MODULE - I
Ch – 1 & 4

Group –A

1. Define plant layout or what do you mean by plant layout? [2013(W),2012 W,2016(S),2017(W),2018
2. What is ideal plant location [2018
3. State the three objectives of plant layout? [2013, 2017(W
4. What is plant location? What do you mean by plant location [2010 W, 2012(N), 2013, 2014(W), 2017(W
5. Define process layout?
6. Define product layout?
7. Define combination layout?
8. Define plant. [2016(S),2014 W,2013
9. What do you mean by plant design?
10. Explain the term material handling

Ch. – 4

1. Why predictive maintenance is used ? [2004(w), 2003(
2. What is break down maintenance? [2006(B
3. Why predictive maintenance is used? [2010(W), 2013
4. Write down two objectives of plant maintenance. [2014(S),2016(
5. What is the predictive maintenance? [2018
6. What is preventive maintenance? [2015(
7. What is plant maintenance?

Group -B

1. Explain the objectives of plant layout. [2018 W,2016(S),2013W,2012(W), 2011(
2. Explain process layout? [2006(
3. Explain regarding the storage space requirements. [2010
4. Write short note on plant layout. [2010(
5. Write the advantages and disadvantages of urban locations of plant. [2016(S),2017(W),2018(
6. Describe features of governing plant location. [2011W), 2013W, 2014(S), 2015(
7. State the objective & principles of plant layout. [2016(S), 2014(S),2013(
8. Compare product layout and process layout? [2014(
[2017(

Ch. - 4

1. Explain in brief break down maintenance in a plant? [2008(
2. What is preventive maintenance? Write its objectives. [2012
3. What are the advantages of preventive maintenance? [2006(B
4. Describe the objectives of plant maintenance? [2004(w), 2013(W),2014(W),2018
5. Describe the types of plant maintenance? [2004(W), 2013

6. Explain in short about corrective maintenance. [2010(W), 2014 S]

9. Describe in brief about predictive maintenance. [2011 S]

Group –C

1. Describe the various factors to be considered in selecting the site in a particular Locality? [2017(S)]
2. Explain the process layout with its advantages and disadvantages. [2013w]
3. State the principles of plant layout with a neat line diagram & describe process layout and give its relative advantages
4. Describe the various procedures of plant layout. [2018W,2014(S),2014(W), 2016(S), 2017 (W),2012(W), 2013(w)]
5. What are the objectives of plant layout? Write the factors which affect plant layout. Give symptoms of bad layout. [2016(S),2018 S]
6. Explain different factors influencing plant location [2017(S)]
7. Write shorts on Plant Layout [2010 W]
8. Compare product layout and process layout [2011 S]

Ch. - 4

1. Compare between preventive maintenance and break down maintenance? [2003(w)]
2. What are the duties and functions of a plant maintenance department? [2003(w)]
3. Distinguish between scheduled maintenances & predictive maintenance department? [2013(w)]
4. State types of plant maintenance. Discuss about scheduled maintenance. [2016(S)]
5. Describe the duties, functions and responsibilities of a plant maintenances department? [2008(w), 2013(w),2014(W),2015(W),2016(S),2018 W]
6. What are the various types of plant maintenance? Write about Break-Down Maintenance [2013 W, 2018 S]
7. Explain preventive maintenance? Write its objectives. [2012N, 2017(s, w), 2016(w)]
8. Describe the procedure of preventive maintenance. [2016(w)]
9. What are the different types of Maintenance? Write about Break-Down maintenance. [2018W]

Name of the Chapter : Operation Research
MODULE - II
Chapter No. – 2

Group-A

1. Define operation research or what do you mean by operation research [2014(W), 2016(S
2. State application of operation Research?
3. State different techniques of operation Research?
4. What do you mean by LPP? [2009 W, 2016 W,2018
5. What is linear programme?
6. What are the limitation of graphical method in solving LPP [2017
7. Why linear programming is used in the operation research? [2010(w), 2012(
8. Define PERT and CPM [2018 S,2018 W, 2009(W), 2014(V
9. Define CPM [2009(w), 2014(
10. Define event? [2004(w), 2013(w), 2012(
11. Define activity? [2013W, (2012
12. Define EST & LST [2012(
13. Define LFT? [2006(
14. Define critical activity? [2008(w). 2007(BP), 2006(BP), 2010(w), 2013S,2018
15. Define dummy activity? [2008(w), 2006(RP), 2006(
16. Define Float and Slack. [2011(
17. What is critical Path? [2013
18. What are the three estimates of time used in PERT? [2016(S

Group-B

1. Write short notes on L.P.P model? [2014(
2. Write the steps of solving a L.P.P by graphical method with the general mathematical model [2004(w), 2012w, 2013(
3. Write short notes on L.P.P model? [2014(w),2011
4. Write down the steps for formulating Linear Programming Problem. [2014(
5. Give a comparison between PERT and CPM. [2018 W,2014 W,2013 S,2012W,2011S,2010
6. Solve the following L.P.P graphically

   Minimize, $Z = 2x + 3y$

   Subject $x + y \geq 6 \ldots\ldots\ldots\ldots C_1$

   $2x + y \geq 7 \ldots\ldots\ldots\ldots C_2$

   $x + 4y \geq 8 \ldots\ldots\ldots\ldots C_3$

   $x, y \geq 0 \ldots\ldots\ldots\ldots C_4$
7. Solve the following L.P.P graphically [2015(W),2016 [2018 W,2014 W,2013
   Minimize, $Z = x + 5y$

   Subject to $5x + 6y \leq 30 \ldots\ldots\ldots\ldots C_1$

   $3x + 2y \leq 12 \ldots\ldots\ldots\ldots C_2$

$x, y \geq 0$

8. Find the optimal solution to the L.P problem given below using graphical method.

Minimize $Z=600x_1+500x_2$

Subject to $3x_1+x_2 \geq 24$

$X_1+x_2 \geq 16$

$2x_1+6x_2 \geq 48$

9. Find the optimal solution to the L.P problem given below using graphical method.

Minimize $Z=600x_1+500x_2$

Subject to $3x_1+x_2 \geq 24$

$X_1+x_2 \geq 16$

$2x_1+6x_2 \geq 48$

$X_1, x_2 \geq 0$ [2010(w)]

10. Find the optimal solution to the L.P problem given below using graphical method.

Minimize, $Z= 60x + 40y$

Subject to, $10x + 10y \geq 160$

$30x + 10y \geq 240$

$20x + 60y \geq 480$

$x, y \geq 0$ [2017(S),2015(W)]

Solve the following L.P.P graphically:

11. **Maximize,** $Z= x+ 5y$, when, $5x + 6y \leq 30$, $3x + 2y \leq 12$

$x, y \geq 0$ [2011(S), 2013(W), 2014(S),2014(W),2016 (W)]

12. Maximize, $Z= 3x_1 + 4x_2$

Subject to constraints $4x_1 + 2x_2 \leq 80$, $2x_1 + 5x_2 \leq 180$

$x_1, x_2 \geq 0$ [2013(w)]

13. Maximize $Z =12x+24y$

Subject to $x+4y \leq 20$, $3x+y \leq =15$, $x+y \leq =6$, $x,y \geq =0$

Use graphical method. [2011(w), 2012w, 2015W,2018 S]

Group-C

1. The characteristics of project schedule are as given below:

Activity	duration
1-2	4
1-3	1
2-4	1
3-4	1
3-5	6
4-9	5
5-6	4
5-7	8
6-8	1

7-8	----------	2
8-10	----------	5
9-10	----------	7

From the above data,

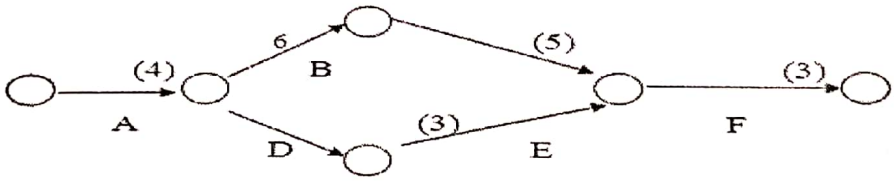
A) Construct a PERT Network?

Find critical path? [2004(

2. Table below given the schedule of welding activities in an assembly shop. Find critical path a determine the black times for each activity? [2012

Activities No.		Duration (Days)
0-1	----------	2
1-2	----------	4
2-3	----------	2
3-4	----------	5
2-5	----------	1
4-5	----------	1
0-6	----------	1
3-7	----------	8
6-7	----------	3
5-8	----------	3
7-8	----------	5

3. A small engineering project consists of 6 activities namely A, B, C, D, E, & F with durations o 6,5,4,3, & 3 days respectively as shown in the network diagram. Calculate EST, LST, EFT, L and floats. Mark the critical path and fine the total project duration. [2011(S), 2012N, 201



4. The precedence relationship of the activities of a project is given below. Draw the network a calculate.

(a) The expected time of each activity

(b) The critical path.

Predecessor Event	Successor Event	to	tm	tp
10	20	1	2	3
10	30	2	4	6
10	50	5	6	13
20	40	6	9	12
20	50	4	7	10
30	60	7	10	19

40	70	0	0	0
40	80	2	3	4
60	70	1	3	5
60	70	10	13	16
70	80	8	11	20

[2007(s)BP]

5. A small project composed of the following activities whose time estimates are given below (Estimate activity duration in weeks)

Activity	optimistic	most likely	pessimistic
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

(A) Draw the network; find the critical paths calculate the expected duration and variance for each activity also calculate the standard deviation of project length.

(B) Find the probability that the project will be completed

i) At least 4 weeks earlier than expected time

ii) No more than 4 weeks later than 4 weeks.

iii) If the project due date is 19 weeks what is the probability of not meeting the due date.

iv) Find the project duration at 95% probability? [2014s]

6. The activity involved in a project are given below along with relevant information construct the network. Find the critical path and floats for each activities.

Activity -	A-B	A- C	B-C	B-D	C-D	D-E
Duration -	20	25	10	12	06	10

[2013 S]

7. A small engineering project consists of six activities namely P,Q,R,S,T,U with durations of 5,7,6,5,4 and 4 days respectively. Draw the network diagram and calculate EST, LST, EFT, LFT and float. Find the total project duration. [2014(W),2018 S]

8. Following table shows the operation time in working days for different activities. Draw the critical path and find project duration. [2016 W, 2017 S]

Activity	Particulars	Time in days
(1-2)P	Machine foundation	09
(2-3)Q	Electric fitting	14
(3-4)R	Repair of floor	18
(3-5)S	Installation	12
(4-6)T	Procure workshop building	15
(5-6)U	White washing	03

(6-7)V	Clean up	

9. Maximize Z =12x+24y
   Subject to x+4y≤20, 3x+y≤=15, x+y≤=6, x,y≥=0
   Use graphical method. [2011(w), 2012w, 2015

10. Following table shows the operation time in working days for different activities. Draw the critic path and find project duration. [2017 W, 2016

Activity	Particulars	Time in days
(1-2)A	Machine foundation	10
(2-3)B	Electric fitting	14
(3-4)C	Repair of floor	21
(3-5)D	Installation	12
(4-6)E	Procure workshop building	14
(5-6)F	White washing	03
(6-7)G	Clean up	02

11. Find the critical path and the duration of project completion for the given time table [2017

Activity	Predecessor	Duration
A	-	07
B	-	13
C	A	10
D	A	17
E	B	03
F	D,E	26

12. A small engineering project consists of six activities namely **A,B,C,D,E &F** with durations 6,8,7,6,5 and 5 days respectively. Draw the network diagram and calculate EST, LST, EFT, LF and float. Find the total project duration. [2016 W,2014 W,2013

13. Find the critical path and the duration of project completion for the given time table [2014

Activity	**Predecessor**	**Duration**
P	-	15
Q	-	13
R	P	12
S	P	19
T	Q	13
U	S,T	20

14. We Want To Manufacture Paper Napkin Of Two Sizes A & B. Find The No Off Each Size Be Manufactured For The Maximum Profit From The Following Data

Deptt.	**Time (Min)**		**Constraints**
	'A' Size	**'B' Size**	

Cutting	10.7	5.0	2705
Folding	5.4	10.0	2210
Packing	0.7	1.0	445
Profit/Unit	Rs 15/-	Rs 10/-	

15. Bombay plaints produce both interior and exterior paints from two raw materials M_1 and M_2 Table provided the basic data of the problem a market survey indicates that the daily demand for the interior paint cannot exceed that for the exterior paint by 2 tones .Moreover the maximum daily demand for the interior paint is 3 tones. Bombay paints wants to determine the optimum product mix the interior paint and exterior paints that maximize the total daily profit formulate an LLP for the same. [2017 (S)]

TABLE – RAW MATERIAL IN TONNES

Raw Material	Exterior Paints	Interior Paint	Constraints
M_1	5	3	20
M_2	2	3	8
Profit	Rs 04 /-	Rs 05/- (In Thousands of units)	

16. A firm is engaged in breeding pigs .the pigs are fed through various products grown on the firm. Because of the need to ensure certain nutrient constituents, it is necessary to buy additional one or two products, which we shall call A and B. the nutrient constituents (Vitamins and Proteins) in each unit of the product are given below:

nutrient constituents	nutrient constituents in the products		Minimum requirement of nutrient constituents
	A	B	
1	36	06	108
2	03	12	36
3	20	10	100
Profit/Unit	Rs 40/- unit	Rs 20/- unit	

Determine how much of product A and B must be purchased so as to provide the pigs nutrients Not less than the minimum required, at the lowest possible cost.

MODULE - III

Chapter-03 (Inventory Control)

GROUP-A

1. What do you mean by EOQ? Where it is used. [2004(w), 2003(w), 2006(BP), 2005(w),2008(w), 2007(s)],2010(w), 2013w, 2014
2. What is reverse stock?
3. What is lead time? If the lead time is zero what should be the reverse stock? [2008
4. What do you mean by inventory? [2012(N),2014(W),2016(S),2018
5. Classify inventories? [2015(
6. What is inventory control? [2013(w),2016(S),2018
7. Define inventory and inventory control. [2016
8. What are the uses of inventory? [2017

GROUP-B

1. Classify inventory? Explain the function of inventory. [2013(w),2014(W),2015(
2. What are the objectives and benefits of inventory control? [2006, 2012(N),2016(S),2018
3. Explain the objectives of inventory control? [2017(w),2012
4. Explain ABC analysis used in Inventories? [2011(S), 2008(W), 2010(W), 2013(W),2014(W),2015(W), 2016(S), 2017(W),2018 W
5. Write short note on EOQ. [2015(W), 2013
6. EOQ basic model have so many Assumptions that they re not practically useful. Explain whether you agree or disagree with the Statement. [2017S
7. What is re-order point? Explain a simple inventory model with a rough sketch showing the order point, order quality and procurement time? [2005(
8. Write the concepts and advantages of ABC analysis. [2016(S
9. Explain briefly about EOQ . [2017(w),2013
10. Derive economic order quantity (EOQ) for basic model (Retailer's). [2017(S),2018
11. Find Economic order quantity for the following data.
    Average Annual Demand = 30,000unit
    Inventory carrying lost = 12% of unit value per year cost of placing an order = Rs 70 /-
    Cost per unit = Rs 2

GROUP-C

1. Given that:-
    (i) Annual usage U=60 Units
    (ii) Procurement cost P = Rs 15 per order
    (iii) Cost per piece C = Rs 100
    (iv) Cost of carrying inventory 1, percentage including expenditure on obsolescence taxes, insurance, deterioration etc = 10%. Calculate EOQ? [2008(W), 2006(BP), 2005(W

2. A company requ
order is Rs 15.
determine
(a) The EOQ
(b) The cycle
3. Find EOQ from
Average annual
Inventory carryi
Cost of unit = R
4. The rate of cor
order is Rs 40.
upon the avera
(i) Determin
(ii) If lead tim
5. ABC manufact
Rs.2.00 and it
carrying cost
Optimum no. o
Usha corporati
unit is Rs. 2 a
carrying cost
Optimum num
annum.
7. Explain briefly
(i) Annual u
(ii) Procure
(iii) Cost pe
(iv) Cost of
insuran
8. Calculate E.C
i) Annual
ii) Procure
iii) Cost pe
iv) Cost of
v) What is

2. A company requires 16000 units of raw material costing Rs 2.00 per unit. The cost of placing an order is Rs 15.00 and the carrying cost are 10% per years per unit of the average inventory determine

   (a) The EOQ?

   (b) The cycle time?

3. Find EOQ from the following data.

   Average annual demand = 30000 Units

   Inventory carrying cost = 12% of the unit value per year cost of placing an order = Rs 70

   Cost of unit = Rs 02 [2006(W), 2013W, 2018 W]

4. The rate of consumption of a particular item is 20 units per year. The cost of procurement per order is Rs 40. The unit cost is Rs. 100. The inventory carrying cost is 0.16% and it depends upon the average stock.

   (i) Determine EOQ?

   (ii) If lead time 3 months, determine reorder point? [2004(W), 2014 S]

5. ABC manufactures got a demand for particular part 10,000unit / year. The cost for unit is Rs.2.00 and it costs Rs. 36.00 to place an order and to process the delivery. The inventory carrying cost is estimated of 9% of Average Inventory Investment. Determine: i) EOQ, ii) Optimum no. of orders to placed / annum, iii) Minimum total cost of inventory per annum.[2012w]

6. Usha corporation has got the demand for particular parts at 10,000 unit per year. The cost per unit is Rs. 2 and it costs Rs. 36 to place an order and the processes delivery. The inventory carrying cost is estimated as 9% of average inventory investment. Determine (i) EOQ, (ii) Optimum number of order to be placed per annum (iii) Minimum total cost of inventory per annum. [2014(W)]

7. Explain briefly about EOQ of the following data:

   (i) Annual usage U = 60 units

   (ii) Procurement cost P = Rs.15 per order

   (iii) Cost per piece C = 100

   (iv) Cost of carrying inventory I, percentage including expenditure on obsolescence taxes, insurance, detoriation = 10%. Calculate EOQ. [2018 S]

8. Calculate E.O.Q : given data

   i) Annual usage = 80 units

   ii) Procurement cost= Rs. 20/ order

   iii) Cost per 10 pieces = Rs. 1000

   iv) Cost of carrying inventory = 16 %

   v) What is cycle time.

Chapter-5

Group-A

1. What do you mean by inspection? [2016(S),2003
2. State types of inspection?
3. What do you mean by planning of inspection? 1.
4. What do you mean by final inspection? 2.
5. What is quality of a product? [2016 3.
6. What do you mean by statistical quality control? 4.
7. Define inspection & quality control. [2016(W),2016 5.
8. What is quality of a product? [2016 3.
9. What do you mean by control charts? [2016 7.
10. What is the use of control charts in manufacturing? 3.
11. What do you mean by statistical quality control? [2017 9.
12. Define inspection.
13. State its different types. [2016 1.
14. Explain different types inspection.
15. What are objectives of inspection? [2016(S),2018 3.
16. What is SQC? 1.

Group-B

1. Define inspection. State its different types. [2016 5.
2. What are objectives of inspection? [2016(S), 2018 S,201 3.
3. What is control chart? Write down its types. 7.
4. Write short notes on X chart. [2011 3
5. What are the types of sampling plan? Give brief idea about Single Sampling plan 9
6. Write short notes on R chart. 1
7. Write short notes on C chart.
8. State types of control charts and give comments on purposes and advantages of control chart. State about P-chart. [2016(
9. Explain concept of Statistical Quality Control. [2018

Group-C

1. Compare between X, R, P and C chart. [20
2. Explain details of control charts with example of different types of charts.
3. Write down the factors influencing the quality of manufacture. [2016
4. Describe different types of inspection [2018
5. Calculate UCL and LCL for X-Chart and R chart of the following data: Sample No : 1 to 10
   3290,3180, 3350, 3470 ,3080,3240, 3260,3310,3640,4110
   R- 560, 410, 200,300,90,650,890,410,1120,520
   Where A= 1.342, A_1 = 1.596, A_2 = 0.577,D_1=0,D_2=4.928,D_3=0,D_4=2.115
5. Ten castings were inspected in order to locate in them. Every casting was found to certain number of defects as given below. So plot a C-chart and draw the conclusion.

Casting	1	2	3	4	5	6	7	8	9	10
No of defects	2	4	1	5	5	6	3	4	0	7

Name of the Chapter : Contemporary Quality Management Concepts

MODULE - V

Chapter No. – 6

Group-A

1. Define TQM [2018 S,2014 S,2012 W,2011 S]
2. What is standardization?
3. What is lean manufacturing?
4. What is ISO 9000? [2016(S),]
5. What is JIT?
6. What is ISO?
7. What is ISO 14000?
8. What is six sigma?
9. What is 7S?

Group-B

1. Describe ISO 9000. [2014(W), 2017(S),2018 S]
2. Write short notes TQM [2014 W]
3. State the benefits of ISO-9000. [2011 S]
4. Describe ISO 14000. [2018 S]
5. Explain about JIT Technique. . [2018 S]
6. Describe six sigma. [2017(s)]
7. Describe about 7S.
8. Describe about lean manufacturing?
9. Write down the principles and actions of TQM. [2016(s), 2017(s)]
10. What is total quality management? What are the principles and actions of TQM? [2014(W), 2015(W),2016(S)]
11. Describe ISO 9000 / 14000, its concept, evolution and implication.

Group-C

1. What are the different stages of implementation of TQM? Give an example of TQM model. Briefly explain JIT technique. `[2016(S),2018 S]
2. Write short notes on ISO 9000 (2010 W)

Group	Ch. No.	Ques. No.	Question
A	1	1*	What do you mean by automobile? [2011(S),2012(S)2013(W),2018(W)]
		2*	Classify auto vehicles? [2013(S),2013(W)]
		3	Name major components of an automobile? [2012(S)]
		4	What is automobile chassis? [2012(S),2013(W),2016(S)]
		5	Give four example of 4- stroke vehicle. [2013(W)]
		6*	State the types of vehicles basing on fuel used?
		7	Give classification of engines in term of numbers of cylinder?
		8	How to specify a vehicle? Give an example? [2013(W)]
		9	State the types of auto vehicle & same the prominent motor veh manufactured in India? [2015]
		10	What do you mean by manufactures specification of auto engine.[2016(
		11	What are the major components of an automobile chassis? [2015(W)]
	2	1*	Write the function of clutch [2010(S), 2011(S),2012(S),2018(W)]
		2*	What is the function of gear box? [2011(S),2013(S)2015(S)]
		3	What is the need of gear box in automobile? [2013(S)2015(S)]
		4*	What is function of universal joint?[2010(S),2014(S), 2015(S)]
		5	What is propeller shaft?
		6*	What is the function of a differential? [2011(S), 2012(S), 2013(S), 2016(
		7	Classify differentials
		8	What is the concept of automatic transmission?
		9	Why a slip joint is used in propeller shaft?
		10	What is the need of a differential? [2013(W)]
		11	Compare sliding mesh and synchromesh gear box? [2015(W)]
B	1	1*	Draw the line diagram layout of automobile chassis and explain? [2010(S),2013(S)2015(S), 2016(S)
		2	State the classification of engine on different basis? [2010 (S),2012(S),2015(W)]
		3	Give the classification of automobile. [2018(W)]
	2	1	Explain why gear box is used in automobile.
		2*	Explain the construction of propeller shaft. [2010,2011(S), 2012(S),2013(W), 2014(W),2015(S)]
		3	Explain in a suitable sketch how power is transmitted from engine to rear axle? [2015(S)]
		4	What are components of transmission system? Explain in brief.
		5	Differentiate between single plate clutch and multi-plate clutch.
C	1	1	State the classification of engines basing on working principle, fuel used, position of cylinder & arrangement of cylinder?
		2*	Draw the layout of an automobile chassis showing various components.
	2	1	Describe the working of single plate clutch with neat sketch. [2014(W),2015(W),2018(W]
		2*	Explain the function and working of multi plate clutch used in motor cyc with neat diagram. [2013(W),2013(S),2016(S)]
		3*	Explain the construction and working of a conventional type differential wit diagram and state its limitations. [2015(W),2016(S)]
		4*	Explain the working of a 4 – speed gear box? [2018(W)]

Group	Ch. No.	Ques. No.	Question
A	3	1*	Write the function of brake. [2013(W)]
		2	Give a classification of brakes.
		3*	What is the difference between brake and clutch, mention any two differences? [2011(S), 2012(S)]
		4*	What is a master cylinder? [2012(S)]
		5	Why brake fluid is used in application of brakes instead of water or Mobile?
		6	What are the factors affects the stoppage of vehicle.[2010(S)]
		7	Name two types of braking system.
		8*	What is vacuum brake? [2016(S)]
		9	Define slave cylinder.
		10	What is mechanical brake? [2012(S)]
	4	1*	What is the function of spark plug? [2011(S), 2013(S),[2016(S),2018(W)]
		2*	Define a hot and cold plug? [2012(S),2014(W),2016(S)]
		3	How ignition takes place in petrol engine [2015(S)]
B	3	1	Write short notes on master cylinder [2013(S)]
		2*	Describe the function of a master cylinder with neat sketch? [2015(S)] [2016(S)]
		3	Explain the working of mechanical brake[2016(S)]
		4*	Describe the various types of braking system used in automobiles with neat diagram. [2010(S), 2013(S),2015(W)]
		5	What are the materials used for brake lining? Give their specification.
		6	Explain the working of Vacuum brake.
	4	1*	Draw and explain the wiring diagram of voltage current regulator circuit [2013(S), 2016(S)]
		2	State the common ignition troubles and its remedies. [2016(S)]
		3*	Describe the construction of a sparking plug. 2012(S), 2013(S), 2015(S)].
C	3	1*	Explain the working of a. Hydraulic brake for car. [2014(W)] b. Air brake for truck. [2011(S),2012(S),2013(S)]
		2*	What do you mean by hydraulic brake? How wheel cylinders get operated in conjunction with the master cylinder? Explain with schematic diagram[2018(W)]
		3	Describe the construction & working principle of hydraulic brake with diagram [2012(S),2016(S)]
		4	Draw the line diagram of air assisted hydraulic brake and explain briefly.
		5	Sketch the air brake system of heavy vehicle and describe how it works.
	4	1*	Explain the wiring diagram of lighting circuit with diagram. [2015(W,2016(S),2018(W)]
		2	Draw and describe the wiring diagram of cut-out circuit in an auto-engine.[2013(S)]
		3*	Draw and explain the wiring diagram of (i) Horn circuit.[2012(S),2013(S)]

(Chapter – 7)

Group	Ch. No.	Ques. No.	Question
A	7	1*	Define Carburetion. [2010(S)]
		2*	State the function of a carburettor. [2011(S)]
		3*	What do you mean by air-fuel ratio? [2013(S), 2012(S), 2015(S), 2016(S)]
		4	Name three components of a fuel injection system.
		5	What is use of fuel feed pump? [2012(S),2013(S)]
		6	Why the carburettor is very much essential for ignition system of a automobile. [2011(S)]
		7	What is firing order?
		8	What is carburattor? [2010(S), 2017(S)]
		9	What is an injector? [2010(S)]
		10	What is the function of fuel filter? [2017(S)]
		11	What is the function of an injector? [2015(W)]
		12	What do you mean by atomization of fuel? [2014(W)]
		13	What is air blast injection?
		14	What is solid injection?
B	7	1	With a neat sketch, describe the working of fuel feed pump. [2013(
		2*	What do you mean by air fuel ratio? Why it is very much essential fo efficiency of an automobile. [2011(S)]
		3	Describe the construction & working of fuel injector with neat sketch [2010(S)]
		4*	Describe battery ignition system and state how it is differs from magneto- ignition system. [2017(W), 2017(S)]
		5	Difference between battery ignition and magneto ignition? [2018(W)]
		6	Describe the difference between air blast and air less injection?
		7	With a neat sketch, describe the working of an injector?
C	7	1*	Explain the battery ignition system with neat sketch. [2015(S), 2016(
		2	With a neat sketch explains in brief the battery ignition for a 4-Cylinde petrol engine. [2010(s), 2013(S)]
		3	What do you mean by multi-point fuel injection system give sketch of fuel supply system of a diesel engine? [2010(s), 2013(S)]
		4*	Describe the working principle of fuel injection system for multi cylinde diesel engine.[2016(S),2017(S)]
		5	Explain the magneto ignition system with neat sketch. [2013(S)]

MODULE – IV
(Chapter – 6)

Group	Ch. No.	Ques. No.	Question
A	6	1	Write the function of lubrication. [2012(S),2013(S)]
		2*	What is the function of oil filter in lubricating system? [2012(S),2013(S)]
		3	What is water cooling?
		4*	What is air cooling?
		5*	What is the necessity of cooling of an engine? [2013(S)]
		6	What is the function of an oil pump? [2015(W)]
		7	What do you mean by gravity type lubrication
		8	What is the difference between gravity type and pressure type?
		9	What is the function of fins in air cooling
		10	Write any two advantages of air cooling?
		11	Give four examples of lubricants? [2018().W]
B	6	1*	Describe necessity of engine cooling. [2012(S), 2013(S)]
		2	Describe water cooling with advantages and disadvantages.
		3	What are the types of cooling system & explain the water cooling system In detail? [2015(S)]
		4	Describe the lubrication in case of 2 stroke petrol engine.
		5	Describe the lubrication in case of 4 stroke petrol engine
		6	Describe about gravity type lubrication system?
		7	Explain briefly pressure lubrication system? [2018(W)]
C	6	1*	Describe the lubrication system of I.C engine. [2013(S),2014(S),2016(S),2017w]
		2	Describe the pressure lubrication system used in automobile with neat sketch. [2012(S),2018(W)]
		3	Why cooling of engine is very much necessary? Write down difference type of cooling process, its defects and their radical measure.[2011(S), 2016(S)]
		4	Explain the water cooling of automobile engines with neat sketch.[2017(S)]
		5	With the help of a neat sketch explain pump circulation water cooling system? [2018(w)]

MODULE – V
(Chapter – 5)

Group – A : 2 Marks
Group – B : 5 Marks
Group – C :7 Marks

Sl. No.	Group	Ch. No.	Ques. No.	Question
1	A	5	1*	What is the function of suspension system? [2012(S)]
2			2	Write the specification of a tyre. [2013(S),2014(W),2016(S)]
3			3	What do you mean by independent suspension? [2018(W)]
4			4	State the use of suspension system? [2012(S)]
1	B	5	1	Write down the causes & remedies of tyre wear. [2011(S), 2012(S), 2017(S)]
2			2	What is conventional suspension system? [2011(S)]
3			3	Describe the conventional suspension system for rear axle & front ax
4			4*	Explain the causes and remedies of tyre wear. [2012(S),2017S]
5			5	Write the construction and working of a leaf spring? [2018(S)]
6			6	Explain various suspension system used in cars? [2015(W)]
7			7	State typr specifications and causes of tyre wear? [2012(S),2013(S)]
1	C	5	1*	Explain about "Telescopic shock absorber". [2013(S),2015(S),2018(W
2			2	Differentiate between conventional suspension system & independen suspension system. Explain the working of telescope shock absorber with sketch. [2011(S), 2013(s)]
3			3	Describe independent suspension system used in car. [2016(S)]

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Process (MET-603)

MODULE – I

Ch. -1

Group	Ch. No.	Ques. No.	Question
A	1	1	What is LBM ?
		2	What is LASER ?
		3	Define EDM.
		4	Define PAM.
		5	State to application of LBM.
		6	What is Plasma and what are the gases used for PAM ? [2016(s)]
		7	What is the circuit voltage and spark gap in EDM? [2016(s)]
		8	Differentiate between conventional and Nontraditional machining process.[2016(s)]
		9	What are the material used for tool on ECM ? [2017w]
		10	Write down the application of PAM. [2017s]
		11	What is the use of EBM ? [2017s]
		12	What is ECM ? [2017s]
		13	Write down the application of AJM. ? [2017s]
		14	State the principle of ECM [2018]
B	1	1	What is EDM ? Write down its application.
		2	With neat sketch explain in brief, the working principle of ECM.
		3	Classify NTM and discuss basic need of NTM. [2016(s)
		4	State advantages and disadvantage of EDM.
		5	Write short notes on a) PAM c) LBM
		6	What is non-conventional machining process ? Explain any one of them.
		7	Explain AJM ? Explain in details its application.[2016(s)
		8	With neat sketch explain the EDM process with its application.[2016(s)
		9	Describe working principle of ECM and its function with neat sketch.
		10	Write down the relative advantage and disadvantages of PAM ?[2016(s)
		11	Explain the working principle of PAM with neat sketch. [2016(s)
		12	Write down the advantage And dis advantage of EDM. [2017(w)]
		13	What is NTM and classify. [2017w]
		14	Write down the advantage And dis advantage of LBM. [2017(w)]
		15	Write down the working principle of AJM [2017s]
		16	State various application of ECM. [2018]
		17	Differentiate between conventional and non-conventional machining process. [2018]

C	1	1	Explain AJM ? Explain in details its application.[2016(s)
		2	With neat sketch explain the EDM process with its application.[2016(s
		3	Describe working principle of ECM and its function with neat sketch.
		4	Write down the relative advantage and disadvantages of PAM ?[2016
		5	Explain the working principle of PAM with neat sketch. [2016(s)
		6	Write down the advantage And dis advantage of EDM. [2017(w)]
		7	What is NTM and classify. [2017w]
		8	Write down the advantage And dis advantage of LBM. [2017(w)]
		9	Write down the working principle of AJM [2017s]
		10	Write down advantage, disadvantage and application of EBM [2018]
		11	Explain the working principle, advantage, disadvantage and applicatio USM.

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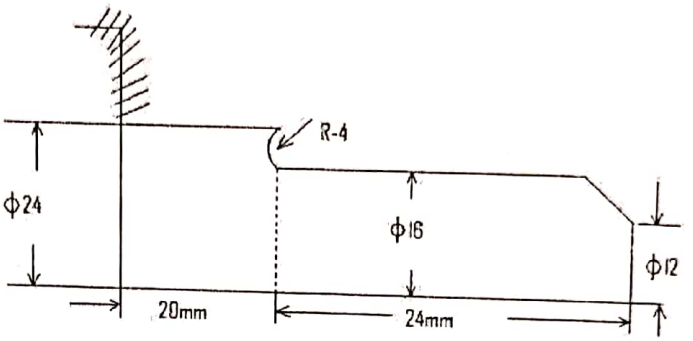
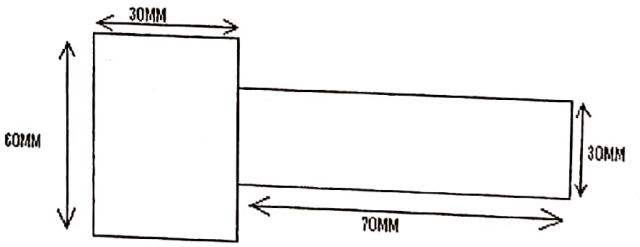
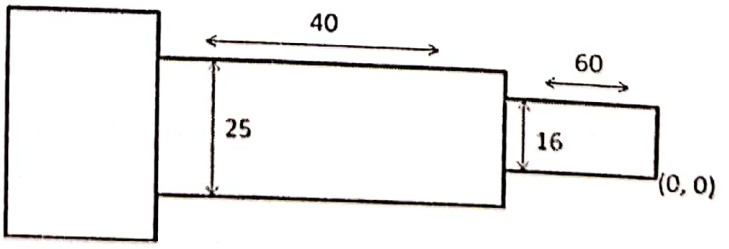
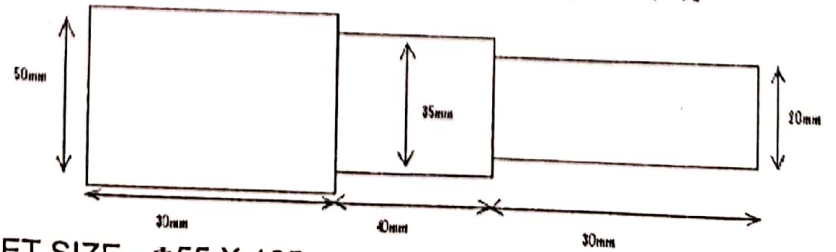
MODULE – II
Ch. – 3

Sl. No.	Group	Ch. No.	Ques. No.	Question
1	A	3	1	What is NC System ? [2016(s), 2015-s, 2017w]
2			2	Write the components of DNC. [2010-s]
3			3	Define NC machining. [2011s, 2012 (s),2012-w), 2014(w)]
4			4	State the types of NC system. [2009(s)]
5			5	What is DNC and CNC [2014(s & w), 2013(s), 2010s, 2009(s), 2018]
6			6	What is meant by machining centre? [2009(s)]
7			7	Define part programme. [2012(s)]
8			8	Define machine zero. [2013(w)]
9			9	What is adaptive control system ? [2015, 2013(s)]
10			10	Define work zero. [2016(s), 2018]
11			11	What is "Interpolation" and list the types of interpolation. 2016(s)
12			12	What is preparatory function and write 2 G-code with its function.2016(s)
13			13	List two advantages of using NC machines.
1	B	3	1	What are the advantages and disadvantages of NC machine tool over conventional machines. [2010s, 2012(s), 2012(w), 2013(w)
2			2	Differentiate between machine centre and machining centre. [2013(w)]
3			3	Describe the economics of NC system. [2012(s),2015-s]
4			4	What is part programming & classify. [2016s]
5			5	Explain "Adaptive control" system. [2012(s), 2017s]
6			6	CNC machines are preferred over NC machines justify.[2009(s)]
7			7	What is adaptive control? Briefly explain.[2009(s), 2013(s), 2014(s)]
8			8	Differentiate between CNC & NC. [2010s]
9			9	Describe tool positioning system used in NC programming. 2016(s), 2017s
10			10	Explain the following with respect to NC system. a) Machine zero b) Work zero
11			11	Tool zero & Tool Offset [2014(s), 2015-s]
1	C	3	1	What are the applications of NC? [2018]
2			2	Explain "Contouring" system. [Page-879, Raghuwansi]
3			3	Explain G-code and M-code NC part programming. [2010(s), 2012(w), 2013(s), 2015-s, 2017s, 2018]
4			4	Describe any two of the following types of NC system with neat sketch. a) Point-to-point b) Straight cut c) Contouring. [2009(s), 2010(s),2012(w), 2015-s, 2017w]

5			5	Explain the NC system with block diagram. [2014(s), 2018]
6			6	What is CNC & DNC ? Explain with respect to Block Digram. [2009(s), 2010s,2012(w), 2017s]
7			7	Describe coordinate systems of NC machine tools. 2009s, 2012(s), 2013s, 2014-w, 2015-s]
8			8	Describe complete part program of following figure using G-code & M-code (2012(s),2015-s] 
9			9	Describe the components of NC system. [2013(s), 2014(s), 2015-s]
10			10	Write down the simple part programme to make this job from the given billet size on a CNC lathe machine; without any repetition a cycle. [2014(s)]  BILLET SIZE - Φ70 X 120
11			11	Prepare a part programme for lathe operation which consists of facing, cleaning cut, reduction of dia to 16mm from 25mm dia., feed 200mm/m speed=800rpm, depth of cut 2mm/cut 
12			12	Write down a part program for the diagram. [2013(w)]  BILLET SIZE - Φ55 X 105
13			13	Describe various types of NC co-ordinate. [2017s]

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Ch. – 2 & 4

Sl. No.	Group	Ch. No.	Ques. No.	Question
1		2	1	Define automation. [2014(s & w), 2013(s), 2011(w), 2017w, 2017s]
2			2	List types of automation. [2011w, 2012(s)]
3			3	List two applications of automation.[2013(w)]
4			4	List two advantages of automation.[Page-896, (Raghuwansi)]
5			5	Write the need of automation.[2017s, 2018]
6		4	1	Why gripper in industrial robot is provided?
7			2	Write the applications of Robot. [2011S,2012(s)]
8	A		3	Define robot. [2013(s), 2014s, 2017s]
9			4	What do you mean by robot anatomy? [2009(S),2012(w), 2015-s]
10			5	What is function of sensor in robot? [2015-s]
11			6	In which way the joints and links on an industrial robot are used? [Page-909(Raghuwansi)]
12			7	List two applications of robot. [Page-909(Raghuwansi)]
13			8	Define robot and objective of using industrial robot. 2016(s) What is AGVS ? [2017w]
14			9	What do you mean by robotics. [2018]
1	B	2	1	Define Automation .State its need and classify it. [2014 (w), 2013(s), 2012(s), 2011(s), 2010(s)]
2			2	Explain the advantages of automation. [2018]
3			3	List types of automation. [2015-S, 2017w, 2018]
4			4	Explain briefly about types of automation. [2013(s)]
5			5	Explain the need of automation. [2015(s), 2014(s), 2013(N), 2012(s), 2012(w)]
6			6	Which type of automation is most adopted, explain. [2017(s)]
7		4	1	Explain briefly different types of end effect or used in industrial robot. [2009s, [2012(s), 2014s]
8			2	What is accuracy and repeatability of the robot? [2010s,2012(s), 2014-w, 2015-s]
9			3	Classify the Robot. [2013w]
10			4	Mention briefly different elements of robot. [2009(S), 2015-s]
11			5	What do you mean by robot configuration ? State and explain the same in brief. 2010s, 2013(s)
12			6	Give various types of end effectors with diagram. [2009(s), 2010s, 2011(s), 2014(s), 2015-s, 2017w, 2018]
1	C	2	1	Explain briefly about types of automation. [2013(s)]
2			2	Explain the need of automation. [2015(s),2014(s),2013(N),2012(s),2012(w)]

3			3	Which type of automation is most adopted, explain. [2017(s)]
4		4	1	What are the similarities and dissimilarities between robot & NC machines? Pg.-909, Raghuwansi)]
5			2	Explain the polar coordinate systems of robot with neat sketch.[Page-909(Raghuwansi)]
6			3	Explain any two sensors used in robot technology. [2009(s), 2018]
7			4	Write down various robot configuration. [2009(s), 2011(s), 2012(s),2012(w),2013(s), 2014(s), 201
8			5	Describe robot configuration and explain the accuracy and repeatability the robot. [2018]
9			6	What do you mean by Robot Anatomy ? Explain in details. [2014-w]
10			7	Describe the main component of robot [2016(s)]
11			8	Discuss various deign of robot arm. [2017w]
12			9	Explain various types of sensor used in Robot. [2017s]

MODULE – IV

Ch. –5

Sl. No.	Group	Ch. No.	Ques. No.	Question
1	A	5	1	Define FMS. .[2013(s), 2014(s), 2015-s]
2			2	List some types of workstation typically found in FMS. [Page-448, (P. Groover)]
3			3	Write two applications of FMS [2010s]
4			4	Write down the components of FMS. [2009(S),2012(w)]
5	B	5	1	Identify the needs of FMS. [2012(s), 2017s]
6			2	Explain about workstation of FMS. [Page-448, P. Groover)]
7	C	5	1	Define FMS ? What are the component of FMS and explain them. [2010s,2012(s), 2012(w), 2014(s), 2015-s, 20
8			2	State the advantages of FMS. Explain the components in brief. [2013(w 2017w]
9			3	What are the various flexible manufacturing equipments ? [2017w]

MODULE – V
Ch. - 6

Group	Ch. No.	Ques. No.	Question
A	6	1	Define CAD, CAM and CIM [2010s,2012(w), 2013(s), 2014s, 2017w]
		2	Define CAM. [2010s,2012(s), 2013(s), 2014s, 2017w]
		3	State reason for implementing CAD. [2011s]
		4	State benefits of CAD. [2012(s), 2017w]
		5	Define CIM. [2009(s), 2010s, 2011s,2012(s),2012(w), 2015-s, 2018]
		6	List some main activities under CIM. [Page-458, (P. Groover)] S
		7	Out line the relation among CAD, CAM, [Page-690(Hajra Choudhury)] S
		8	Write the application of CAD. [Page-690 Hajra Choudhury]
B	6	1	Write down the application of CAD and CAM. [2009(S)
		2	State the benefits of CAD & CAM software. [2014s, 2015-s, 2018]
		3	Discuss the different elements of CIM. [2013(s)
		4	Explain CAD & CIM hardware [2013(s)
C	6	1	Short notes on :- a) CIM b) CAD software [2014(N)]
		2	Write the concept and background of CIM, also explain the CIM hardware and software. [2015-s, 2017w]
		3	What are the benefits of CAM.
		4	Differentiate between CAD and CAM.

Power Plant Engineering (ME 604)

Module - I

Chapter No- 01 & 02

Group – A

1. Classify the types of fuel.
2. What do you mean by power plant ?
3. Classify power plant depending upon the various factors.
4. What do you mean by nuclear fuel? [2010
5. What is the application of wind mill? [2017S(o),
6. What is terrestrial heat or Geothermal Energy? 2015-s, 2011s, 2013(
7. What is captive power station? 2009s, 2010s, 2012(s), 2017s ,2018
8. Name any 4 sources of energy. [2014s], 2
9. Define tidal power plant.
10. Classify the power plants on any two number basis. [2

Ch. 02

11. Plot the P-v & T-S Diagram of Rankine Cycle.
12. What are the main components of a steam power plant working on Rankine cycle?
13. Define thermal efficiency of Rankine Cycle. [2010s,
14. Define work ratio and specific steam consumption in a Rankine cycle.
    [2010s, 2011s, 2013(S), 2014s, 2015-s, 2016s, 2017s, 2017w (o)
15. Explain the term quality of steam.
16. What do you mean by Reheat Cycle? [2012(S),2
17. Draw the P-V & T-S diagram of Reheat cycle.
18. Write down the methods of Reheating.
19. What do you mean by regenerative cycle?
20. What is the function of economizer? [2010s, 2011s,
21. Write down the function of superheater. [2
22. What is the function of air pre heater? [2009s, 2010s,
23. Write down two advantages of superheated steam.
24. Write the use of feed water heater. [2012(S), 2013(S), 2015-s,2
25. Name the different type of draught system.

Group-B

1. Briefly explain the different sources of energy. [2012(s),

Ch. 02

2. Explain Rankine cycle with P-V & T-S diagram. [2010s, 2012s,
3. In a Rankine cycle, the steam at inlet to turbine is saturated at a pressure of 30 bar a Exhaust pressure is 0.25 bar. Determine:
   i) The pump work ii) Turbine work. R.K. Rajput, Ex

4. A steam power plant works between 40bar and 0.05 bar. If the steam supplied is dry saturated and the cycle of operation is Rankine, find :
i) Cycle efficiency ii) Specific steam consumption. R.K. Rajput, Ex
5. A simple Rankine cycle works between pressure of 30bar and 0.04 bar, the initial condition of Steam being dry saturated, calculate the cycle efficiency, work ratio and specific steam Consumption. (R.K. Rajput, Ex. – 1)
6. Explain reheat cycle with schematic diagram and T-S diagram. [2017w (N)]
7. Write down the working principle of ESP? [2017w]
8. State the advantages of pulverized fuel system? [2017s]
9. Dry saturated steam at 150 bar enters a steam turbine and comes out at 1 bar. Calculate the Cycle efficiency. [2017w (N)]
10. What is regenerative cycle? Explain direct contact heater type regenerative system. [2013(S), 2017s]
11. Write down the advantage & disadvantages of reheat cycle.
12. Write different mountings & accessories of boiler. [2010s]
13. Differentiate between Natural Draft & forced draft.
14. What is a super heater? State advantages of super heated steam. [2014s]

Group-C

1. Differentiate between central power station and captive power station. [2014s,2016s,2017w,2018W]

Ch. 02

2. Explain the layout of steam power plant. [2012(S), 2016s, 2017w/s(O),2018S,2018W]
3. Explain Rankine cycle with P-V T-S diagram and find out thermal efficiency and work ratio. [2018W, 2018S]
4. In a steam turbine, steam at 20 bar, 360°C is expanded to 0.09 bars. It then enters a condenser, Where it is condensed to saturated liquid water. The pump feeds back the water into a boiler. Assume ideal process, find per kg of steam the net work and cycle efficiency. (959.94, 32.27%) [2012(S)]
5. A 50mw steam turbine operates on basic Rankine cycle of inlet conditions of 90bar pressure & Temp. Of 500°c. The condenser pressure is 0.040 bar. Find the followings
i) Thermal efficiency ii) Specific steam consumption. [2014s]
6. A simple Rankine cycle works between pressures 28 bar and 0.06 bar, the initial condition of Steam being dry saturated. Calculate the cycle efficiency, work ratio and specific steam Consumption. (R.K. rajput,Ex:2.4) (33.97%,0.997,4.049kh/kwh) [2018W, 2016s]
7. In a power plant working on Rankine cycle, steam was supplied to a steam turbine at 16 bar and is exhausted into a condenser at 0.05 bar. Considering the feed pump work, find the thermal efficiency of the plant when the steam is initially super heated, it's temperature being 300°C. [2012wN(BP)]
8. Derive the expression for thermal efficiency and work done of reheat cycle with P-V, T-S & h-S diagram. [2012s,2017s(o)]
9. The admission pressure of steam to a steam turbine working on Rankine cycle is 30 bar. The steam is superheated at this pressure, its temperature being 300°C. In the turbine when the steam pressure has dropped to 8 bar, it is tapped from the turbine and reheated at constant pressure to 300°C again. This steam expands in the turbine to condenser pressure of 0.1 bar and is exhausted into the condenser at this pressure. Determine thermal efficiency and specific steam consumption. [2017s,2013s,2012wN(BP)]

10. A steam power plant operates on a theoretical reheat cycle. Steam at boiler at 150 bar; 55
expands through the high pressure turbine. It is reheated at a constant pressure of 40 ba
550°C & expands through the low pressure turbine to a condenser at 0.1 bar. Draw T-S an
S diagram. Find – (R.K Rajput Ex. 2.10)

i) Quality of steam at turbine exhaust.

ii) Cycle efficiency

iii) Steam rate in kg/kwhr (.88, 44.05%, 2.17) 0.88,44.05%,2.17kg/kwh)

11. The steam at 100bar and 450°C is supplied to a steam turbine. The steam is reheated to original temp. Passing the steam through re heater at 12bar. The expansion after the Reheat takes place to condenser pressure of 0.05 bar. Find the efficiency of Re-heat cycle and the w output if the flow of steam is 1 kg / sec. (Assuming the expansion through the turbine Isentropic. Neglecting the pressure loss and pump work.

12. A single stage regenerative feed heating is used in a turbine plant. The steam at 15 bar& 30 [2015
is supplied to the turbine and exhausted to the condenser at 0.06 bar. The steam is bled heating at 1.8 bar. Assuming the expansion through the turbine is isentropic; find out improvement in thermal efficiency due to regenerative feed heating. (1.68%)

13. In a single-heater regenerative cycle the steam enters the turbine at 30bar 400°C and exhaust pressure is 0.10 bar. The feed water heater is a direct contact type which operates a bar. Find :

i) The efficiency and the steam rate of the cycle. (36.08%,3.85kg/kwh)

ii) The increase in mean temperature of heat addition, efficiency and steam rate compared to the Rankine cycle (without regeneration). Pump work may be neglect (27.4°c, 1.9%,0.39kg/kwh) (R.K. rajput,Ex:2.11)

14. What is Boiler accessory? Explain the working of the Green's economizer with a neat sketch.

15. Name various draught systems. Describe the operation of a balanced draught system. [2009s 2015-s,2018S,2018W

Module - II
Chapter No- 2

Group – A

16. What is the function of nozzle in steam turbine?
17. What do you mean by governing of steam turbine? 2012(S), 2017s(O)
18. What do you mean by compounding of steam turbine?
19. Define stage efficiency.
20. State the function of condenser. [2011s, 2012(S),2018W]
21. Classify condenser. [2014s, 2017s(O)]
22. Write down two advantages of using steam condenser. [2009s, 2010s]
23. What is the function of cooling Tower? [2013(S), 2017s]
24. Define reheat factor. [2011s, 2013(S), 2017s (O)]
25. Write down the differences between accessories and mountings of a boiler. [2016s]
26. Why compounding of steam turbine is necessary? [2016(O)]
27. What is the purpose of air-extraction pump in steam condenser in a power plant? [2015s]
28. What is steam generator? [2017w, 2018W]
29. What is balanced drought system? [2017w]
30. Write two mountings & two accessories of boiler. [2018S, 2018W]

Group-B

14. Why compounding of steam turbine is necessary? Explain velocity compounding. [2013(S), 2017s]
15. Differentiate between surface condenser & Jet condenser. [2012(S),2017s (O),2018W]
16. Explain the requirement of a good condensing system. [2013(S), 2017s]
17. Classify boiler. [2017w]
18. Why compounding of steam turbine is necessary? Explain pressure-velocity compounding of an Impulse turbine. [2017S(O)]
19. State the advantages & Disadvantages of steam turbine. [2012(S), 2014s]
20. State the advantages & Disadvantages of velocity compounded impulse turbine? [2017w,2018S]
21. Describe the function and operation of jet condenser. [2009s]
22. Describe the function and operation of surface condenser. [2010s, 2016s, 2017s(O)]
23. State advantages of condenser. [2011s]
24. Briefly explain about different types of mechanical draft cooling tower. [2015-s, 2018W]
25. Give comparison between forced and induced draught cooling towers. [2015-s]
26. With neat sketch explain nozzle control governing of steam turbine. [2015w]
27. What is a cooling tower and how they are classified? [2018W,2018S]
28. Define Draught. Explain different types of draught system. [2010s, 2013s, 2017s]

Group-C

15. Describe the various types of natural draft cooling tower. [2013(S), 2017s]
16. With neat sketch explain throttle governing of steam turbine.

17. In a De Laval turbine, the steam issues from the nozzles with a velocity of 850 m/s. The nozzle angle is 20%. Mean blade velocity is 350 m/s. The blades are equiangular. The mass flow rate is 1000 kg/min. Friction factor is 0.8. Determine : i) blade angles, ii) axial thrust on the end bearing, iii) power developed in kW, iv) blade efficiency, v) stage efficiency, if nozzle efficiency is 93%. (R.K Rajput .Q-32, page 339)Ans. : i) 33°, 33° ii) 500 N, iii) 4666.7kW, iv) 77.5%, v) 72.1%

18. Steam with absolute velocity of 300 m/s is supplied through a nozzle to a single stage impulse turbine. The nozzle angle is 25°.The mean diameter of the blade rotor is 1 m & has a speed of 2000 rpm. Find suitable blade angles for zero axial thrust. If the blade velocity coefficient is 0.7 and the steam flow rate is 10 kg/s, calculate the power developed. (θ=37°,ϕ=42°,P=321.3kw) [2012(S)

19. The mean blade velocity of an impulse turbine with single row wheel is 127 m/sec. The steam velocity issuing from the nozzle is 275 m/sec and the nozzle angle is 20°. The rotor blades are equal and angular and the blade friction factor is 0.86. If the axial thrust is 120 N. Find the power developed by the turbine. [2017w

20. The velocity of steam, leaving the nozzles of an impulse turbine is 1200 m/sec and the nozzle angle is 20°. The blade velocity is 375 m/s and the blade velocity coefficient is 0.75. Assuming no loss due to shock at inlet, calculate for a mass flow of 0.5 kg/ sec and symmetrical blading (i) blade inlet angle ii) driving force on the wheel iii) axial thrust on the wheel and iv) power developed by the turbine. [2017s(O)]

21. The velocity of steam leaving the nozzles of an impulse turbine is 1200m/s and the nozzle angle is 20°. The blade velocity is 375m/s end the blade velocity co-efficiency is 0.75. Asuming no loss due to shock at inlet, calculate for a mass flow of 0.5kg/s and symmetries blading (i) inlet blade angle, ii) driving force on blue wheel iii) .... on the wheel, iv) Power developed by the turbine.

22. The velocity of the steam at the nozzle of an impulse turbine is 800m/s and the nozzle angle is 20°. The blade velocity is 350 m/sec and the blade velocity coefficient is 0.75. Assuming no loss due to shock at inlet and symmetrical blading with a mass flow rate of 2kg/sec, determine [2017s
    (i) Blade angle at inlet.
    (ii) Power developed by the turbine.
    (iii) Axial thrust on the wheel.

23. The velocity of steam leaving the nozzles of an impulse turbine is 1000m/s and the nozzle angle is 20°. The blade velocity is 400 m/s and the blades are symmetrical. The mass flow rate of steam is 0.75kg/sec. Neglecting friction effects on the blade estimate (i) the blade angles (ii) the tangential force on blades (iii) the axial thrust (iv) the diagram efficiency. [2015 SP TH-II]

24. Describe various types of cooling towers. [2018W]

25. Explain the function of different condenser auxiliaries such as hot well, extraction pump, air extraction pump, cooling water circulating pump. [2017s(O),2018S]

26. Why compounding of a steam turbine is necessary explain Pressure compounding. [2018W]

27. What is the necessity of compounding in steam turbine? Mention its types and describe in details.

MODULE – III
Ch. – 4 Diesel Engine Power Plant

Group – A

1. What do you mean by Diesel engine?
2. What are the main Component of a Diesel engine power plant.
3. State the applications diesel power plant. [2018S,2018W]
4. What is the function of injection system in a diesel power plant ? [2013(S), 2017s]
5. Write down the main systems of diesel engine power plant. [2017w(N)]

Group – B

1. State the advantages & disadvantages of diesel plant over steam power plant. [2009s, 2013(S, 2017S, 2017w)2018W,2018S]
2. Give the layout of a diesel engine power plant showing all the systems. [2009s]
3. Explain fuel storage and supply system of a diesel power plant. [2013S, 2017s)]
4. What are the different methods of fuel injection used in diesel plants? Which method is Commonly used in big diesel plant & why? [2016s]
5. Draw a neat Diagram of a cooling system used for diesel power plant showing all the essential components.
6. Write various types of lubricants. [2011s]

Group-C

1. Why the cooling & cleaning of lubricating oil is necessary? Draw a neat diagram of lubricating System used for medium capacity diesel power plant. [2014(S)]
2. Why the starting of diesel plant is more difficult? What different methods are used for starting Diesel engine? Which method is common & why?
3. List out the essential components of a diesel power plant and explain them briefly. [2017s (o)2018W]
4. Draw a neat diagram of a fuel storage and fuel supply system used for diesel power plants.
5. Explain in detail about cooling system and Lubrication system of a diesel power plant. [2018W]
6. Write down the working of a diesel Power plant. [2017w]

Group – A

1. Define fusion and fission. Give examples. [2015-s, 201
2. What are the components of a nuclear reactor?
3. What is the function of moderator in a nuclear reactor? [201
4. What are the different nuclear fuels? [2009s, 2010s, 2012(
5. What is amu?
6. What is a thermal reactor? / What is a nuclear reactor? [201
7. What is chain reaction?
8. What is the function of shielding? [201
9. Classify Nuclear reactor?
10. What is the difference between atomic number & mass number?
11. What is the function of a reflector?
12. What is the function of pressurizer in a PWR?
13. Write the full form of PWR and BWR power plant. Mention two places in India where there are nuclear power plants ? [201

Group – B

1. Briefly explain about nuclear fission. [2009s, 2010s, 2015s, 2017s(O
2. Briefly explain about nuclear fusion. [2009s, 2010s, 2017s(O
3. Write some advantages & disadvantages of nuclear power plant.
4. Explain the properties of moderator used in a nuclear reactor.
5. Explain the properties of control rods used in nuclear reactor.
6. Briefly explain about the disposal of nuclear waste. [2012(S), 2013(S), 2016s,2017s (O),2018W
7. Make a small comparison between nuclear power plant& steam power plant. [2009s, 2010s, 2016s
8. Compare between fission and fusion process. [2018S

Group-C

1. Differentiate between PWR & BWR power plant. [2014(S
2. What is Chain reaction? Explain controlled and uncontrolled chain reaction. [2015-s]
3. With a schematic diagram, explain the various components of nuclear reactor. [2009s, 2010s, 2011s, 2012(s), 2016s, 2018W
4. Explain the detail working principle of PWR with neat sketch. [2018W]
5. Make a neat sketch & explain the working of BWR. [2009s, 2013(S), 2017s(O),2018S]
6. Explain thoroughly the effects of nuclear radiation. [2012-s, 2015-s]
7. Write short notes on nuclear fission and nuclear fusion. [2017W
8. Explain BWR with its advantages and disadvantages. [2017W
9. Explain PWR with its advantages and disadvantages

MODULE – V
Name of the Chapter: - Hydel Power Plant

Group – A

1. Define Hydrology. [2009s]
2. Name four major components of a hydro electric power plant. [2018S]
3. Classify hydroelectric power plant.
4. What do you mean by base load plant.
5. What is low head power plant?
6. What is the function of draft tube.
7. What is the function of surge tank in hydroelectric power plant ? [2017w]
8. What is 'Prime Mover'? Give two examples. [2016s, 2018S]

Group – B

1. Classify hydraulic power plant based on different aspect. [2015s]
2. State the advantages and disadvantages of hydro-electric power plant. [2013s, 2016s, 2017s,w]
3. Explain the general arrangement of storage type hydroelectric power plant & its operation. [2010-s, 2011]
4. Draw the layout of a hydroelectric power plant. [2018S]
5. What is the function of penstock, spillway, headrace& tailrace in an hydel power plant.

Group-C

1. What are the criteria for site selection of a hydroelectric power plant? Explain in detail.[2015-s, 2017w
2. Write down the differences between a Hydel power plant and a thermal power plant.
3. State advantages of hydro electronic power plant. [2017s(O)]

Environmental Studies (BST-501)

MODULE – I

Ch.-1 & Ch.-2

Group – A : 10x02 = 20Marks
Group – B : 06x05 = 30Marks
Group – C : 05x10 = 50Marks

Total – 100 Marks

Sl. No.	Group	Ch. No.	Ques No.	Question
1	A	1	1	What do you mean by Environment & define Green Technology [2014, 2016, 2015(S)]
2			2	What is Biotic environment?[2014, 2015(S)]
3			3	What is Abiotic environment? [2014]
4			4	Define environmental science & environmental studies. [2017(W)]
5			5	Define the topics environmental science and environmental studies.2018(w)
6			6	Define autoecology.2018(w)
7		2	1	What is wind energy and state its importance? [2014]
8			2	What is energy and state the importance of energy? 2015(S)
9			3	What are land degradation & land slide ? [2017(s,w)].
10			4	What is deforestation ? [2017s]
1	B	1	1	Explain the interdisciplinary nature of environmental studies.
2			2	Explain the importance of environmental studies? [2013s, 2015(S), 2016s]2018(w)
3			3	Show that ,environmental science is multidisciplinary.2018(w)
4		2	1	Explain production of bio mass from bio gas. [2015(S)]
5			2	What are the environmental effect of extracting & using mineral resources?
6			3	State & Explain renewable & non-renewable resources.
1	C	1	1	Describe the importance & scope of environmental studies.
2		2	1	Explain overgrazing.
3			2	Define the role of an Individual in conserving natural resources.2018(w)
4			3	Explain deforestation. Describe its causes & control measures.[2017w]
5			4	Explain, equitable use of natural resources for sustainable life style. [2017w]

MODULE – II
Ch.- 3 & Ch. - 4

Group – A : 10x02 = 20Marks
Group – B : 06x05 = 30Marks
Group – C : 05x10 = 50Marks

Total – 100 Mark

Sl. No.	Group	Ch. No.	Ques. No.	Question
1	A	3	1	What is Ecosystem? Write the characteristics? [2012]
2			2	Define ecosystem. [2016(S)]
3			3	What is food web ? Give one example. 2015(W), 2017
4			4	Write four effects of overgrazing. [2017w]
5			5	Define ecology & ecosystem. 2018(w)
6			6	What are detrivores? Give example 2018(w)
7		4	1	Define the term "Biodiversity".
8			2	What do you mean by genetic, species and ecosystem diversity?
9			3	What do you mean by poaching of wild life?
10			4	What are hotspot of biodiversity?2018(w)
1	B	3	1	Describe the energy-flow in an ecosystem. [2013(W)]
2			2	What is ecological pyramid & explain. ?
3			3	What is ecological succession ?Explain a complete terrestrial ecological succession.2018(w)
4		4	1	Discuss the biodiversity at various levels.
5			2	What are various threats to biodiversity?2018(w)
6			3	Write a note on Biodiversity [2017s]
1	C	3	1	Explain the function of Ecosystem. [2015(S)]
2			2	Give a detailed account of the process of succession in a terrestrial ecosystem. [2017w]
3			3	Explain, the structure & functions of a grass-land eco-system. [2017w]2018(w)
4		4	1	Briefly explain about productive and aesthetic values of biodiversity 2018(w)
5			2	Give a comparision between ex situ and in situ conservation of biodiversity [2018]

MODULE – III
Ch. - 5

Group – A : 10x02 = 20Marks
Group – B : 06x05 = 30Marks
Group – C : 05x10 = 50Marks

Total – 100 Marks

Sl. No.	Group	Ch. No.	Ques. No.	Question
1	A	5	1	What is Air pollution? [2014W, 2015(S0]
2			2	Define Noise pollution. [2014W,2015(S)]
3			3	What is acid rain? [2014 S]
4			4	What is wind energy and state its importance ?2015(S)
5			5	What is geothermal Energy[2016(s)]
6			6	What is noise rating system [2016(s)]
7			7	Define pollution.[2017s]
8			8	Define pyrolysis. [2017s]
9			9	What are biomass?2018(w)
10			10	Write four physiological effects of noise pollution 2018(w)
1	B	5	1	What are the environmental impacts of thermal power plants? [2014W]
2			2	State the drawbacks of Nuclear Power and adverse Environmental Impacts. [2014W,2015(W)]
3			3	Write various types of pollutants causing water pollution. [2016 S]
4			4	Write various causes of air pollution and state its effect on environment.
5			5	State the effect of noise. 2015(S)
6			6	Give a difference between biomass & Fossil fuel. [2016s]
1	C	5	1	Write the adverse effects of radio-active pollution ? [2017w]
2			2	Discuss the effect of land pollution. [2017s]
3			3	What is geothermal energy ? Explain [2017s]
4			4	Explain ,the methods employed for control of noise pollution.2018(w)
5			5	What are the harmful effects of Noise pollution & what are the methods to control noise pollution. [2014, 2016s. 2017s]

MODULE – IV

Ch.- 6

Group – A : 10x02 = 20Marks
Group – B : 06x05 = 30Marks
Group – C : 05x10 = 50Marks

Total – 100 Marks

Sl. No.	Group	Ch. No.	Ques. No.	Question
1	A	6	1	What is sustainable development? [2014 W]
2			2	Why it is essential to conserve water?
3			3	What is secondary pollutants ? 2015(W)
4			4	What is biodegradable polymer ? [2016s]
5			5	What is watershed management?2018(w)
1	B	6	1	Differentiate between Acid rain and ozone depletion. [2014 W]
2			2	Write about urban problems related to energy
3			3	Mention the reason for displacement of population.
4			4	What are various types of pollutants? 2015(W)
1	C	6	1	Describe about status of sustainable development in India. [2014W]
2			2	Differentiate between nuclear accident and holocaust
3			3	What is Greenhouse effect ? How does it causes global warming ? [2017s]
4			4	Why rain water harvesting is in evitable for conservation & management of water ? [2017s]