FACULTY OF ENGINEERING

B.E. (Civil) IV-Semester (CBCS) (Main & Backlog) Examination, May/June 2019

Subject : Hydrology and Water Management

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

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (20 Marks)

1	Sketch the hydrological cycle	2
2	Define infiltration indices.	2
3	What are the various causes of floods?	2
4	Define "Time of Concentration".	2
5	Differentiate between hydrological and hyetograph.	2
6	What are the different types of aquifers?	2
7	What is "Return Period".	2
8	What is meant by readily available soil moisture?	2
9	What is the relation between duty and delta?	2
10	What is the probability that a 5-year flood will occur at least once during the next 3-year?	2

PART – B (50 Marks)

11 a) Enumerate various of rain gauges and explain weighing bucket type rain gauge in detail.   5

   b) Thiessen polygons constructed for a network of 10 rain gauges in river basin yielded thiessen weights of 0.10, 0.16, 0.12, 0.11, 0.09, 0.08, 0.07, 0.11, 0.06 and 0.10. If the rainfalls recorded at these gauges during a cyclonic storm are 132, 114, 162, 138, 207, 0156, 135, 158, 168 and 150 mm respectively determine the average depth of rainfall by theissen mean and arithmetic mean methods.   5

12 a) Describe the methods of calculating average depth of rainfall from catchments.   5

   b) A catchment are of 30Sq.km has one recording gauge. During a storm, the following mass curve of rainfall was recorded : If the volume of runoff due to the storm measured is $1.2 \times 10^6 m^3$, estimate the { index of the catchment.

Time from start of storm (h)	0	2	4	6	8	10	12	14
Accumulated rainfall (mm)	0	6	17	57	70	81	87	90

   What flood discharge in this river will have a return period of 1000 years?   5

13 a) Enumerate various methods of flood estimation. Describe flood frequency analysis. 5

b) The ordinates of 4 hour unit hydrograph are given in the table. Compute the ordinate of 8 hour unit hydrograph. 5

Time in (hrs)	0	3	6	9	12	15	18	21	24	27	30
Ordinates (m^3/sec)	0	10	25	2	16	12	9	7	5	3	0

Find the ordinates of a 6 hour unit hydrograph for the same basin analytically.

14 a) What is Darcy's Law? What are its limitations? How will you measure the coefficient of permeability of soil? 5

b) A fully penetrating well of dia. 0.3m draws water from a confined aquifer of permeability .001 m/s and thickness 15m. If steady state discharge is found to be 30 m^3/s compute the drawdown at points 10m and 40m from the centre of the well. Take radius of influence of well 1000m. 5

15 a) Define the term time series and write the components of time series. 4

b) A coffer dam designed for a 22 years flood is constructed. It take 6 years to complete the construction of main dam. What is the risk that the coffer dam may fail before the end of the construction period? What return period in the design of coffer dam would have reduced the risk to 12%? 6

16 a) Define Irrigation. List the advantages and ill-effects of irrigation. 5

b) A loamy soil has field capacity of 22% and wilting coefficient of 10%. The dry unit weight of soil is 1.5 gm/cm^3, if the root zone depth is 70cm, determine the storage capacity of the soil. Irrigation water is applied when moisture content falls to 14%. If the water application efficiency is 75% determine the water depth required to be applied in the field. 5

17 Write short notes on : 10
   a) Storage coefficient
   b) Stream gauging
   c) Vertical distribution of soil moisture

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FACULTY OF ENGINEERING
B.E. (EEE) IV - Semester (CBCS) (Main & Backlog) Examination, May / June 2019

### Subject : Electrical Circuits - II

Time : 3 Hours   Max. Marks: 70

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

PART – A (20 Marks)

1 List the Fourier coefficients of odd symmetry?   2

2 In a circuit the applied voltage is V(t)=30+30 sin 3000t+15 sin 6000t V, the resulting current is given as i(t)=6sin (3000t+ 63.4°) + 3sin (6000t+45°) A. Determine the power dissipated in the circuit.   2

3 Find the Laplace transform of $\dfrac{d^2 f}{dt^2}$ 2

4 Calculate V(t) given that V(s)=$\dfrac{10}{s(s+1)}$.   2

5 Write the symmetrical conditions for T Parameters of a two-port network   2

6 Find the Z parameters for the given circuit.   2
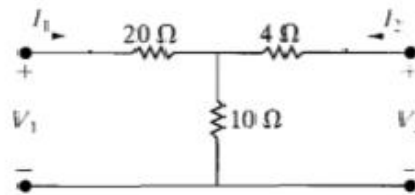
7 Test whether following function is positive real or not? Z(s)=$\dfrac{(s^2+1)(s^2+4)}{s(s^2+2)}$.   2

8 Write the significance of network functions.   2

9 Define the following terms with neat diagrams
   i) Oriented Graph   ii) Tree   2

10 Write the properties of Hurwitz polynomial.   2

PART – B (50 Marks)

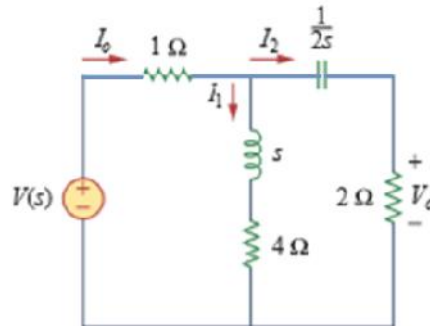11 Find the Fourier Expansion of the following .   10
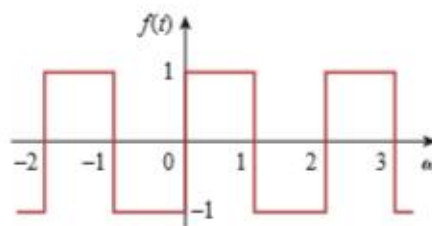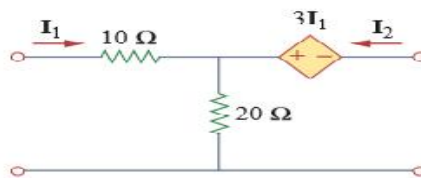
12 (a) Use the Laplace transform to solve the given differential equation

$\dfrac{d^2v(t)}{dt^2} + 8\dfrac{dv(t)}{dt} + 6v(t) = 4u(t)$ Subjected to $v(0) = 1, \dfrac{dv(0)}{dt} = -2$.   5
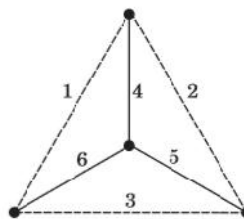
   (b) Determine the transfer function $H(s)=V_0(s)/I_0(s)$ of the circuit in the below figure.   5

13 Determine the T and Y parameters of a given network for the given circuit.   10
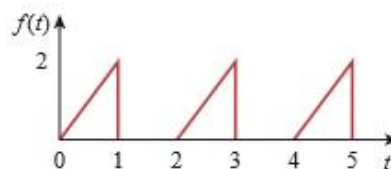

14 Determine Incidence matrix and loop matrix of the given Graph, solid lines are branches and dotted lines as links of the graph.   10
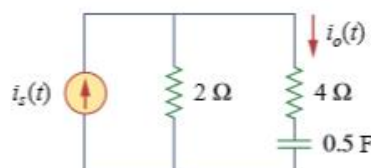

15 Realize $Y(s) = \dfrac{(s+2)(s+4)}{(s+2)(s+7)}$ in both cauer forms with equivalent networks.   10

16 (a) Derive symmetry and reciprocity conditions for "T" Parameters & "h" parameters.   5
   (b) Calculate the Laplace Transform of the periodic function in figure.   5

17 (a) Using Fourier Transform method find $i_0(t)$ in figure when source current $i_s(t)=10\sin2t$ A.   5

   (b) Check whether the giver P(s) is Hurwitz or not
   $P(s) = s^6 + s^5 + 6s^4 + 5s^3 + 3s^2 + 5s + 6$ 5

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FACULTY OF ENGINEERING

B.E. (Inst.) IV - Semester (CBCS) (Main & Backlog) Examination, May / June 2019

Subject : Electrical Machines

Time : 3 Hours   Max. Marks: 70

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

PART – A (20 Marks)

1. What is Armature reaction?   [2]
2. List the various parts of D.C machine.   [2]
3. Draw the phasor diagram of transformer on No load.   [2]
4. Name the various losses in a single phase transformer.   [2]
5. Draw the phasor diagram of a synchronous generator when delivering a lagging power factor load.   [2]
6. What is Synchronous condenser?   [2]
7. A 50Hz, 4 pole, 3-phase induction motor has a rotor current of frequency 2 Hz. Determine the slip.   [2]
8. Derive the condition for maximum starting torque.   [2]
9. What is the purpose of starting winding in a single phase induction motor?   [2]
10. Write the applications of micro motors.   [2]

PART – B (50 Marks)

11. a) Derive the torque equation of a D.C motor.   [5]
     b) A 4-Pole, d.c generator has wave wound armature with 792 conductors .the flux per pole is 12.1mWb. What is the speed to generate a voltage of 240V on no load?   [5]

12. a) Derive the E.M.F equation of single phase transformer and explain voltage transformation ratio.   [5]
     b) In a 50 kVA ,11 kV /400 V transformer ,the iron and copper losses 500W and 600W respectively under full load .Calculate the efficiency at full load 0.8 power factor.   [5]

13. a) Describe with neat sketches, the principle of operation of a three phase synchronous motor.   [5]
     b) A 500 V ,50 kVA ,single phase alternator has an effective resistance of 0.2 . A field current of 10 A produces an armature current of 200 A on short circuit and e.m.f of 450 V on open circuit .Calculate (a) the synchronous impedance and reactance and (b) the full load regulation.   [5]

14 a) Explain briefly the starting methods of three phase induction motors. [5]
b) The full load efficiency and power factor of a 12 kW ,440 V, 3-phase induction motor are 85% and 0.8 lag respectively . The line current is 45 A at 220 V. Calculate the ratio of starting to full load current ,if the motor is provided with star delta starter. Neglect magnetizing current. [5]

15 a) Explain the principle operation of shaded pole motor. [5]
b) Explain the working principle of split-phase capacitor start single phase induction motor. [5]

16 a) Explain commutation process in dc machine with the help of neat diagrams. [5]
b) Explain the principle operation of an auto transformer. [5]

17 Write short notes of the following:
a) Draw torque-slip characteristics of three phase induction motor. [3]
b) What are the applications of stepper motor? [3]
c) Explain voltage regulation by synchronous impedance method. [4]

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FACULTY OF ENGINEERING
B.E. (ECE) IV – Semester (CBCS) (Main & Backlog) Examination, May / June 2019

Subject: Electromagnetic Theory & Transmission Lines

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

Note: Answer all questions from Part – A and any five questions from Part – B.
PART – A (20 Marks)

1 Express vector **B**=(2 a_x − a_y + 2 a_z) in terms of Spherical coordinate system at
   P(1, π/2 , π).   (2)
2 Define Gauss's Law.   (2)
3 Determine the energy stored in free space for the region 2mm<r < 3 mm;
   0< Θ < π/2 ; and   0 <   < π/2 ; for a given potential = (200/r)volts.   (2)
4 Define Vector Magnetic Potential.   (2)
5 Describe concept of Displacement Current.   (2)
6 Explain the concept of Single Stub matching.   (2)
7 What are the applications of Half wave and Quarter wave lines.   (2)
8 Define Complex Poynting Vector.   (2)
9 Describe   ,   ,   with respect to transmission lines.   (2)
10 Define various types of polarizations.   (2)

PART – B (50 Marks)

11 a) Derive an expression for Electric field intensity due to volume charge distribution in spherical coordinate system?   (5)

   b) A circular flat ring of inner radius 2mts and outer radius 5mts has surface charge density $_s$ = ((100/r) micro coulombs/sqmt; Determine **E** on the axis of the ring 15mts away from the centre?   (5)

12 a) Derive an expression for magnetic flux density due to a short length of current element at point P, along Z-axis?   (5)

   b) Sate and explain Stoke's theorem?   (5)

13 a) Describe the concept of Linear and Circular polarization of an EM wave?   (5)
   b) Show that intrinsic impedance for free space is 377ohms?   (5)

14 a) Explain the concept of open and short circuit lines and their significance?   (5)
   b) Derive an expression for Campbell's relation?   (5)

15 a) Compare the characteristics of /2, /4, /8 lines ?   (5)
   b) Obtain an expression for VSWR and Reflection Coefficient?   (5)

16 a) A uniform plane wave is travelling in positive Z-direction in air strikes normally Dielectric surface with permeability as 1 = μ_0 ; and ϵr = 6.25ϵ_0 ; the amplitude of electric field of the incident wave is 10v/mt; Calculate amplitudes of Electric field intensities associated with reflected and transmitted wave?   (5)
   b) Define Parallel and Perpendicular polarizations with illustrations?   (5)

17 a) Compare analogy between electric current in conducting medium and electric flux in Dielectric medium?   (5)
   b) Describe in detail Maxwell's equations in point form and Integral form?   (5)

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FACULTY OF ENGINEERING

B.E. (M/P/AE) IV - Semester (CBCS) (Main & Backlog) Examination, May / June 2019

Subject : Kinematics of Machines

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

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

PART – A (20 Marks)

1 Differentiate mechanism and machine and structure with suitable examples.
2 Define the term inversions. Name any three inversions of four bar mechanism.
3 State the occurrence of coriolis component of acceleration with examples.
4 State Kennedy's theorem.
5 Differentiate self locking and over hauling screws.
6 State the function of clutch. Write the relevant equations.
7 State the various types of followers motions.
8 State the importance of gears. Give classification of gears.
9 Differentiate simple, compound and gear trains with relevant equations for velocity ratio.
10 Write the properties of involute gears.

PART – B (50 Marks)

11 Explain with neat sketches any four inversions of slider crank chain. State the importance of quick return mechanism with its applications.

12 The dimensions of the various links of a mechanism, as shown in figure 1, are as follows: OA = 80 mm ; AC = CB = CD = 120 mm, If the crank OA rotates at 150 r.p.m. in the anticlockwise direction, find, for the given configuration : 1, velocity and acceleration of B and D ; 2. rubbing velocity on the pin at C, if its diameter is 20 mm; and 3, angular acceleration of the link AB and CD.
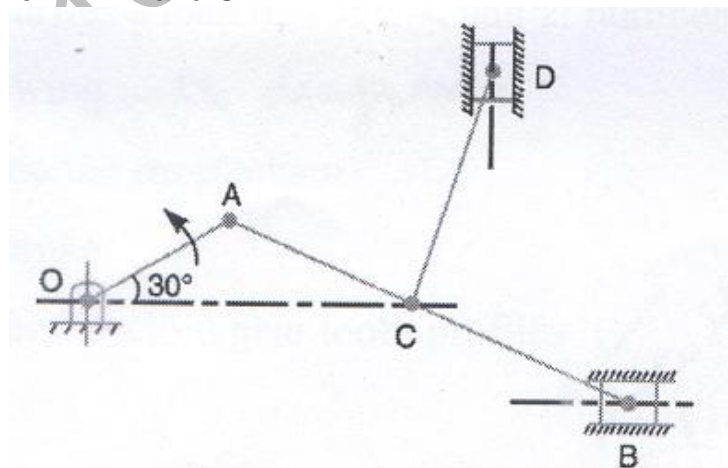

Fig: 1

13 Find the width of the belt, necessary to transmit 7.5 kW to a pulley 300 mm diameter, if the pulley makes 1600 r.p.m. and the coefficient of friction between the belt and the pulley is 0.22. Assume the angle of contact as 210° and the maximum tension in the belt is not to exceed 8 N/mm width.

14 From the following data, draw the profile of a cam in which the follower moves with simple harmonic motion during ascent while it moves with uniformly accelerated motion during descent : Least radius of cam = 50 mm; Angle of ascent = 48° ; Angle of dwell between ascent and descent = 42° ; Angle of descent = 60° ; Lift of follower = 40 mm ; Diameter of roller = 30 mm ; Distance between the line of action of follower and the axis of cam = 20 mm. If the cam rotates at 360 r.p.m. anticlockwise, find the maximum velocity and acceleration of the follower during descent.

15 An epicyclic gear train, as shown in Figure 2, has a sun wheel S of 30 teeth and two planet wheel P – P of 500 teeth. The planet wheels mesh with the internal teeth of a fixed annulus A. The driving shaft carrying the sunwheel, transmit 4 kW at 300 r.p.m. The driven shaft is connected to an arm which carries the planet wheels. Determine the speed of the driven shaft and the torque transmitted, if the overall efficiency is 95%.

Fig. 2
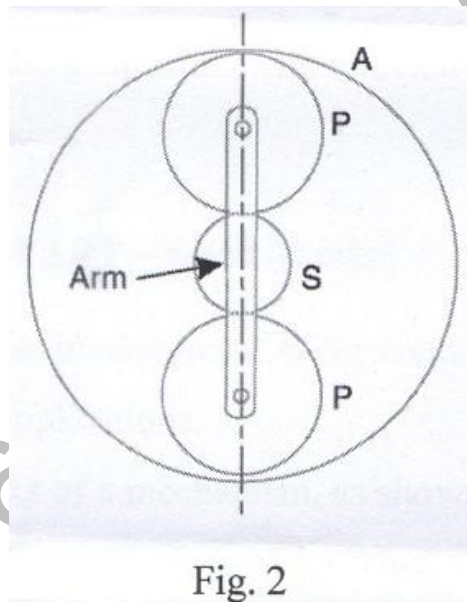
16 A shaft has a number of collars integral with it. The external diameter of the collars is 400 mm and the shaft diameter is 250 mm. If the uniform intensity of pressure is 0.350 N/mm^2 and its coefficient of friction is 0.05, estimate : 1. Power absorbed is overcoming friction when the shaft runs at 105 r.p.m. and carries a load of 150 kN, and 2. Number of collars required.

17 Write short notes on the following with diagrams:
   (a) Peaucellier straight line motion mechanism
   (b) Internal expanding shoe brake
   (c) Comparison of involute and cycloid gear tooth profiles

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FACULTY OF ENGINEERING

B.E. (CSE) IV - Semester (CBCS) (Main & Backlog) Examination, May / June 2019

Subject : Programming Languages

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

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

PART – A (20 Marks)

1	Write important uses of programming languages.	(2)
2	Write the differences between compiler and interpreter.	(2)
3	What is type inferencing?	(2)
4	What is an alias?	(2)
5	What is a Named constant? Give an example.	(2)
6	What is short circuit evaluation?	(2)
7	What are guarded commands?	(2)
8	What is a variable and what are the attributes of a variable?	(2)
9	Define template. Give example.	(2)
10	Write the differences between logic programming and concurrent Programming.	(2)

PART – B (50 Marks)

11	(a) Discuss features of programming languages and its importance.	(5)
	(b) Draw the syntax tree for a+b*c/d + e-f.	(5)
12	(a) Distinguish between data types, arrays and records.	(5)
	(b) What is call-by-value and call-by-reference? Give example.	(5)
13	(a) What are recursive types?	(5)
	(b) Explain concurrency mechanism in Ada.	(5)
14	Explain the concept of inheritance with example.	(10)
15	(a) Explain logic programming language features.	(5)
	(b) Write on scheme programming language.	(5)
16	Explain the various approaches for expression evaluation in functional programming language.	(10)
17	Write short notes on:	(10)
	(a) Abstract data types	
	(b) Polymorphism.	

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BE (CBCS) IV-Semester (I.T) (Main & Backlog) Examination, May / June 2019

Subject : Data Communications

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

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

PART- A (25 Marks)

1. Distinguish TCP/IP and OSI Protocol Architecture	2
2. Define Amplitude Modulation with an example	2
3. Write the differences between Synchronous and Asynchronous transmission	2
4. What is Stop-n-wait ARQ protocol.	2
5. Write the differences between Circuit switching and packet switching	2
6. Give ATM Cell format.	2
7. What is CSMA/CD? Why is it needed in different Ethernets?	2
8. What are traditional Ethernet topologies?	2
9. Differentiate 2G and 3G Cellular networks	2
10. Give the architecture of Bluetooth	2

PART-B (50 Marks)

11. a) Explain the components of Data Communication model	5
b) Explain about different transmission impairments	5
12. Describe Error control techniques	10
13. Write short notes on the following:	
a) Synchronous Time Division Multiplexing	5
b) Statistical Time Division Multiplexing	5
14. a) Write short notes on Frame Relay	5
b) Discuss about Asymmetric Digital Subscriber Line	5
15. Explain in detail about LAN Protocol architecture	10
16. Distinguish Bridged, Switched and Full Duplex Ethernets	10
17. Write short notes on the following:	
a) Architecture of Wireless LAN	5
b) Zigbee Technologies	5

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FACULTY OF ENGINEERING

BE 3/4 (Civil/CSE/IT) I-Semester (Backlog) Examination, May / June 2019

SUBJECT : Managerial Economics and Accountancy

Time: 3 Hours   Max. Marks: 75

Note: Answer all questions from Part-A & any Five Questions from Part-B.
PART-A (25Marks)

1	Explain Opportunity Cost Principle	3
2	Explain about cross elasticity of demand	2
3	What is production function	3
4	What are the sources of capital	2
5	Write the rules of accounting	3
6	Explain about micro managerial Economics	2
7	What is the concept of Equilibrium	3
8	Explain fixed and Variable cost	2
9	Explain discounted pay back period	3
10	What is Trial Balance	2

PART-B (50Marks)

11. Define managerial Economics and its usefulness to Engineers   10

12. From the following information.   10

Year	Sales (Rs)	Profit (Rs)
2012	10,00,000	2,00,000
2013	15,00,000	4,00,000

Calculate : 1) P/V Ratio   2) B.E.P   3) Fixed cost   4) Margin of Safety

13. Write Short note on
    a) Internal Economics of Scale   5
    b) Feature of Perfect competition   5

14. The following information is given   10

Year	1	2	3	4	5
Cash flow before tax (Rs)	50,000	60,000	40,000	30,000	20,000

Investment Rs.2,00,000 Depreciation = 10% Tax Rate = 20% Evaluate NPV assuming discount Rate 12%

15. Prepare trading, Profit and loss account

	(Rs)		(Rs)	10
Opening Stock	1,32,000	Purchase Returns	1,320	
Purchases	83,600	Sales	1,87,440	
Sales Returns	8,360	Capital	55,000	
Debtors	26,400	Creditors	1,76,000	
Furniture	17,600	Bills payable	26,400	
Premises	71,500			
Wages	2,200			
Import duties	6,600			

Cash	1,760
Bank Balance	6,600
Bills Receivable	28,600
Salaries	44,000
Bad debts	440
Insurance	5,500
Advertisement	6,600
Carriage out wards	1,100
Trade Expanses	3,300

Adjustments : closing Stock Rs.1,28,700

16. a) Write about law of demand assumptions   5
    b) Explain the demand forecast techniques   5

17. a) Write any two Concepts of accounting   5
    b) Write zonal entries for the following transaction Journal   5

    1-2-2016 Deposited in bank cash Rs. 50,000

    2-2-2016 Purchased goods for cash Rs. 20,000

    3-2-2016 Sold goods to vivek for cash Rs. 5000

    4-2-2016 Withdrawn cash fun bank Rs. 20,000

    5-2-2016 Salary paid Rs. 10,000

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FACULTY OF ENGINEERING

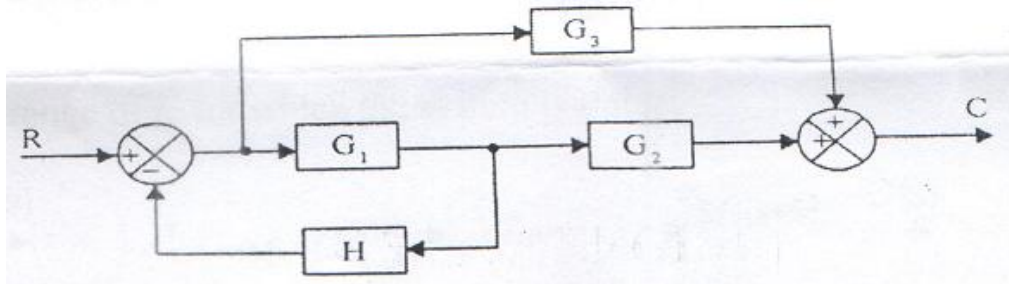**B.E. 3/4 (EEE/Inst.) I - Semester (Backlog) Examination, May / June 2019**

Subject : Linear Control Systems

Time : 3 Hours　　　　　　　　　　　　　　　　　　　　　**Max. Marks: 75**

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

PART – A (25 Marks)

1　Obtain the Transfer function of the control system shown in figure.　　(3)

2　What are the different components of Control system?　　(2)

3　Explain the purpose of PID Controller.　　(2)

4　Determine the stability of the characteristic equation $S^4 + 8S^3 + 18S^2 + 16S + 5$.　　(3)

5　What is Gain Margin?　　(2)

6　Draw the Polar plot for the transfer function $G(s) = \dfrac{1}{s^2(1+s)(1+2s)}$.　　(3)

7　If $\dfrac{Y(S)}{U(S)} = \dfrac{S+4}{S^2 + 3S + 2}$ then Draw the state model.　　(3)

8　How to choose State variable in a system?　　(2)

9　If $A = \begin{bmatrix} 0 & 1 \\ 0 & -2 \end{bmatrix}$. Determine the STM.　　(3)

10　Obtain the the Transfer function of unit step function.　　(2)

PART – B (50 Marks)

11　(a) Derive the Transfer function for Field controlled DC servomotor.　　(5)
　　(b) Find the overall transfer function for the single flow graph shown in
　　　　figure.　　(5)
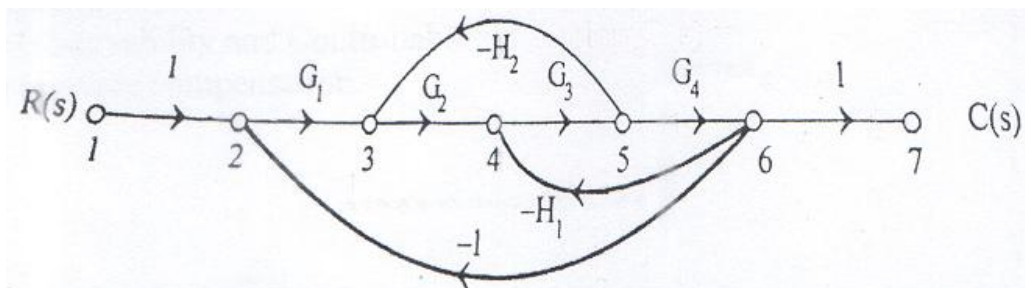
12 Sketch the Root locus of the system whose open loop transfer function is

$G(s) = \dfrac{K}{S(S+2)(S+4)}$. Find the value of K so that the damping ratio of the

Closed loop system is 0.5. (10)

13 By using of Nyquist criterion, determine the range of K for which the system is stable. (10)
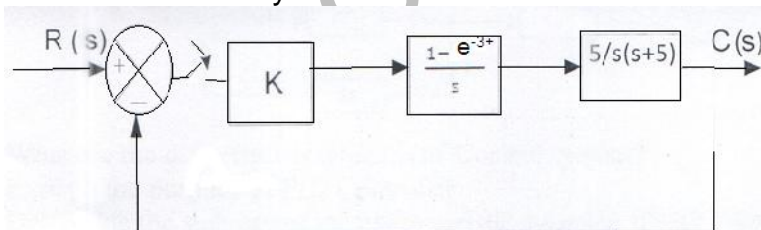
$$G(s)H(s) = \dfrac{K(1+0.5S)(1+S)}{(1+10S)(S-1)}$$

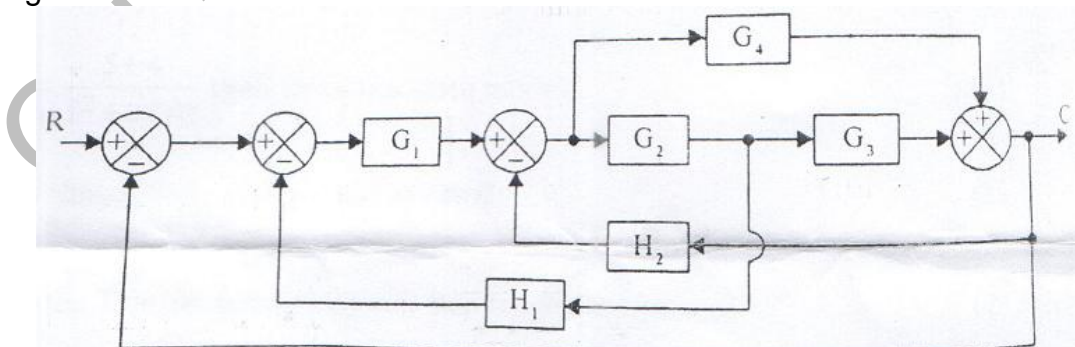14 Find $X_1(t)$ and $X_2(t)$ of the system describe by (10)

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}\begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 1 \\ 0 \end{bmatrix} u$$. Where initial condition are

$$\begin{bmatrix} x_1(0) \\ x_2(0) \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$$. And u is unit step input.

15 Find the range of K for which the system is stable. (10)

16 (a) Determine the overall transfer function C(s) / R(s) for the system shown in figure. (5)

(b) Explain for the correlation between time domain and frequency domain specification. (5)

17 Write short notes on the following:
(a) Observability and Controllability (5)
(b) Cascade compensation (5)

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FACULTY OF ENGINEERING

BE ¾ (ECE) I – Semester (Backlog) Examination, May/June 2019

Subject: Pulse & Digital Circuits

Time: 3 Hours   **Max. Marks: 75**

Note: Answer all questions from Part – A, & any five questions from Part – B.

Part – A (25 Marks)

1. Explain how a high pass RC circuit acts as a differentiator.
2. Draw the response of RC high pass circuit at different time constants for pulse input.
3. State and prove clamping circuit theorem.
4. Explain transistor-switching times.
5. Explain how a voltage to frequency converter works with a neat circuit diagram?
6. Explain the general features of a time base signals.
7. Explain the concept of fan-in and fan-out of a gate with an example.
8. Explain wired logic in TTL logic family.
9. What are the applications of CMOS transmission gate?
10. Compare CMOS and TTL logic families.

Part – B (50 Marks)

11. a) Derive the square wave response of a high pass RC circuit with suitable waveforms.
    b) Draw the circuit diagram of compensated attenuator? Derive the necessary conditions for perfect attenuation of the compensated attenuator.

12. a) Explain the two way parallel clippers with neat circuit diagram and waveforms.
    b) Explain the working of positive clamper with neat circuit diagram and waveforms.

13. a) Explain the mono stable multi vibrator with relevant waveforms and derive an expression for pulse width.
    b) Draw and analyze sweep circuit using UJT and derive its intrinsic standoff ratio.

14. a) Explain totem pole output in TTL gate with neat circuit diagram.
    b) Draw and explain two input ECL OR/NOR gate.

15. a) Implement the function F = (AB+CD)' using CMOS logic family and explain with truth table.
    b) Explain interfacing of TTL driving CMOS gate and CMOS driving TTL.

16. Explain the Schmitt trigger circuit with the help of circuit diagram and derive the expressions for UTP and LTP.

17. Write short notes on
    a) SCR sweep circuit
    b) Voltage comparator
    c) Tristate output logic

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FACULTY OF ENGINEERING

B.E. 3/4 (E.C.E) I – Semester (Old) Examination, May/June 2019

Subject: Microprocessors and Microcontrollers

Time: 3 hours   Max. Marks: 75

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

PART – A [25 Marks]

1. How does 8086 differentiate between an opcode and instruction data? [2]

2. Write 8086 instructions to mask the most significant four bits of an 8-bit data. [2]

3. What are the functions of the following 8086 pins: [3]

    (i) ALE   (ii) READY   (iii) $\overline{BHE}$

4. Write the I/O mode control word register format for 8255 in mode 0 configurations

    with the following specification:

    Port A as IN, Port B as IN, Port C lower as OUT and Port C upper as OUT [3]

5. What is meant by 'framing' in asynchronous serial data communication? [2]

6. Explain the following 8051 instructions with syntax format and an example: [3]

     (i) SJMP   (ii) MOVX   (iii) CJNE

7. Explain the configuration of interred if enable system. [2]

8. Write an ALP of 8051 to store a constant onto RAM locations {30H- 34H} using stack

    operations. [3]

9. How do you double the baud rate in the 8051? [2]

10. Show the interfacing connections of 8255PPI with 8051. [3]

PART – B [50 Marks]

11. a) Discuss the architecture of 8086 microprocessor and explain the operation
       of BIU and EU. [5]
    b) Draw the Write cycle timing diagram for 8086 in minimum mode operation. [5]

12. a) Write an ALP for 8086 to find square root of a two digit number
       (Assume that the number is a perfect square) using assembler directives. [6]
    b) Address 00080H in the interrupt-vector table contains 4A24H, and address [4]
       00082H contains 0040H.
       i) To what interrupt type do these locations correspond?
       ii) What is the starting address of the interrupt service procedure?

13. a) Interface the following memory ICs with 8086:
        i) Two 8 KB EPROMs ending at FFFFFH.
        ii) Two 8KB SRAMs starting from C0000H. [5]
    b) Explain the operational modes of 8255 PPI. [5]

14. a) Sketch the pin configuration of 8051 and explain. [5]
     b) Write an ALP of 8051 to find the sum of a series of ten 8-bit numbers. [5]

15. a) How do you program 8051 timer in mode 1 to generate a 5ms delay? [5]
    b) Write a program to transfer "YES" Serially at 4800 baud rate continuously.
       Show the configuration of all the registers required. [5]

16. a) Write a program to interface an LCD to 8051 and display "INDIA". [5]
    b) Interface a stepper motor to 8051 and write a program to rotate it by
      80-degree in clockwise direction. The motor has a 2-degree step angle. [5]

17. Write short notes on any two:
    a) 8051 interrupts and 8051 IVT. [5]
    b) Instruction formats of 8086. [5]
    c) 8257 DMA interfacing with 8086. [5]

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FACULTY OF ENGINEERING

B.E. 3/4 (AE) I - Semester (Backlog) Examination, May / June 2019

Subject : Automotive Transmission

Time : 3 hours   **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any Five questions from Part-B.

PART – A (10 x 2.5 = 25 Marks)

1 What are the various components of the transmission system?
2 What are the advantages of using a spur gear?
3 State the principle of torque conversion.
4 What are the limitations of fluid coupling?
5 How are different speeds obtained in a planetary gear box?
6 List out any three merits of an automatic transmission.
7 What are the three major rotating elements in a torque converter?
8 Explain the term hydrostatic drive.
9 List out the types of electrical drives.
10 What is meant by claping force in clutch?

PART – B (5 x 10 = 50 Marks)

11 Explain briefly the construction and working principle of multiplate clutch with neat sketch.   10

12 Explain briefly the construction and working principle of sliding mesh gear box and show how the power flow from lay shaft to main shaft in different gears.   10

13 Describe the working of multistage and polyphase torque converters with neat sketches.   10

14 Explain with the help of neat sketch and working principle of Janney hydrostatic drive.   10

15 Explain the working principle of planetary gear box and determine the gear ratios. With neat sketches.   10

16 Explain briefly Chervolet drive automatic transmission with neat sketch.   10

17 Explain the working principle of Ward Leonard system with a neat sketch briefly. 10

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