



Labany

M 25/11

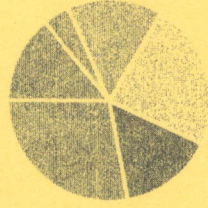
 ARKA JAIN University Jharkhand		 NAAC GRADE A ACCREDITED UNIVERSITY		END SEM EXAMINATION School of Engineering & IT	
Branch	Mechanical Engineering			Program	Diploma
Subject Name	Theory of Machine and Mechanism			Semester	V
				Year	Nov/Dec 2024*
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't Write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any Four out of Six of Section B Answer Any Three out of Five of Section C Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers</u>. 				
Knowledge Level (KL)	K1 : Remembering		K3 : Applying		K5 : Evaluating
	K2 : Understanding		K4 : Analysing		K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x) - 20 Marks						
Q. N1	QUESTIONS			Marks	COs	KL PO
i	Differentiate between cross belt drive and open belt drive.			2	CO1	KL1 PO1
ii	How are drives classified? *			2	CO3	KL3 PO3
iii	State the types of gear & gear train?			2	CO2	KL3 PO4
iv	State the function of Flywheel?			2	CO4	KL4 PO5
v	State the application of disc brake.			2	CO1	KL1 PO1
vi	Explain the function of gyroscope.			2	CO1	KL1 PO1
vii	Define vibration and write the name of different types of vibration.			2	CO3	KL3 PO3
viii	Differentiate between clutch and brake			2	CO2	KL6 PO4
ix	Define :- Coefficient of fluctuation of speed Coefficient of fluctuation of energy			2	CO2	KL3 PO4
x	Write down the name of different types of governor used in automobile.			2	CO2	KL3 PO4

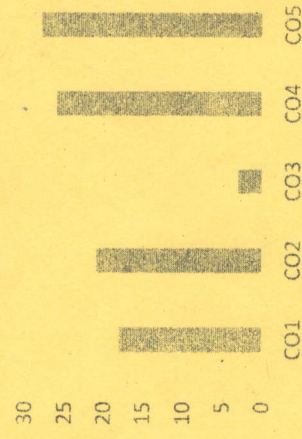
CO1	Understand mechanisms in real life applications.
CO2	Apply static and dynamic force analysis of slider crank mechanism & kinematic analysis of simple mechanisms.
CO3	Analyse the flywheel for engines.
CO4	Evaluate moment of inertia of rigid bodies experimentally.
CO5	Analyse the working of gyroscope & Governor.

GRAPHICAL REPRESENTATION

Bloom's Level wise Marks Distribution





Course Outcome Wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 5 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Explain working and types of cam and follower with suitable example.	5	CO1	KL1	PO1
3	Explain working of any one type of brake with suitable diagram.	5	CO4	KL4	PO3
4	Elaborate different types of belt drive used in automobile.	5	CO1	KL2	PO1
5	Explain the function of clutch and write down the name of different types of clutch and brake used in automobile.	5	CO4	KL4	PO4
6	Explain slip and creep phenomenon in belts.	5	CO4	KL1	PO4
7	Explain types of vibration with suitable example.	5	CO3	KL4	PO4
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Define Governor and Explain working and application of any one type Governor with suitable diagram.	10	CO1	KL1	PO1
9	Explain working of any one type of dynamometer with suitable diagram.	10	CO4	KL4	PO3
10	Draw the profile of a cam imparting motion to a roller follower with following details Stroke length = 45mm Roller diameter = 10mm Base circle diameter = 60mm Angle of Rise = 120° Dwell after rise = 60° Angle of return = 180° The follower rises and returns with uniform velocity.	10	CO1	KL6	PO1
11	Two pulleys, one 450 mm diameter and the other 200 mm diameter are on parallel shafts 1.95 m apart and are connected by a crossed belt. Find the length of the belt required	10	CO1	KL1	PO1
12	Explain the working of internal expanding shoe brake with the help of neat sketch.	10	CO4	KL4	PO3

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 ARKA JAIN University <small>Jharkhand</small>				END SEM EXAMINATION School of Engineering & IT	
Branch	Mechanical Engineering		Program	Diploma	
Subject Name	Advanced Manufacturing Process		Semester	V	
			Year	Nov/Dec 2024	
Time: 3 Hour	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any Four out of Six of Section B Answer Any Three out of Five of Section C Possession of <u>Mobile Phone</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussion with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Paper(s)</u>. 				
Max. Marks : 70					
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating		
	K2 : Understanding	K4 : Analysing	K6 : Creating		

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)					
Q.N	QUESTIONS	Marks	COs	KL	
1					
i	Explain the use of Jigs and Fixture in Machining.	2	CO1	K1	
ii	List out the types of Jigs used in machining.	2	CO1	KL2	
iii	Write the name of the parts of EDM Machine	2	CO2	KL1	
iv	Define Total Productive Maintenance	2	CO4	KL2	
v	Define Blow moulding	2	CO2	KL2	
vi	Define Injection moulding process	2	CO2	KL2	
vii	List out the name of Primary and Secondary plastic processing technology	2	CO4	KL2	
viii	What are the advantages of using jigs and fixture in manufacturing?	2	CO1	KL1	
ix	List out the name of Dielectric fluid used in EDM.	2	CO3	KL3	
x	Why does Non-Traditional machining needed.	2	CO3	KL3	

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	What is jig boring? Explain.	05	CO1	KL1
3	What is principle of location? explain	05	CO4	KL4
4	Explain Injection moulding processes with suitable diagram	05	CO4	KL1
5	Explain Total Productive Maintenance (TPM) and write down the different type of TPM.	05	CO3	KL4
6	Write the comparison between traditional and Non-Traditional Machining	05	CO4	KL1
7	List out the 5 basic G-Code and M-Code each used in CNC programming.	05	CO3	KL4

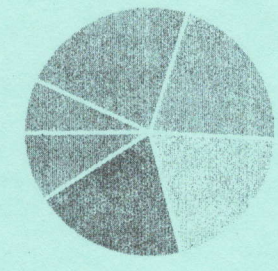
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain plastic processing technique with flow chart, Also Explain Injection Moulding or Blow Moulding with schematic diagram.	10	CO1	KL2
9	Explain function of special purpose machine with suitable example.	10	CO1	KL1
10	Explain working Principle of Laser Beam Machining with Suitable diagram.	10	CO3	KL5
11	Explain any five types of jigs used in drilling with neat sketch.	10	CO5	KL6
12	Explain working Principle, components, advantages, limitations and applications of Electrical Discharge Machining with suitable diagram.	10	CO4	KL2

Course Outcomes	CO1	CO2	CO3	CO4	CO5	CO6
Know the Operation and control of different advanced machine tools and equipment's.						
Produce jobs as per specified requirements by selecting the specific machining process.						
Develop the mind set for modern trends in manufacturing and automation.						
Identify the different fabrication methods viz., sheet forming, blow molding, laminating and reinforcing of plastics.						
Know different non-traditional machining processes, CNC milling machines, special Purpose machines.						
Know the Operation and control of different advanced machine tools and equipment's.						

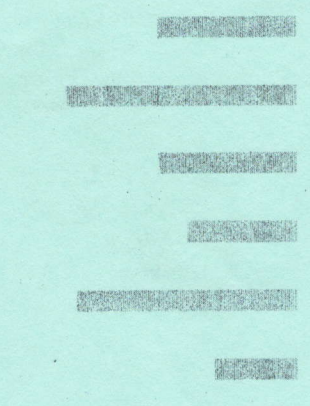
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



30
25
20
15
10
5
0

Course Outcome wise Marks Distribution



CO-1 CO-2 CO-3 CO-4 CO-5 CO-6

■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

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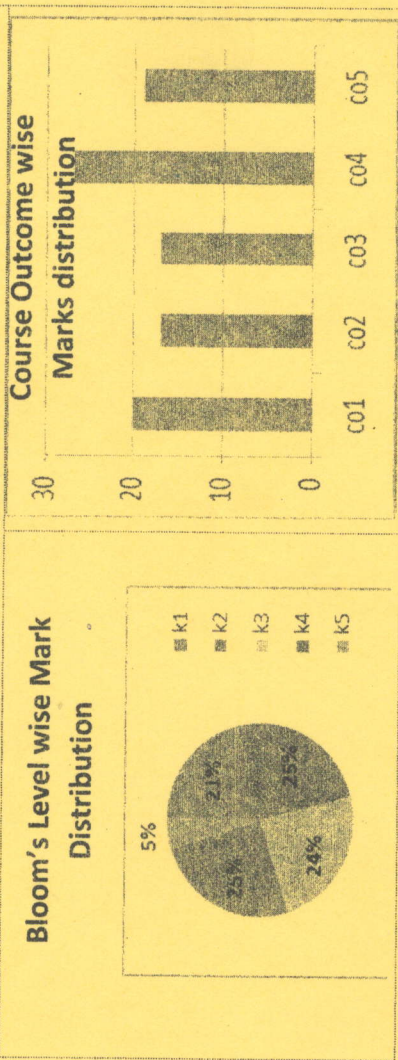
END SEM EXAMINATION
School of Engineering & IT

Branch	Mechanical Engineering	Program	Diploma
Subject Name	Automobile Engineering	Semester	V
		Year	Nov/Dec 2024
Time: 3 Hour Max. Marks: 70	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any Four out of Six of Section B Answer Any Three out of Five of Section C Possession of Mobile Phones or any kind of <u>Written Material, Arguments with the Invigilator or Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will Result in the <u>Cancellation of the Papers.</u> 		
Knowledge Level (KL)	K1: Remembering	K3: Applying	K5: Evaluating
	K2: Understanding	K4: Analysing	K6: Creating

Section A (Each question Carry 02 Marks from Q1-i to x) – 20 Marks			
Q. N1	QUESTIONS	Marks	COs KL
i	Where and why four-wheel drives is used?	2	CO1 K1
ii	Define body and suspension.	2	CO3 K2
iii	What is chassis? How its design is related to vehicle aerodynamics?	2	CO1 K2
iv	List of the forces acting on a chassis frame.	2	CO2 K1
v	What are the functions of frame?	2	CO1 K1
vi	Why do we need to use superchargers in engines?	2	CO5 K2
vii	State the difference between turbocharger and supercharger.	2	CO5 K3
viii	What is the function of a propeller shaft?	2	CO1 K2
ix	What are the requirements of an automotive transmission?	2	CO1 K2
x	State the advantage of Uni-body construction over Body on frame	2	CO4 K3

Course Outcomes	CO1	Identify the components of an automobile with their working
	CO2	Explain the concepts of cooling and lubricating systems.
	CO3	Identify different suspension systems and their applications.
	CO4	Explain the concepts of Ignition and Transmission and steering systems.
	CO5	Differentiate the special vehicles according to the usage.

GRAPHICAL REPRESENTATION





Section B (Answer any FOUR out of SIX) - 20 Marks
(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain the use of Hydrogen as a fuel to CI engine	5	CO4	K3
3	Explain about all wheel drive with suitable sketch.	5	CO1	K2
4	Explain gasoline injection system.	5	CO1	K4
5	Explain the working of a cone clutch	5	CO5	K1
6	Explain a typical power steering system.	5	CO2	K3
7	State the advantages and disadvantage of use of renewable source of energy.	5	CO3	K5

Section C (Answer any THREE out of FIVE) - 30 Marks
(Each question Carry 10 Marks)

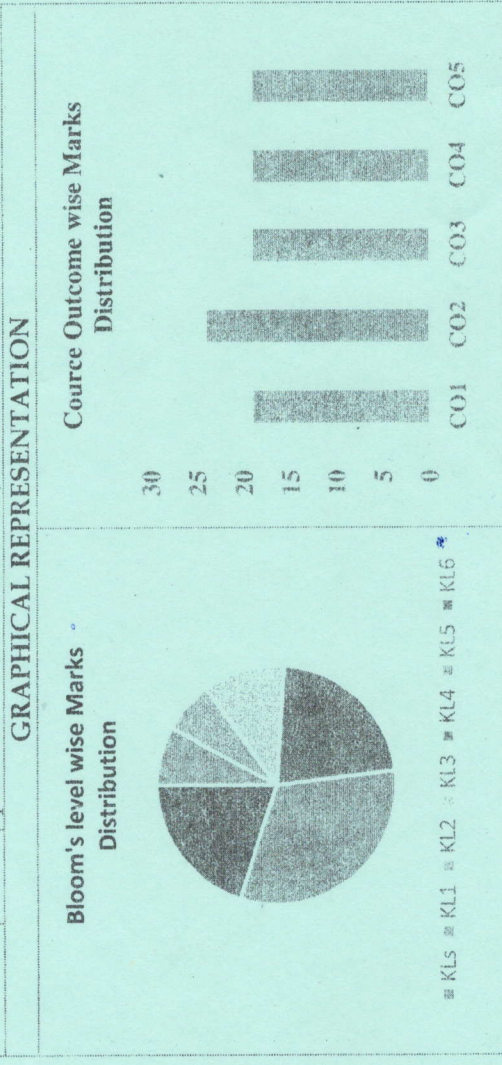
Q. No.	QUESTIONS	Marks	COs	KL
8	Discuss the operation of an LPG propelled vehicle with neat sketch.	10	CO5	K4
9	Write short note on ABS and Traction control.	10	CO2	K2
10	Explain the working principle of hotch kiss drive with neat sketch.	10	CO4	K1
11	List the engine parts with their functions, materials and method of its manufacture with neat sketch.	10	CO3	K3
12	Explain the construction and working of Turbocharger with a neat sketch.	10	CO4	K4

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	ARKA JAIN University Jharkhand		END SEM EXAMINATION School of Engineering & IT
Branch	Mechanical Engineering	Program	Diploma
Subject Name	Power Plant Engineering	Semester	V
	<ul style="list-style-type: none"> • Start writing from 2nd page onwards; don't Write on the 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of <u>Mobile Phone</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussion with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</u>. 	Year	Nov/Dec 2024
Time: 3 Hour Max. Marks : 70			
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating



Q. N1	QUESTIONS	Marks	COs	KL
i	List out four important factors to be considered for the selection of site for power plants.	2	CO2	KL2
ii	What are the main types of power plants?	2	CO2	KL1
iii	Name the three moderators used in nuclear power plants.	2	CO3	KL1
iv	Explain the requirements of fission process.	2	CO3	KL4
v	Define the function of surge tank in hydro plants.	2	CO4	KL1
vi	Describe the water hammer.	2	CO4	KL3
vii	What are the different types of tariff?	2	CO1	KL3
viii	What is reheating and regeneration of gas turbine?	2	CO1	KL5
ix	Define the term "Hydrology".	2	CO5	KL1
x	What is the function of draft tube?	2	CO5	KL3

CO1	Familiarised with the present and future power scenario of India.
CO2	Enlist various load terminologies in power plants.
CO3	Working and classifications in hydro power plant.
CO4	Working principles of Diesel, Gas and Nuclear power plants.
CO5	Understand the issues and necessity of safety concepts of power plants.



Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)		Marks	COs	KL																
Q. No.	QUESTIONS																			
2	Explain the environmental and social impacts of power plant location decisions.	05	CO2	KL4																
3	A peak load on the thermal power plant is 75 MW. The loads having maximum demands of 35 kW, 20 MW, 15 MW and 18 MW are connected to the power plant. The capacity of the plant is 90 MW and annual load factor is 0.53. Calculate the average load on power plant, energy supplied per year, demand factor and diversity factor.	05	CO2	KL4																
4	Compare the Kaplan turbine and Francis turbine.	05	CO3	KL2																
5	Discuss the working of combined cycle power plant.	05	CO4	KL3																
6	Explain with a neat sketch a boiling water reactor.	05	CO1	KL4																
7	Explain the methods to control pollution in thermal and nuclear power plants.	05	CO5	KL4																
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)																				
Q. No.	QUESTIONS	Marks	COs	KL																
8	Draw a general layout of thermal power plant and explain the working of different circuits.	10	CO2	KL5																
9	The load on the power plant which respect to time for 24 hrs are given as follows.	10	CO3	KL5																
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Time</td> <td>0-6</td> <td>6-8</td> <td>8-12</td> <td>12-14</td> <td>14-18</td> <td>18-22</td> <td>22-24</td> </tr> <tr> <td>Load (kW)</td> <td>60</td> <td>70</td> <td>80</td> <td>60</td> <td>90</td> <td>100</td> <td>50</td> </tr> </table>	Time	0-6	6-8	8-12	12-14	14-18	18-22	22-24	Load (kW)	60	70	80	60	90	100	50			
Time	0-6	6-8	8-12	12-14	14-18	18-22	22-24													
Load (kW)	60	70	80	60	90	100	50													
10	Draw the load curve and find out the energy generated. Explain the construction and working of gas turbine power plant with a layout	10	CO4	KL6																
11	Explain CANDU (Canadian-Deuterium Uranium) reactor with neat diagram also mention its merits and demerits.	10	CO1	KL5																
12	Evaluate the economic, environmental, and social factors that influence the choice of power plant technology in India.	10	CO5	KL6																

(M) 1/12

 		END SEM EXAMINATION School of Engineering & IT	
Branch	Mechanical Engineering	Program	Diploma
Subject Name	Industrial Engineering & Management	Semester	V
		Year	Nov/Dec 2024
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> Answer all Questions of Section A (Compulsory) Answer Any Four out of Six of Section B Answer Any Three out of Five of Section C Possession of Mobile Phones or any kind of <u>Written Material, Arguments with the Invigilator or Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u> 		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x) - 20 Marks					
Q. N1	QUESTIONS	Marks	COs	KL	PO
i	Define term of plant layout?	2	CO2	KL1	PO1
ii	What are principle good plant layout?	2	CO3	KL5	PO3
iii	What is the fixed position layout	2	CO3	KL1	PO1
iv	Define scheduled maintenance.	2	CO5	KL1	PO1
v	What is the two handed process chart.	2	CO5	KL1	PO1
vi	What is leadership in industry?	2	CO3	KL5	PO2
vii	What is zero defect concepts?	2	CO3	KL1	PO3
viii	Define the term productivity?	2	CO1	KL1	PO1
ix	What is the concept of ISO 9001:2008	2	CO1	KL1	PO1
x	What is single sampling plan?	2	CO1	KL1	PO1

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Write and explain the principle of production.	5	CO3	KL2	PO3
3	What are main, objective of plant layout?	5	CO3	KL2	PO2
4	Define inspection and give its objectives.	5	CO4	KL4	PO4
5	What is scientific advantage of plant layout?	5	CO2	KL4	PO1
6	Explain the function of despatching?	5	CO4	KL2	PO2
7	Write and explain the principle of production.	5	CO3	KL2	PO2

Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	What are the factors that are considered for selecting a site for factory?	10	CO2	KL3	PO1
9	Write the short notes on a. Standard data b. Performance rating c. Productivity d. Fatigue allowance	10	CO1	KL2	PO1
10	Describe clearly the function of routing, scheduling and dispatching?	10	CO5	KL4	PO4
11	Explain product layout and process layout?	10	CO5	KL3	PO4
12	Explain the concept of Total quality management(TQM)	10	CO5	KL1	PO4

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	CO2	CO3	CO4	CO5
Know different concept of plant layout and industry mechanism					
Understand the personnel development in industry.					
Explain the concept the best plant layout.					
Develop ability to come up with plant cost reducing.					
Understand different types of concept of industrialist in production revolution.					

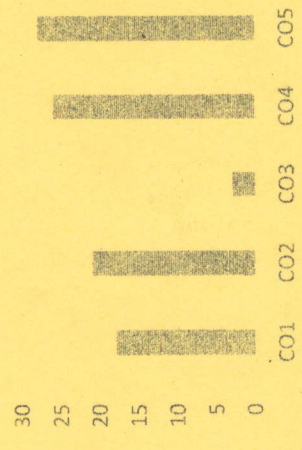
GRAPHICAL REPRESENTATION

Bloom's Level wise Marks Distribution





■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome Wise Marks Distribution



M' 6/12

				END SEM EXAMINATION School of Engineering & IT	
Branch	Mechanical Engineering			Program	Diploma
Subject Name	Renewable Energy Technology			Semester	V
				Year	Nov/Dec 2024
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; don't Write on the 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of <u>Mobile Phones</u> or any kind of <u>Written Material, Arguments</u> with the <u>Invigilator</u> or <u>Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u>				
Knowledge Level (KL)	K1 : Remembering		K3 : Applying		K5 : Evaluating
	K2 : Understanding		K4 : Analysing		K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x) - 20 Marks						
Q. N	QUESTIONS	Marks	COs	KL	PO	
1						
i	Define Energy.	2	CO1	K1	PO1	
ii	What is the function of inverter?	2	CO5	K2	PO3	
iii	What are the different types of current?	2	CO5	K3	PO5	
iv	Define Geothermal Energy?	2	CO4	K1	PO1	
v	List the types of wind turbines.	2	CO1	K4	PO2	
vi	What do you mean by Biogas?	2	CO1	K1	PO1	
vii	Highlight the advantages of wind power.	2	CO1	K4	PO5	
viii	Define Tidal Energy.	2	CO1	K1	PO1	
ix	What is a solar radiation?	2	CO1	K3	PO1	
x	Coal is the example ofsources of energy.	2	CO1	K2	PO2	

Section B (Answer any FOUR out of SIX) - 20 Marks

(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Define Solar Panel. Classify them briefly	5	CO4	K3	PO1
3	Explain the setup for wind mills with neat sketch.	5	CO2	K1	PO2
4	Elaborate the future prospects of solar energy in Indian market.	5	CO1	K2	PO3
5	Explain solar pond with diagram.	5	CO3	K1	PO2
6	What is difference between beam radiation and diffused radiation?	5	CO5	K1	PO5
7	Differentiate between impulse and reaction turbine.	5	CO4	K2	PO4

Section C (Answer any THREE out of FIVE) - 30 Marks

(Each question Carry 10 Marks)

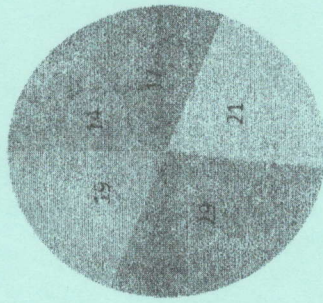
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Explain the working principle, applications, advantages and disadvantages of solar dryers with neat diagram.	10	CO1	K3	PO1
9	a) Differentiate between conventional and non-conventional sources of energy. Discuss the advantages and disadvantages of renewable energy sources	10	CO1	K4	PO1
10	Describe the factors for site selection for wind power plant.	10	CO2	K5	PO3
11	Explain the different types of instruments used for solar radiation measurement.	10	CO2	K5	PO5
12	Explain the process of generating power from Biomass. Draw the schematic diagram.	10	CO2	K1	PO3

CO- Course Outcomes, KL- Knowledge Level, PO - Program Outcome

CO1	Maintain ocean thermal energy technologies
CO2	Maintain the optimised working of solar PV and CS power plants.
CO3	Maintain the optimised working of large wind power plants
CO4	Maintain the optimised working of small wind turbines. *
CO5	Maintain the optimised working of biomass-based power plants.

GRAPHICAL REPRESENTATION

Bloom's Level Wise Mark Distribution



Course Outcome Wise Mark Distribution

