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(Approved by A.I.C.T.E., New Delhi & Affiliated to JNTUK, Kakinada)
An ISO 9001:2008, ISO 14001:2004 & OHSAS 18001:2007 Certified Institute.
NH-5, Anakapalle – 531002, Visakhapatnam, A.P.
Phone: 08924-221111 / 221122/9963981111, www.diet.edu.in, E-mail: info@diet.edu.in
Department of Electronics and Communication Engineering

IV B.Tech (CSE) Sem-II QUESTION BANK
Subject: **Management Science (R13)**
Faculty: **A. Kiran Kumar, Sr. Asst. Professor, MBA Department**

I UNIT

1. a) What is the significance of Hawthorne experiments for management?
   b) Define Management and explain its functions.
2. a) Define Management? Explain Henry Fayol's principles of management
   b) Differentiate between behavioral approach and scientific approach to management.
3. a) Explain the nature of management.
   b) What are the challenges you have to face as a manager.
4. a) Describe the theory of scientific management and explain how it was criticized.
   b) What is matrix organization and what I its uniqueness.
5. a) Why is management considered as a profession and what factors make it a profession?
   b) Distinguish between Theory – X and Theory – Y
6. a) What is motivation? Explain Abraham Maslow's needs Hierarchy theory.
   b) What do you mean by Functional organization structure? What are the advantages and disadvantages?

II UNIT

1. a) Describe the basic procedure to be followed in adopting work study techniques for Sound results
   b) What is inventory? Explain the need for inventory control
2. a) What do you mean by EOQ? derive the formula for determining the EOQ.
   b) Define control charts and explain its types
3. a) What s meant by materials management? state its advantages and disadvantages.
   b) Explain the types of ABC analysis.
4. a) What is meant by integrated Materials Management? State its advantages
   b) Discuss about various types of p chart,r chart.
5. What is statistical quality control? How is this important in operations management

III UNIT

1. a) State the importance and methods of job evaluation.
   b) Define training and explain its methods.
2. a) What do you understand by marketing mix?
   (b) Explain briefly the basic elements in marketing mix
3. a) Explain the functions of personnel management
   b) Evaluate the different sources of recruitment
4. a) What do you understand by Human Resource Management?
   b) Define Human Resource Development? Outline its concept.
5. a) Define Human Resource Management. Explain its functions
   b) What are the differences between Human Resource Management and Personal Management and Industrial Relations?
6. a) Discuss in brief about various wage payment plans? Are they relevant in present day Context.
   b) What is product life cycle? Describe its stages.

IV UNIT

1. From the following information:
   a) Draw the project network and find critical path.
   b) Calculate earliest starting times and earliest finished times for each activity.
   c) Determine Total, Free and Independent floats.

Activity	Immediate Predecessor	Duration
A	-	3
B	-	4
C	A	5
D	A	7
E	B,C	3
F	B,C,D	6

2. From the following information:
   a) Draw the network
   b) Find its critical path and project duration

c) Determine Total, Free and Independent Floats.

Activity	Duration
1-2	5
1-3	4
2-4	6
3-4	2
4-5	1
4-6	7
5-7	8
6-7	4
7-8	3

3. From the following data crash the network and identify the optimum time of the project where the indirect cost is estimated Rs. 60 per day.

Activity	normal time	Crash time	Cost slope
1-2	9	6	20
1-3	8	5	25
1-4	15	10	30
2-4	5	3	10
3-4	11	6	15
4-5	2	1	40

4. From the following information:

(a) Draw the PERT network

(b) Find variance for each activity

(c) Find variance and standard distribution for critical path

(d) What is the probability that the project will be completed in 23 days?

(e) Find Total, Independent and Free floats?

Activity	To	Tm	Tp
1-2	3	3	3
2-3	3	6	9
2-4	2	4	6
3-5	4	6	8
4-6	4	6	8
5-6	0	0	0
5-7	3	4	5
6-7	2	5	8

5. a) What is CPM? Discuss its advantages and limitations.

b) Distinguish between PERT and CPM.

6. a) What is pert? State its advantages and limitations

b) What is CPM? Explain its advantages.

V UNIT

1. (a) How do you formulate and implement strategy? Explain

(b) What is the need for corporate planning process?

2. (a) what are the factors of external and internal environmental to be considered for formulating the strategy? Explain.

(b). Explain various generic strategy alternatives in detail

3. (a) Define strategic management and describe the process of strategic management.

(b) How do you carry out SWOT analysis for a manufacturing unit?

4. (a) What do you understand by the concept of strategy? Discuss the concept of Mission and Vision.

(b). Discuss corporate planning process.

5. (a). Explain various external environment scanning techniques used by the organization

(b) What is environmental scanning? How is this important in present day context.

VI UNIT

1. Write a notes on:

(a) Capability Maturity Model (b) Balanced Score card.

2. Write a notes on :

(a) Supply Chain Management b) Performance Management.

3 (a) What is Enterprise Resource Planning? Explain

(b) Explain the merits and demerits of Enterprise Resource Planning.

4. (a) define total quality management and explain its significance.

(b) Write notes on six sigma

5. Write a short notes on:
(a) Management Information System (b) Bench Marking.

6. Discuss the following;
a) Supply Chain Management b) Enterprise Resource Planning

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Academic Year : **2017 – 2018**
Name of the Faculty : **M.RAJARAO**
Designation : **Assistant Professor**
Department : **Electrical &Electronics Engineering**
Year/Semester : **II rd Year/II nd semester**
Subject : **Power System – 1**

Unit-1

1. A) Explain the factors to be considered for the selection of the site for a thermal power station.
b) Explain the functions of Cooling tower and condenser with respect to a thermal power station.

2. Draw the complete schematic diagram of a coal fired thermal power plant. Label each Component. Discuss briefly the function of each component.

3. a) Describe the functions of economizer and super heater in a thermal power plant.
b) What are the essential requirements of steam power station design?
4 a) Describe briefly various components in modern thermal power station with neat flow diagram.
b) Explain briefly about ash handling mechanism in a thermal plant.
5 a) what are the essential requirements of steam power station design
b) Explain the function of super heater and economical in thermal power plant
6. a) Describing briefly the various methods of steam turbine governing
b) Explain the function of super heater with neat diagram

Unit-2

1. a) Describe the fast breeder reactor with neat sketch? Discuss its merits. (9M)
b) Discuss about the nuclear waste disposal mechanism in a nuclear power plant. (7M)
2. a) Describe with the help of a neat sketch, construction and working of a boiling water reactor (9M)
b) Explain the factors considered for location of a nuclear power plant. (7M)
3. a) With the help of a neat diagram explain the working principle of a fast breeder reactor used in a nuclear power plant.(9M)
b) Enumerate and explain essential components of a nuclear reactor. (7M)
4. a) With the help of neat diagram, describe the working of pressurized water reactor. . (9M)
b) Explain the radiation hazards and shielding in nuclear power plants. (7M)
5 a) With the help of a neat diagram explain the working principle of a fast breeder reactor used in a nuclear power plant.
b) Explain the radiation hazards and shielding in nuclear power plants.
6 a) Discuss the boiling water reactor, mentioning its merits and demerits?
b) Explain the following terms with reference to nuclear plant
i) Moderator, ii) Heavy water and iii) control rods

Unit-3

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1. Explain, in detail the radial and ring main distribution systems. Discuss the characteristics of each system. Also explain the design features of each system

2 a) Explain the radial distribution system with neat diagram and list out its merits and demerits compared to ring main distributor.

b) A D.C ring main system ABCDA fed from point A with 250 V supply and the loop Resistances of various sections are AB = 0.09 ohms; BC = 0.4 ohms; CD = 0.3 ohms and DA = 0.08 ohms. The main supplies 110 A at B, 160A at C and 220 A at D. Calculate the voltages at each load point. If the points A and C are inter connected through a link of 0.08 ohm. Determine the voltages at the load points.

3. A) Explain about stepped distributor and ring main distributor in a distribution system.
b) A 500 m long single phase AC distributor has a total impedance of (0.02+j0.04) ohms and is fed from one end at 230V. It is loaded as follows: 50A at UPF, 200 m from feeding point, 100A at 0.8 p.f lag, 300 m from feeding point, 50A at 0.7 p.f lag at the far end. Calculate the total voltage drop and voltage at the far end

4. a) Give the classification of distribution systems and compare AC and DC distribution systems.
b) A single-phase distributor has a total resistance of 0.3 ohms and a reactance of 0.4 ohms. At the midpoint 'A', a current of 75A at 0.75 p.f lead and at the far end 'B', a current of 100A at unity p.f is tapped. If the voltage at the midpoint is 230V, find the voltage at the supply end and also its phase angle with respect to voltage at the far end when the power factors are with reference to respective voltages at the load point.

5. a) Explain the design features of distribution systems

b) A 2 wire, DC ring distributor is 300m long and is fed at 240V at point A. At point B, 150m from A, is loaded of 120A is taken and at C, 100m in the opposite direction, a load of 80A, is taken. If the resistance per 100m of single conductor is 0.03_, find the currents in each section of distributor and voltages at points B and C.

6. a) State the main types of distribution systems and compare their applications
b) A single phase, ring distributor PQR is fed at P. The loads at Q and R are 50A at p.f. 0.8 lag and 80A at p.f. 0.707 lag respectively, both expressed relative to the voltage at P. The total impedance of the three sections PQ, QR and RP are (1.5 + j 1.5) _, (2+j3)_ and (2+j1) respectively. Determine the current in each section with respect to the voltage at P.

Unit-4

1. a) What are the merits and demerits of GIS over air insulated substations.
b) What are the various types of bus bar arrangements in the substation? Discuss double bar system.
2 a) Draw the single line diagram of a GIS and explain.
b) Explain with a neat lay out diagram of main and transfer bus bar system. (8M+8M)

3 a) What is the difference between indoor and outdoor substations? What are the factors which are to be considered for a selection of a site of a substation.
b) Explain the installation and maintenance of gas insulated substation (9M+7M)
4. a) What are the various types of bus bar arrangements in the substations? Explain sectionalized single bus bar arrangement with suitable diagrams.
b) Explain the constructional aspects of gas insulated substation.
5. a) Compare Air insulated and gas insulated substations.
b) Explain with a neat lay out diagram of main and transfer bus bar system
6 a) Explain the factors to be considered when selecting a location for a substation
b) List the merits and demerits of indoor substations over outdoor substations. (7M+8M)

Unit-5

1. a) Derive the expression for electrostatic stress in a single core cable. Where does maximum stress occur and where is it minimum and why?
b) A single core, 33kV cable has a conductor diameter of 3.4 cm and a sheath of inside diameter 6.2 cm. The cable has an inner layer of 1.5 cm thick of rubber of dielectric constant 5.1 and rest impregnated refer of dielectric constant 3.2. Find the maximum stresses in the rubber and in the paper. (8M+8M)

2. a) Deduce an expression for insulation resistance of a single core cable in terms of specific resistance of dielectric, its core and sheath diameter.
b) A 3-core, 3-phase metal sheathed cable has capacitance between all conductors bunched and sheath is 0.9 μF and capacitance between two conductors bunched with sheath and third conductor is 0.7 μF. Determine the capacitance when the sheath is insulated for the following conditions: (i) Between any two conductors (ii) Between any two bunched conductors and the third conductor (iii) Calculate the capacitance to neutral and charging current taken by the cable when connected to 33 kV, 3-phase, 50 Hz systems. (8M+8M)

3 a) Draw the cross section of a 3-core belted high voltage cable and describe its various parts.
b) A 3-phase, single core 132 kV cable has a conductor diameter of 3.2 cm and a sheath of inside diameter 9 cm. If two intersheaths are introduced in such a way that the stress varies between the same maximum and minimum in the three layers. Find i) Positions of inters heaths ii) voltage on the inters heaths iii) Maximum and minimum stress. (8M+8M)

4. a) A single core cable has a conductor diameter of 2.5 cm and a sheath of inside diameter 6 cm. Calculate the maximum stress. It is desired to reduce the maximum stress by using two intersheaths. Determine their best position, the maximum stress and the voltage on each. Consider the System voltage as 3-phase 66 kV.
b) What is the most general criterion for the classification of cables? Draw the sketch of a single core low tension cable and label the various parts. (8M+8M)

5 a) Explain the purpose of using inters heaths in a cable.
b) A single core cable has a conductor diameter of 2.5 cm and a sheath of inside diameter 6cm. Calculate the maximum stress. It is desired to reduce the maximum stress by using twointers

heaths. Determine their best position, the maximum stress and the voltage on each. Consider the System voltage as 3-phase 66 kV.

6. Explain classification of cables and discuss their general construction with neat sketch. (15M)

Unit-6

1. a) What are the various types of tariffs? Explain the power factor tariff.
b) An industry working 12 hours a day for 360 days in a year. The following two systems of tariff are available: H.V supply at 5 paise per unit plus Rs. 4.5 per month per kVA of maximum demand, LV supply at Rs.4 per month per kVA of maximum demand plus 7 paise per unit. The industry has an average load of 300 kW at 0.8 p.f and a maximum demand of 125 kW at p.f of 0.85. The H.V equipment costs Rs. 50 per kVA and losses can be taken as 5%. The interest and depreciation charges are 5%. Calculate the differences in cost between the two systems. Comment on the results. (8M+8M)

2. a) Discuss the objectives and requirements of tariff methods.
b) A 2000 MW power station delivers 2000 MW for 3 hours, 600 MW for 7 hours and is shut down for the rest of each day. It is also shut down for maintenance for 70 days annually. Calculate its annual load factor. (8M+8M)

3. a) Explain the following with respect to the economic aspects power generation: (i) Load duration curve, (ii) Diversity factor ,(iii) Maximum demand and (iv) Plant Capacity factor.
b) A Power station is to fed four regions of load whose peak loads are 12, 7, 10 and 8 MW. The diversity factor at the station is 1.4 and the average annual load factor is 65%. Determine the following: i) Maximum demand on the station ii) Annual energy supplied by the station and iii) Suggest the installed capacity

4 a) A Domestic lighting installation having fifteen 60 watt lamps is operated as follows:
i) 5 lamps from 6 p.m till 8 p.m ii) 10 lamps from 8 p.m till 10 p.m
iii) 6 lamps from 10 p.m till 12 p.m iv) Determine the demand factor and the daily load factor.
b) Explain two-part tariff and compare it with power factor tariff. (8M+8M)
5. a) Explain the terms load factor and diversity factor and discuss their effect on the cost of generation of electrical energy.
b) A 1000MW power station delivers 1000 MW for 2 hours, 500 MW for 6 hours and is shut down for the rest of each day. It is also shut down for maintenance for 60 days annually. Calculate its annual load factor. (8M+7M)

6. a) Define the following with respect to the economic aspects power generation
i) Connected load ii) Load factor iii) Plant capacity factor
b) Calculate the generating cost per kWH, delivered from a generating station from the following data. Plant capacity 500 MW; annual load factor 45 %; capital cost Rs.1200×106; annual cost of fuel etc Rs.160 × 106, interest 9.2 % per annum of initial value. (8M+7M)

Dadi Institute of Engineering & Technology, Anakapalle

Department of Electrical & Electronics Engineering

STLD

QUESTION BANK (Academic Year 2017-18)

D.R.CH NOOKESH, *Assistant Professor*

II Year B-TECH

UNIT-1

1. Implement the following functions using NAND gates.

$$F_1 = A(B + CD) + (BC)^{|}$$
$$F_2 = WX^{|} + X^{|}Y(Z + W^{|})$$

2. Find the complement of the following Boolean functions and reduce them to minimum number of literals.

$$(BC^{|} + A^{|}D)(AB^{|} + CD^{|}$$
$$(B^{|}D + A^{|}BC^{|} + ACD + AB^{|}C)$$

3. a) Convert the given expression in standard SOP form f(A,B,C)=AC+BA+BC

b) Convert the given expression in standard POS form y=A. (A+B+C)

4. a) Given the 8bit data word 01011011, generate the 12 bit composite word for the hamming code that corrects and detects single errors.

b) Perform the following addition using excess-3 code. I) 386+756 ii) 1010 + 444

5. *a) i.)Represent +65* and -65 in sign magnitude, sign 1's complement and sign 2's Complement representation. ii.)Explain about Weighted and non-weighted codes

b) Using 10's complement, subtract i) 72532_{10}-3250_{10} ii) 3250_{10}-72532_{10}. What do you infer from the results?

6 a i) Perform $(24)_{10} - (56)_{10}$ in BCD using 9's complement

ii)) Convert $(97.75)_{10}$ to base 2.

b i) Convert $(2468)_{10}$ to ( ) $_{16}$

ii.) What is the advantage of 1's and 2's complement in computers. Represent +45 and -45 in sign-magnitude, sign-1's complement and sign-2's complement representation.

UNIT-2

1. Minimize the following function using K-map and also verify through tabulation method. F (A, B, C, D) = $\sum m(1,4,5,7,8,9,12,14)$+d (0, 3, 6, 10).

2. Simplify the following Boolean expressions using K-map and implement it by using NOR gates.
   a) F(A,B,C,D)= $AB^{|}C^{|} + AC + A^{|}CD^{|}$
   b)F(W,X,Y,Z)== $W^{|}X^{|}Y^{|}Z^{|} + WXY^{|}Z^{|} + W^{|}X^{|}YZ + WXYZ$

3 a) Reduce the following function using k-map technique
F (A, B, C, D) =$\pi(0,2,3,8,9,12,13,15)$
b) Minimize the expression using k-map y= $(A + B + C^{|})(A + B + C)(A^{|} + B^{|} + C^{|})(A^{|} + B + C)(A + B + C)$
4. Simplify the following using tabulation method y(w,x,y,z)= $\sum m(1,2,3,5,9,12,14,15)$+ +d(4,8,11)
5 a.) What are the basic operations in Boolean algebra?

b.)What are the advantages of tabulation method over K-map?

UNIT-3

1. a) Design a excess-3 adder using 4-bit parallel binary adder and logic gates.
   b) What are the applications of full adders?

2. a) Design BCD to gray code converter and realize using logic gates.
   b) Design a 1:8 demultiplexer using two 1:4 demultiplexer.

3. a) Design and implement a two bit comparator using logic gates.
   b) Implement full adder using decoder and OR gates.
   .

4. a) Implement the following switching function using a Four input multiplexer
   F(A, B, C, D) = Σm (0, 1, 2, 4, 6, 9, 10, 13, 14)
   b) A Combinational circuit is defined by the following three Boolean functions
   $F_1 = x'y'z' + xz$ $F_2 = xy'z' + x'y$ $F_3 = x'y'z + xy$
   Design the circuit with a decoder and external gates.

5. a) Define decoder. Construct 3x8 decoder using logic gates and truth table.
   b) Define an encoder. Design octal to binary encoder

6.

a) Implement a full adder with two 4×1 multiplexers.
b) Implement Half adder using 5 NAND gates

Unit-4

1. A) Derive the PLA programming table for the combinational circuit that squares a 3 bit Number.

b) Implement the following Boolean functions using PAL.

W (A, B, C, D) = $\sum m(0,2,6,7,8,9,12,13)$

X (A, B, C, D) = $\sum m(0,2,6,7,8,9,12,13,14)$

Y (A, B, C, D) = $\sum m(2,3,0,9,10,12,13)$

Z (A, B, C, D) = $\sum m(1,3,4,6,9,12,14)$

2. a) Design a BCD to excess-3 code converter and implement using suitable PLA.

b) Implement the following functions using a PROM

i) F(w,x,y,z)= $\sum(1,9,12,15)$

ii) G(w,x,y,z)= $\sum(0,1,2,3,4,5,7,8,10,11,12,13,14,15)$

3a) Implement the following Boolean functions using PLA.

A(x,y,z)=$\sum m(1,2,4,6)$

B(x,y,z)=$\sum m(0,1,6,7)$

C(x,y,z)=$\sum m(2,6)$

b) Design a combinational circuit using PROM that accepts 3-bit binary number and generates its equivalent excess-3 code.

4. a) Draw the logic diagram of a SR latch using NOR gates. Explain its Operation using excitation table.

b) Convert D flip-flop into T and JK flip-flops.

5 a) Implement 4 bit binary to gray code conversion logic functions in PLA.

b) Obtain programmable logic to implement the following functions in PLA.

$x(A, B, C, D) = \sum m(0, 2, 6, 7, 8, 9, 12, 13, 14)$

$y(A, B, C, D) = \sum m(0, 3, 7, 9, 11, 12, 14)$

6 a) Design a BCD to excess-3 code converter using

i) ROM ii)PAL

b). Give the comparison between PROM, PLA and PAL.

c) Write short notes on PLA.

Unit-5

1. Convert the following

a) JK flip-flop to T flip-flop

b) RS flip-flop to D flip-flop

2. a) Draw the logic diagram of a JK flip- flop and using excitation table explain its operation.

b) What do you mean by triggering? Explain the various triggering modes with examples

3. a) Draw the logic diagram of a SR latch using NOR gates. Explain its Operation using excitation table.

b) Convert D flip-flop into T and JK flip-flops

4 a) Construct a JK flip flop using a D flip flop, a 2x1 multiplexer and an inverter.

b) Draw the schematic circuit of RS master slave flip flop. Give its truth table and justify the entries in the truth table.

5. a) Distinguish between combinational and sequential logic circuits.

b) Convert a D flip flop into

i) SR flip flop ii) JK flip flop iii) T flip flop.

6 a) Define a sequential system and explain how it differs from a combinational system..

b) Draw the circuit of 4 bit Johnson counter using D flip flops and explain its operation with the help of bit pattern

Unit-6

1. a) Draw the diagram of Mealy type FSM for serial adder.

b) Draw the circuit for Moore type FSM.

2. a) Convert the following Mealy machine into a corresponding Moore Machine.

8. PS	9. NS	a. Z
	10. X=0	11. X=1
12. A	13. C,0	14. B,0
15. B	16. A,1	17. D,0
18. C	19. B,1	20. A,1
21. D	22. D,1	23. C,0

b) Convert the following Moore machine into a corresponding Melay Machine

24. PS	. NEXT STATE		25. OUTPUT 26. Z
	27. X=0	28. X=1	
29. A	30. D	31. B	32. 0
33. B	34. B	35. C	36. 1
37. C	38. C	39. D	40. 0
41. D	42. D	43. B	44. 0

3. Find the equivalence partition and a corresponding reduced machine in a standard form for a Given machine.

PS	NS	Z
	X=0	X=1
A	B,0	E,0
B	E,0	D,0
C	D,1	A,0
D	C,1	E,0
E	B,0	D,0
F	C,1	C,1
G	C,1	D,1
H	C,0	A,1

4 a) distinguish between moore and melay machines?

(b) Write capabilities and limitations of finite –state machine?

5(a) draws and explain moore circuit?

(b)draw and explain melay circuit?

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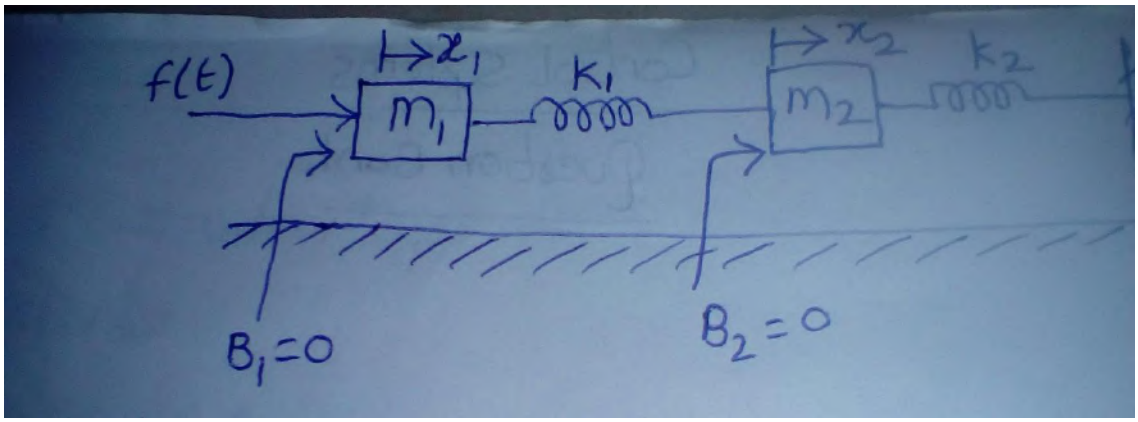
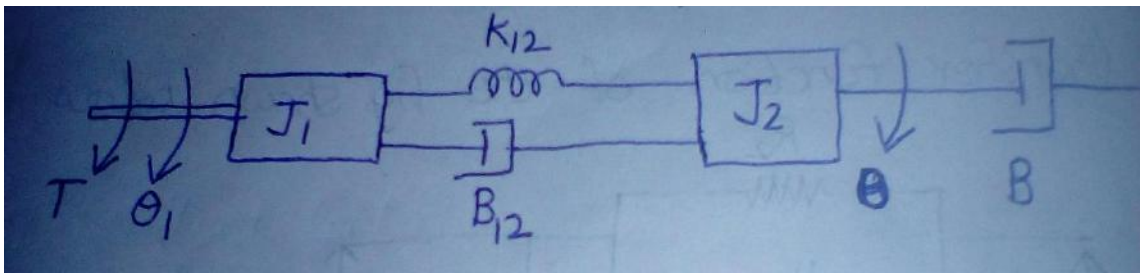
Academic Year :2017-2018
Name of the Faculty : M Rajendra Prasad
Designation : Asst.Professor,EEE Dept
Department :EEE
Year/Semester :II YEAR– II SEMESTER
Subject : **Control Systems**

UNIT-1

1. a) Define control systems. Explain the difference between closed loop and open looped system with a suitable example. **[4M]**
   b) What do you mean by the sensitivity of the control system and discuss the effect of feedback on sensitivity. **[6M]**
2. a) What are the characteristics of negative feedback **[4M]**
   b) Draw the free body diagram and write the differential equations describe the dynamics of the system shown in below figure and obtain the transfer function $\frac{X_2(s)}{F(s)}$ **[6M]**



3. a) Write the force balance equation of ideal dashpot **[4M]**
   b) Find the transfer function $\frac{\theta(s)}{T(s)}$ **[6M]**



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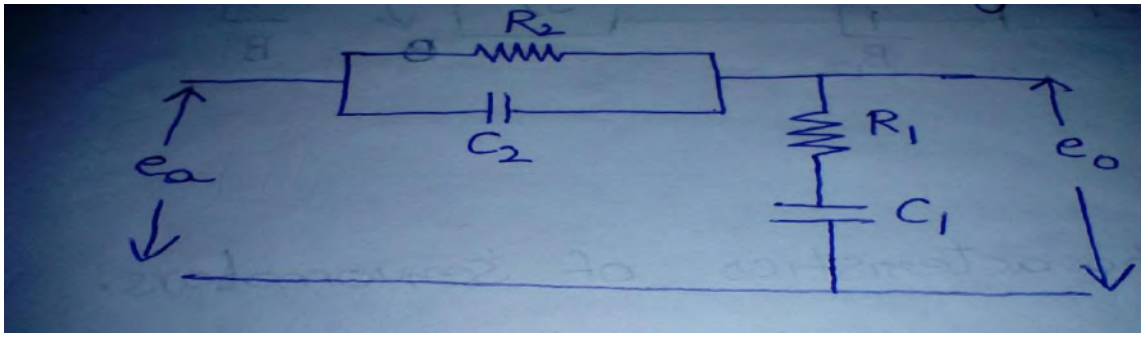
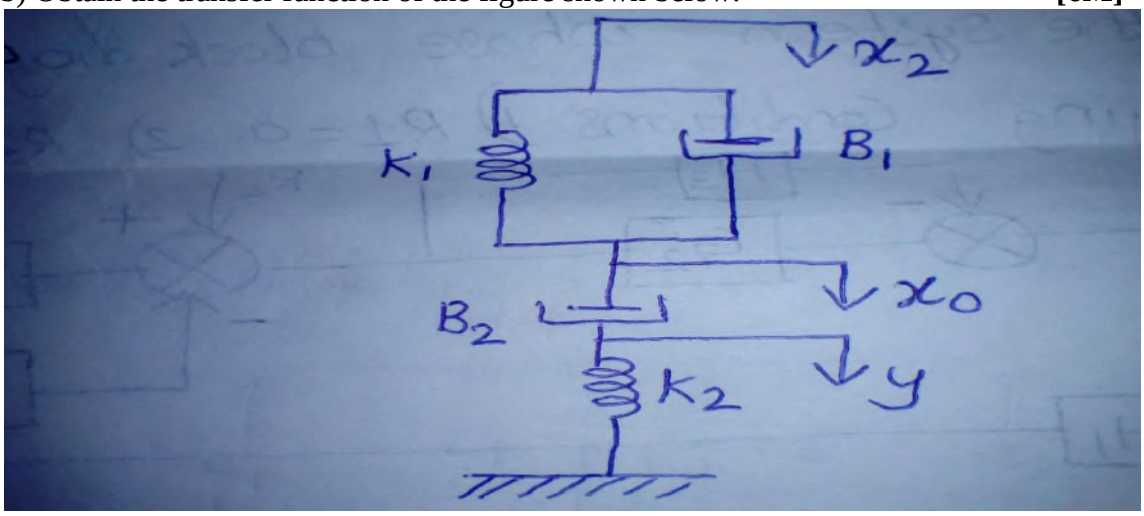
4. a) Write the differential equation of the mechanical system shown in figure below. **[4M]**

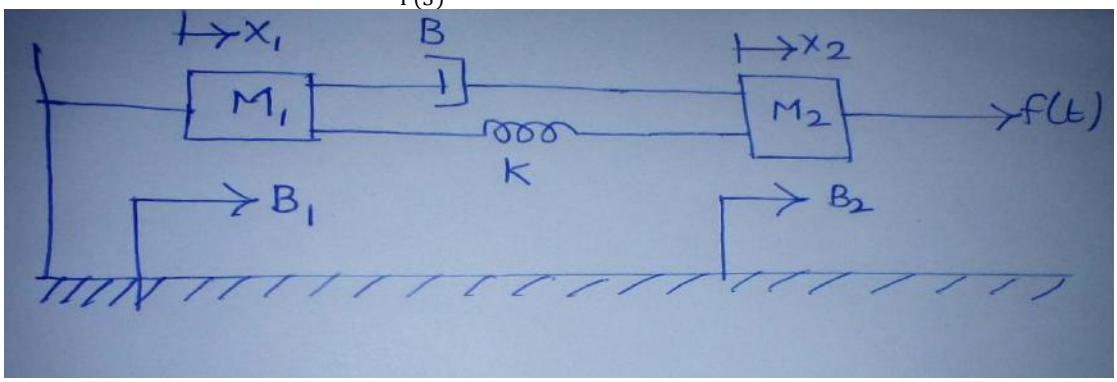


b) Obtain the transfer function of the figure shown below. **[6M]**



5. a) Write the advantages and disadvantages of open loop and closed loop control systems **[4M]**

b) Find the transfer function $\frac{X_2(S)}{F(S)}$ **[6M]**



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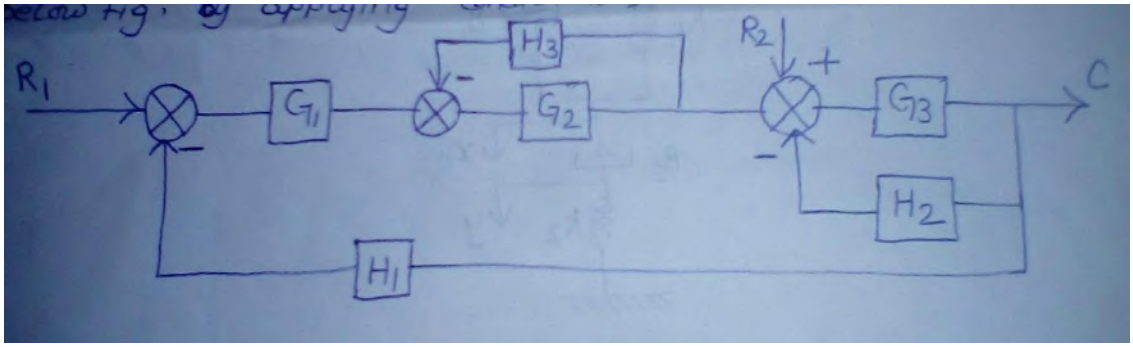
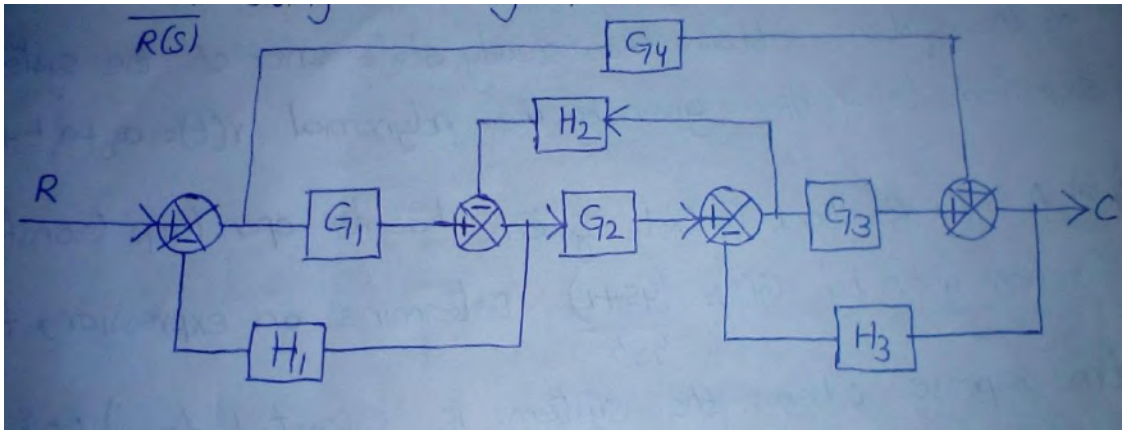
UNIT-2

1. a) What are characteristics of servo motor. **[4M]**
   b) Using block diagram reduction technique find closed loop transfer function of the system whose block diagram is shown below by applying conditions 1) R1=0 2) R2=0 **[6M]**

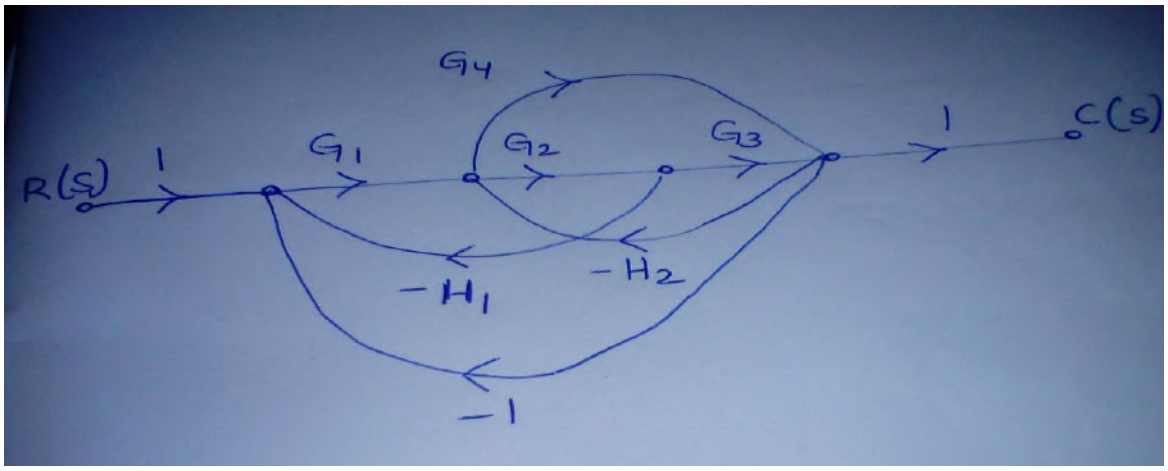


2. a) Derive the transfer function of field controlled DC servo motor **[6M]**
   b) State and explain the Mason's gain formula **[4M]**
3. a) Compare AC and DC servomotor **[4M]**
   b) Draw the equivalent signal flow graph for the figure shown below and determine the $\frac{C(s)}{R(s)}$ Mason's gain formula **[6M]**



4. a) Explain the advantages of signal flow graph over block diagram representation. **[4M]**
   b) Derive the transfer function of field controlled AC servo motor **[6M]**
5. a) What are the advantages of transfer function representation of a system **[4M]**

b) Find the transfer function $\frac{C(S)}{R(S)}$ **[6M]**



UNIT-3

1. a) Mention two advantages of generalized error constants over static error constants **[4M]**
   b) The open loop transfer function of a servo motor with unity feedback is $G(s) = \frac{10}{s(0.1s+1)}$. Evaluate the static error constants of the system. Obtain the steady state error of a system when subjected to an input given by the polynomial $r(t) = a_0 + a_1 t + \frac{a_2}{2} t^2$ **[6M]**
2. a) What is meant by step input, ramp input and impulse input. How do you represent them graphically? **[4M]**
   b) A unity feedback control system has its open loop transfer function given by $G(s) = \frac{(4s+1)}{(4s^2)}$. Determine an expression for the time response when the system is subjected to
   1) unit impulse input function 2) unit step input function. **[6M]**
3. a) Define the error constants K_P, K_V, K_a **[4M]**
   b) Derive the response of a standard under damped 2nd order system for unit step input. **[6M]**
4. a) Draw the unit step response of a 1st order system and explain. **[4M]**
   b) Determine the step, ramp and parabolic error constants of the following unity feedback control system whose open loop transfer function is given by
   $G(s) = \frac{500}{(1+5s)(1+10s)}$ **[6M]**
5. a) Write short notes on steady state error **[4M]**
   b) Explain the effect of proportional control action on the performance of second order system **[6M]**

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UNIT-4

1. a) What is routh stability criterion **[4M]**
   b) Determine the value of ' K' such that the roots of the characteristic equation given below lie to the left of the line s= -1, $s^3 + 10s^2 + 18s + K = 0$ **[6M]**
2. a) What are asymptotes? How will you find the angle of asymptotes**.** **[4M]**
   b) Draw the root locus plot for a system having open loop transfer function is $G(s) = \frac{K}{s(s+1)(s+5)}$ **[6M]**
3. a) Explain about the effects of adding zeros to G(s) H(s) on the root loci **[4M]**
   b) Explain the procedure to draw the root locus of a given transfer function **[6M]**
4. a) For a unity feedback system with open loop transfer function $G(s)H(s) = \frac{K}{s(s+4)(s+6)}$ Find the range of K for which the system will be stable using RH criterion. **[4M]**
   b) Explain the routh criterion with an example and what are its limitations **[6M]**
5. a) Explain the advantages of root locus technique **[4M]**
   b) Using routh Hurwitz criterion determine the stability of closed loop system that has the following characteristic equation and also determine the number of roots that are in the right half of s-plane and on the imaginary axis$s^4 + s^3 + 3s^2 + 2s + 5 = 0$ **[6M]**

UNIT-5

1. a) What are the advantages of bode plot. **[4M]**
   b) Find the gain margin and phase margin of the system if the open loop transfer function is $G(s) = \frac{0.5}{s^2+3s+2}$ **[6M]**
2. a) Define resonant peak and bandwidth **[4M]**
   b) Define various frequency domain specifications **[6M]**
3. a) What is phase and gain crossover frequency **[4M]**
   b) Construct bode plot for the system whose open loop transfer function is given below, $G(s)H(s) = \frac{4}{s(1+0.5s)(1+0.08s)}$ **[6M]**
4. a) Define resonant peak and bandwidth **[4M]**
   b)Find the gain margin and phase margin of the system if the open loop transfer function is $G(s) = \frac{10}{s(s+1)}$ **[6M]**
5. a) Define resonant frequency and cut off rate **[4M]**
   b) Find resonant peak, resonant frequency, bandwidth of the unity feedback system whose open loop transfer function is $G(s) = \frac{1}{s^2+6s+5}$ **[6M]**

UNIT-6

1. a) Define controllability and Observability **[4M]**
   b) Define state transition matrix and explain its properties with examples. **[6M]**
2. a) For the system given below obtain total response **[4M]**
   $\dot{X} = \begin{bmatrix} 0 & 1 \\ -2 & -1 \end{bmatrix} X + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u(t)$ where $x_1(0) = 1, x_2(0) = 0, u(t) = 1$
   b) Why compensation is necessary in feedback control system. **[6M]**

3. a) The transfer function of control system is given by $\frac{Y(s)}{U(s)} = \frac{s+2}{(s^3+9s^2+26s+24)}$ check controllability and Observability**.** **[4M]**

   b) Explain about lead compensator **[6M]**

4. a) A system is characterized by the following state space equation.

   $\begin{bmatrix}\dot{x}_1\\ \dot{x}_2\end{bmatrix} = \begin{bmatrix}-3 & 1\\ -2 & 0\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix} + \begin{bmatrix}0\\ 1\end{bmatrix} u(t)$; t>0

   $Y = \begin{bmatrix}1 & 0\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix}$ Find the transfer function of the system**.** **[4M]**

   b) Compute state transition matrix of above system**.** **[6M]**

5. a) What is meant by Observability **[4M]**

   b) Determine the state and output equations in vector matrix form for the system whose transfer function is given by $G(s) = \frac{(s+3)}{s(s^2+3s+2)}$ **[6M]**

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QUESTION BANK

Course : B.Tech. **Branch :** EEE **Year/Semester :** II/II **Academic Year :** 2017-18
Faculty Name : K.VIJAY KUMAR **Subject :** Electrical Measurements
Admitted Batch : 2016 **Regulation:** R16

UNIT – I

1) a) Explain the essential features of Indicating Instruments.
   b) Explain about Spring control and gravity control controlling devices.
   c) Explain the significance of Eddy current damping in an indicating Instrument.

2) a) Derive the Torque equation for Moving iron Instruments.
   b) Explain the various methods of providing damping torque in an indicating instrument.

3) a) Explain the construction and working of Repulsion type Moving iron Instruments.
   b) Explain the following terms with respect to Instrument transformers:-
   i) Actual Ratio ii) Nominal ratio iii) Ratio correction factor iv) Burden of an instrument transformer.

4) a) Explain the construction and working of a Permanent magnet moving coil meter.
   b) Compare between Current transformer and Potential transformer.

5) a) a) Derive the actual ratio of a Current transformer from its equivalent circuit and Phasor diagram.
   b) Derive the equation for deflection of a Dynamometer type of instruments which can be used for both DC and AC.

UNIT – II

1) a) Explain with a neat circuit of Dynamometer type Wattmeter and derive the equation for deflection.
   b) List the various types of errors in dynamometer type Wattmeter's.

2) a) Explain the working of Induction type single phase Energy meter with a neat diagram.
   b) A 50 A, 230V meter on full load test makes 61 revolutions in 37 seconds. If the normal disc speed is 520 revolutions per KWH, find the percentage error.

3) a) Explain how a power measurement range can be extended with a wattmeter in conjunction with an instrument transformer.
   b) A single phase KWh meter makes 500 revolutions per KWh. It is found, on testing, as making 40 revolutions in 58 seconds at 5 KW full load. Find out the percentage error.

4) a) Derive the actual ratio of a Current transformer from its equivalent circuit and Phasor diagram.
b) Why secondary of current transformer should never be open when the Primary winding is energized.

5) A)Define LPF and UPF wattmeter's and give their significance.
B) What do you mean by Creeping error in Induction Energy meter and how it can be adjusted?
C) What do you understand by Phantom or Fictitious loading in energy meters and why is it necessary?

UNIT – III

1) a) List out the limitations of AC potentiometers.
b) Explain the procedure for standardizing the potentiometer.
c) Explain the significance of a Potentiometer.
d) What are the applications of self balancing Potentiometers?

2) a) How does an AC potentiometer different from a DC Potentiometer.
b) Explain how the calibration of Voltmeter and Wattmeter can be done using a DC Potentiometer.

3.a) Explain the working of Crompton Potentiometer with a neat diagram.
b) How the unknown emf is measured using Drysdale – Tinsley A.C. Potentiometer?

4) a)Explain how calibration of Voltmeter and Wattmeter can be done using a DC Potentiometer.
b) List the basic requirements of AC potentiometers.

5) a) Explain the working of Gall Co-ordinate type Potentiometer with a neat diagram.
b) Explain how the Voltage and power can be measured using a dc Potentiometer.

UNIT – IV

1) a) From the point of measurement, how can resistances be classified.
b) Discuss the common sources of error in AC bridges. How are they eliminated?
c) How are detectors classified? Explain each one of them briefly.
d) State the applications of Wein Bridge.

2) a) Explain any one method for the measurement of high resistance and explain its advantages over other methods.
b) Deduce the general equation or condition for bridge balance in AC Circuits.

3) a) Explain the procedure of measuring a low resistance with the help of Kelvin's double bridge. Derive the necessary relation for finding the unknown resistance under balanced condition of the bridge.
b) Explain the working of Carey – Foster slide wire bridge with neat circuit diagram.

4) a) Explain with a neat diagram for the measurement of Inductance using Hay bridge and also derive the relation for inductance under balanced condition using a neat

phasor diagram.

b) Explain the importance of Wagner's earthing device.

5) a) Explain how the inductance can be measured by using Maxwell bridge with a neat Diagram.

b) A balanced 5 KHz bridge has the following configuration:

Arm AB : R_1 = 4000_ in parallel with C_1 = 0.063μF

BC : R_2 = 2500_ in series with C_2 = 0.63μF

CD : the unknown R and C

DA : Pure capacitance C_4 = 0.305μF

Calculate the unknown R and C. Draw the phasor diagram of the above bridge under balanced condition.

UNIT – V

1) a) How are magnetic materials classified?

b) Explain the AC bridge method for measurement of iron losses in ferromagnetic materials.

2) a) Explain the AC Potentiometer method for measurement of iron losses in ferromagnetic materials.

b) Define the following terms related to magnetic materials:

i) Magnetic field strength ii) Curie temperature.

3) a) Explain the operation of Ballistic Galvanometer with a neat diagram.

b) c) List the precautions needed to be taken in Magnetic testing.

4) a) Give the merits and demerits of ring and bar specimens that are commonly used in magnetic testing of materials.

b) Explain the method for finding out the B-H curve of a magnetic materials using step by step method.

5) a) Explain the determination of Hysteresis loop by method of reversals using a neat diagram.

b) Explain how magnetizing and loss components of no load current of a transformer be determined by using an A.C. Potentiometer.

UNIT – VI

1) a) Explain the working of Dual slope Integrating type Digital Voltmeter with a neat schematic diagram.

b) Explain the basic scheme of Digital multimeter along with its advantages.

2) a) Explain the working of Digital frequency meter with a neat block diagram.

b) Explain the basic block diagram of a Digital voltmeter

3) a) Define resolution and Sensitivity of Digital voltmeter.

b) Explain the working of Linear Ramp type Digital voltmeter with a neat schematic.

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4) a) Explain the working of Successive Approximation type Digital Voltmeter with a neat diagram.

b) List out the advantages of Digital Voltmeters.

5) a) List the general specifications of Digital Voltmeters.

B) Explain the working of Digital Tachometer with a neat block diagram.

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

QUESTION BANK (2017-18)

NAME OF SUBJECT : POWER SYSTEMS-1

NAME OF FACULTY : MR. G. JAGADEESH

REGULATION : C-16

COURSE : DIPLOMA

BRANCH : EEE

YEAR / SEMESTER : II/ IV

MID-1

Short answer questions

1.List the different sources of energy

2.Classify the sources of energy into conventional and non-conventional types.

3.State necessity of developing non-conventional methods of power generation.Explain the method of generating electrical energy from (i) Tidal Power (ii) Bio-Mass (iii)Geo thermal energy

4.Explain the general principle of working of thermal power stations.

5.List the requirements for setting up of Thermal Power Station.

6.Mention the requirement for site selection of thermal power plant.

7.Explain the principle of working of Hydro power station.

8.List the requirements for setting up of Hydro Electric Power (HEP).Station.

9.Mention the requirement and factors for site selection of Hydro Electric Power Plant

10.State the importance of nuclear energy

11.Explain fission and fusion reactions.

12.State the merits of using nuclear energy

13.List the various risks involved in using nuclear energy

14.State the amount of solar radiation reaching the earth surface.

15.State the Principle of Conversion of solar radiation in to heat.

16. State the different methods of Storing Solar Energy.

17.State the Principle of Photo-Voltaic Conversion.

18. Explain the function of Flat Plate Collector.

19. State the Working Principle of Solar Cell.

20. List the types of reactors used in Nuclear power stations.

ESSAY ANSWER QUESTIONS

1.A) Explain the principle of working of each component of thermal power station with line diagram.
1.B) State the necessity of cooling towers in thermal power plant

.
2.A) Mention the causes of pollution
2.B) List the methods to control Pollution

3. Classify the H.E.P's based upon
i) Head ii) Duty iii) Location and iv) Hydraulic considerations.

4. Explain with layout diagram working of the following Power Stations
ii) High Head, ii) Medium Head, iii) Low Head.

5.A)List the types of reactors used in Nuclear power stations.
5.B)Explain the working of reactors in Nuclear power stations

6.A) State the merits and demerits of reactors in Nuclear power stations.
6.B) Explain the working of a moderate type nuclear power station with a block diagram.

7.A) Mention the materials used for i) Coolant ii) Reflector and iii) Control rods
7.B) State the need & explain the working of i) Coolant ii) Reflector

8.A) State the different considerations for site selection for installing Wind Mill.
8.B) List the basic components of wind Mill.

9.A) Describe the constructional details of wind Mill.
9.B) Explain the working Principle of wind mill.