular shaped planet carrier C. The size of different toothed wheels are such that the planet carrier C rotates at $1/6^{\text{th}}$ of the speed of the sun wheel S. The minimum number of teeth on the sun wheel is 18 Determine the number of teeth on the other wheels of gear train.

16 Explain the following with neat sketches

- (a) Davis steering gear mechanism
- (b) Rope Brake Dynamometer.

17 Explain the following with neat sketches

- (a) Classify Gears.
- (b) Hart's Mechanism.

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FACULTY OF ENGINEERING
B.E. (CSE) IV-Semester Examination, October 2021

Subject: Programming Languages

Time: 2 hours

Max. Marks: 70

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

PART – A

Answer any five questions.

(5x2 = 10 Marks)

- 1 Write any four important uses of programming languages.
- 2 What is type inferencing?
- 3 What is a named constant? Give an example.
- 4 What are guarded commands?
- 5 What are primitive data types?
- 6 Give an example for fact and rules in logic programming languages.
- 7 What is a variable and what are the attribute of a variable?
- 8 What is short circuit evaluation?
- 9 List few characteristics of Python language.
- 10 Define associative arrays.

PART – B

Answer any four questions.

(4x15 = 60 Marks)

- 11 (a) What are the design issues for names?
(b) Distinguish between static type binding and dynamic type binding.
- 12 (a) Write a note on Boolean and relational expressions.
(b) List the advantages and disadvantages of mixed mode arithmetic expressions.
- 13 How are parameter passing methods implemented in various languages?
- 14 (a) What are the design issues for Abstract data types?
(b) Explain message passing in Ada.
- 15 (a) Discuss the design issues of subprogram and its operations performed on them.
(b) Explain the design considerations of parameter passing.
- 16 (a) Describe briefly about Monitors.
(b) Define binary semaphore. What is counting semaphore? What are the primary problems with using semaphores to provide synchronization?
- 17 (a) Discuss Object Oriented Programming in SMALLTALK.
(b) Discuss in detail about the python primitive types.

FACULTY OF ENGINEERING
B.E. IV - Semester (IT) (CBCS) (Backlog) Examination, October 2021

Subject: Data Communication

Time: 2 Hours

Max. Marks: 70

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer any five questions.

(5x2 = 10 Marks)

- 1 Distinguish TCP/IP and OSI Protocol Architecture.
- 2 Define Delta modulation and PCM.
- 3 Give ATM Cell format.
- 4 What is CSMA/CD? Why is it needed in different Ethernets?
- 5 What is Wavelength Division Multiplexing?
- 6 What is xDSL?
- 7 Give Ethernet Frame format.
- 8 Define CDMA.
- 9 Differentiate 2G and 3G Cellular networks.
- 10 Explain the architecture of ZigBee.

PART – B

Note: Answer any four questions.

(4x15 = 60 Marks)

- 11 Explain different data encoding techniques.
- 12 Describe Flow control techniques.
- 13 Write notes on the following:
 - (a) Frequency Division Multiplexing
 - (b) Wavelength Division Multiplexing
- 14 (a) Write notes on Frame Relay.
(b) Discuss about Asymmetric Digital Subscriber Line.
- 15 Explain in detail about LAN Protocol architecture.
- 16 Explain the MAC sub layer and physical layer of Gigabit Ethernet.
- 17 Write notes on the following:
 - (a) Architecture of Wireless LAN
 - (b) ZigBee Technologies.
