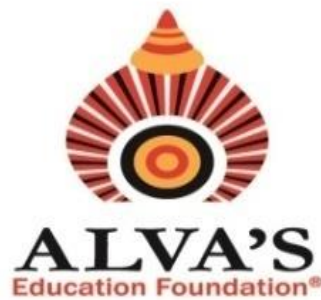


ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

**SHOBHAVANA CAMPUS, MIJAR – 574225, MOODBIDRI
DAKSHINA KANNADA KARNATAKA, INDIA**



Department of Mechanical Engineering CERTIFICATION COURSE

On

“Applied Thermal Engineering”

For the Academic Year

2020-21



ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

Shobhavana Campus, Mijar, Moodbidri - 574 225

Phone: 08258-262725 Fax: 08258-262726

DEPARTMENT OF MECHANICAL ENGINEERING

Date: 18-01-2021

APPROVAL LETTER

To,

The Principal,
AIET, Moodbidri

Respected Sir,

Sub: - Approval for Organizing the Students Certification/Training Program on "Applied Thermal Engineering"-Reg.

With reference to the subject cited above, I would like to bring to your kind notice that, the Department is planning to host a **Five day's** Student Training Program/ hands on workshop on "**Applied Thermal Engineering**" from "**25 January 2021**" to **29 January 2021**".

Kindly consider the above request and approve the same for further proceedings.

Thanking you Sir.


Coordinator:

Mr. Hemanth S


Head of the Department:


Principal:
PRINCIPAL
Alva's Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, U.K

Place: AIET, Moodbidri.



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DEPARTMENT OF MECHANICAL ENGINEERING

Date: 18-01-2021

CIRCULAR

All the students are hereby informed that there is a certification course on **Applied Thermal Engineering** which is scheduled from 25.01.2021 to 29.01.2021, which is conducted by Dr. Satyanarayana and Mr. K V Suresh at AIET, Dept of mechanical engineering, moodbidri. Interested students kindly register your names on or before 23.01.2021.

A handwritten signature in blue ink, appearing to read "S. K. Suresh", written over a horizontal line.

Head of the Department:



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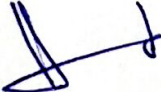
DEPARTMENT OF MECHANICAL ENGINEERING

ACADEMIC YEAR: 2014-15

CERTIFICATE PROGRAM ON APPLIED Thermal Engineering

SL. No	Topic
1	Concept of two phase system - Formation of steam- Definition and representation of wet steam, dry steam, saturated steam and superheated steam on T-H Diagram. Concept and determination of dryness fraction- Degree of superheat-Latent heat-sensible heat, enthalpy-entropy-Internal energy-External work of evaporation and specific volume of steam Use of Steam tables and Mollier chart- (Heat Entropy Chart).-Numerical examples based on above. Steam vapour cycles-Carnot cycle- Schematic diagram -Representation on PV & T-S diagram Rankine cycle-Schematic diagram- Representation on PV & T-S diagram-(No numerical Problems on steam vapour cycles) Steam Calorimeters- Barrel Calorimeter, Separating Calorimeter, Throttling Calorimeter and combined Separating & Throttling calorimeters.-Limitations of Calorimeter.
2	Introduction-Steam condenser-Concept-Classification-Functions- Jet condensers and surface condensers-working-merits and demerits of surface condensers over jet condensers -Cooling towers- Classification, function and working. Steam nozzles-concept-Types-Flow of steam through convergent-divergent nozzle-Friction in a nozzle-Discharge of steam through nozzles-Critical pressure ratio (no derivation)-Methods of calculation of cross sectional areas at throat and exit for maximum discharge-Effect of friction in nozzles-Supersaturated flow through nozzle- Numerical on nozzles using Mollier Chart only.
3	Steam boiler-Concept-definition-Indian Boilers Regulation (IBR)- Classification of boiler - function of boiler-Low pressure boilers- Sketch and working of Cochran boiler- Babcock and Wilcox boiler-Merits and demerits-High pressure boilers- Sketch and working of Lamont and Benson boiler- Merits and demerits- Comparison of water tube and fire tube boilers- Boiler mountings and accessories, Boiler draught system-concept and classification -steam jet draught.
4	Air compressor-concepts, functions, classification and applications- Single stage reciprocating air compressor-construction and working (with line diagram) Expression for work done and power required by single stage reciprocating compressor (without derivation), Simple problems on work done and power required. Multi stage compression - advantages of multistage compression-Rotary Compressors - working of rotary Compressor-Difference between reciprocating and rotary compressors - concept of screw compressor (oil free).
5	Refrigeration - Definition -Unit of refrigeration -Coefficient of performance (COP)-Vapour compression refrigeration with flow diagram-Vapour absorption refrigeration with flow diagram- Refrigerants -Types-Factors affecting the choice of refrigerants- properties of good refrigerants. Psychrometry- definition-Psychrometric terms - dry air, saturated air, dry bulb temperature Wet bulb temperature, dew point temperature, relative humidity, absolute humidity, specific humidity. Air Conditioning- classification-winter Air Conditioning-Summer Air conditioning-Year round air conditioning-

H.O.D.
Dept. Of Mechanical Engineering
Alva's Institute of Engineering & Technology,
Mijar, MOODBIDRI - 574 225


Course Coordinator

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
 Shetlavana Campus, Nagar, Nearbidri 574225
 DEPARTMENT OF MECHANICAL ENGINEERING
 aietmech08@gmail.com

sl no	USN	NAME	1/25/2021	1/26/2021	1/27/2021	1/28/2021	1/29/2021	
1	4AL20ME001	Adhwith	P	P	P	P	P	P
2	4AL20ME002	Akshar N	P	P	P	P	P	P
3	4AL20ME003	Babugouda Shankaragouda	P	P	P	P	P	P
4	4AL20ME004	Chandan Bhosale Urf Hagedal	P	P	P	P	P	P
5	4AL20ME006	Chiranth H S	P	P	P	P	P	P
6	4AL20ME008	Frison Nikhil Martis	P	P	P	P	P	P
7	4AL20ME009	Girish B Bannikoppa	P	P	P	P	P	P
8	4AL20ME011	Jenny Fernandes	P	P	P	P	P	P
9	4AL20ME012	Manoj Kumar Karnam	P	P	P	P	P	P
10	4AL20ME013	Manu K N	P	P	P	P	P	P
11	4AL20ME014	Mohammed Swahid	P	P	P	P	P	P
12	4AL20ME015	Mohammed Fahad H	P	P	P	P	P	P
13	4AL20ME016	Navyashree H B	P	P	P	P	P	P
14	4AL20ME017	Pallavi P	P	P	P	P	P	P
15	4AL20ME018	Patankumar H R	P	P	P	P	P	P
16	4AL20ME019	Rakshith S	P	P	P	P	P	P
17	4AL20ME020	Shaldon Mendonca	P	P	P	P	P	P
18	4AL20ME021	Varun S Bhandary	P	P	P	P	P	P
19	4AL20ME022	Vignesh	P	P	P	P	P	P
20	4AL18ME009	Chiranth p	P	P	P	P	P	P
21	4AL18ME018	Karthik	P	P	P	P	P	P
22	4AL18ME020	Kundar Bhushan R	P	P	P	P	P	P
23	4AL18ME025	Nishanth	P	P	P	P	P	P
24	4AL18ME032	Vyshnav S B	P	P	P	P	P	P
25	4AL18ME033	Yashwanth k	P	P	P	P	P	P
26	4AL19ME002	Abhishek Vinod	P	P	P	P	P	P
27	4AL19ME003	Ajay Kumar J	P	P	P	P	P	P
28	4AL19ME004	Aromal A	P	P	P	P	P	P
29	4AL19ME005	Bhoomika K R	P	P	P	P	P	P
30	4AL19ME006	Christon lloyd pinto	P	P	P	P	P	P
31	4AL19ME007	D Jay Kumar	P	P	P	P	P	P
32	4AL19ME008	Denil Paul	P	P	P	P	P	P
33	4AL19ME009	Dinesh KAMALAKAR Naik	P	P	P	P	P	P
34	4AL19ME010	Gurukiran	P	P	P	P	P	P
35	4AL19ME011	KETAN ARJUN KARANDE	P	P	P	P	P	P
36	4AL19ME012	Likhith S Shetty	P	P	P	P	P	P
37	4AL19ME013	Manoj Kumar A	P	P	P	P	P	P
38	4AL19ME014	Mohan Gowda	P	P	P	P	P	P
39	4AL19ME015	Nandana M Hegde	P	P	P	P	P	P
40	4AL19ME016	Naveen Bilagi	P	P	P	P	P	P

Dept. Of Mechanical
 Alva's Institute of Engg
 Nearbidri



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DEPARTMENT OF MECHANICAL ENGINEERING

FEEDBACK FORM

Five days Students Training Program

On

"Applied Thermal Engineering"

For the following areas, please indicate your rating from 1 to 5:

1=strongly Disagree 2=Disagree 3=neither agree nor disagree 4=Agree 5=strongly Agree

SN	Topics	1	2	3	4	5
A.	Content					
1	Understood the basics of Applied Thermal Engineering					✓
2	Understood the fundamental					✓
3	Able to apply the Applied Thermal Engineering Systems techniques for the problems at the hand.			✓		
4	Understood the fundamentals of test document writing.		✓			
5	Able to write effective test documents.				✓	
B	Presentation					
6	Instructor's knowledge					✓
7	Instructor's presentation style					✓
8	Instructor covered material clearly			✓		
9	Instructor responded well to questions				✓	
10	Instructor facilitated interactions among participants well			✓		

C. How could this workshop be improved? by doing proper practice work.

D. Any other comments or suggestions?

— NO —

E. Overall, how would you rate this workshop?

☐	Poor	☒	Good
☐	Neither Good Nor Poor	☐	Excellent



Quiz on Applied Thermal Engineering Course

1. One ton of refrigeration is equal to ____
 - a. 120 B Th U/hr
 - b. 200 B Th U/hr
 - c. 1200 B Th U/hr
 - d. 12000 B Th U/hr
2. Thermal efficiency of S.I. engines is low, due to ____
 - a. low compression ratio
 - b. high compression ratio
3. Which of the following energy conversion devices convert heat into work?
 - a. Electrical generators
 - b. I. C engines
 - c. Condensers
 - d. All of the above
4. Lancashire boilers are ____
 - a. externally fired boilers
 - b. internally fired boilers
 - c. both a. and b.
 - d. none of the above
5. Smoke tube boilers have large water to steam ratio, hence ____
 - a. have high evaporation rates
 - b. are slow in operations
 - c. temperature stresses inducing failure of feed water arrangement are maximum
 - d. all of the above
6. Pump transfers input mechanical energy of an engine, into ____
 - a. pressure energy of a fluid
 - b. kinetic energy of a fluid
 - c. both a. and b.
 - d. none of the above
7. What is the function of a moderator?
 - a. Anchors
 - b. Forebays
 - c. Trash rack
 - d. Surge tank
8. What is the function of a moderator?
 - a. Increases the speed of neutrons
 - b. Increases the speed of electrons
 - c. Reduces the speed of neutrons
 - d. Reduces the speed of electrons
9. A definite area or a place where some thermodynamic process takes place is known as
 - a) Thermodynamic system
 - b) Thermodynamic circle
 - c) Thermodynamic process
 - d) Thermodynamic law
10. The measurement of a thermodynamic property known as the temperature is based on
 - a. Zeroth law of thermodynamics
 - b. First law of thermodynamics
 - c. The second law of thermodynamics
 - d. None of these
11. The amount of heat required to raise the temperature of the unit mass of gas through one degree at constant volume is known as
 - a. Specific heat at volume
 - b. Specific heat at constant pressure
 - c. Kilojoule
 - d. None of these



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DEPARTMENT OF MECHANICAL ENGINEERING

Quiz on Applied Thermal Engineering Course

12. The states that change of internal energy of a perfect gas is directly proportional to the change of temperature
 - a. Boyle's law
 - b. Charle's law
 - c. Gay-Lussac law
 - d. Joule's law
13. Which of the following is an intensive property of a thermodynamic system?
 - a. Pressure
 - b. Volume
 - c. Temperature
 - d. Density
14. A process, in which the gas is heated or expanded in such a way that the product of its pressure and volume remains constant is known as
 - a. Isothermal process
 - b. Hyperbolic process
 - c. Adiabatic process
 - d. Polytropic process
15. An adiabatic process is one in which
 - a. No heat enters or leaves the gas
 - b. The temperature of the gas changes
 - c. The change in internal energy is equal to the mechanical work done
 - d. All of the above
16. The efficiency of joule cycle is
 - a. Greater than Carnot cycle
 - b. Less than Carnot cycle
 - c. Equal to Carnot cycle
 - d. None of these
17. Is an isothermal process
 - a. There is no change in temperature
 - b. There is no change in enthalpy
 - c. There is no change in internal energy
 - d. All of these
18. Otto cycle consists of
 - a. Two constant volume and two isentropic processes
 - b. Two constant pressure and two isentropic processes
 - c. Two constant volume and two isothermal processes
 - d. One constant pressure, one constant volume and two isotropic processes
19. The amount of heat generated per kg of fuel is known as
 - a. Calrofic value
 - b. Heat energy
 - c. Lower calorific value
 - d. Higher calorific value
20. Which of the following gas has the highest calorific value?
 - a. Coal gas
 - b. Producer gas
 - c. Mond gas
 - d. Blast furnace gas



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DEPARTMENT OF MECHANICAL ENGINEERING

Report on Applied Thermal Engineering

The department of ME conducted a Five Days hands on students training program for the students of ME from 25-01-2015 to 29-01-2015 on "Applied Thermal Engineering" at AIET Moodbidri.

Dr. Satyanarayana & Mr. Shankarappa K, Department of Mechanical Engineering AIET, Moodbidri delivered a comprehensive and in depth information about the Fundamentals of Applied Thermal Engineering & its Principles, Techniques, Applications. Eighty participants have enthusiastically participated and learnt the application building.

Photo





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Department of Mechanical Engineering

ACADEMICS YEAR 2020-21

Summary Report of Add-on / Certificate program with its Outcomes

Title of the Course: Applied Thermal Engineering

Learning Outcomes: The student have learnt to

- apply advanced thermal engineering concepts in the design of engineering equipment/ systems.
- utilize non-conventional energy resources for the development of ecofriendly thermal systems
- Independently carry out research/investigation and development work to solve thermal engineering problems.



HOD

H. O. D.

Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOOBBIDRI - 574 225

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY MOODBIDRI



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Shobhavana Campus, Mijar, Moodbidri DK Karnataka-574225

DEPARTMENT MECHANICAL ENGINEERING

Certificate

*This is to certify that Mr./Ms.....bearing the
USN from has attended
the Students Workshop Program on “Applied Thermal
Engineering” from 25 January 2021 to 29 January 2021*

Mr. Hemanth S
Coordinator

Head of the Department
Mechanical Engineering

Dr. Peter Fernandes
Principal
AIET Moodbidri