ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END SEMESTER EXAMINATION (JULY 2020)

Name of the Program: B.Tech (ME) **Semester:** VI
Course Name: Electrical Drives **Course Code: EEE43108**
Maximum Marks: 40 **Time duration: 3 Hours**
Total No of questions: 12 **Total No of Pages: 2**

Instruction to the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

GROUP –A
(**Multiple Choice Type Questions**)

1. Answer all the *five* questions of the following: **5 x 1 = 5**

(i) What are the different types of a DC motor?
(ii) Mention four important parts of a DC machine.
(iii) In flux control method how is the speed of DC motor controlled?
(iv) In a DC shunt motor if field current is increased then what will happen to the speed of the motor?
(v) Which of the performance parameters of a DC motor will decrease when the supply voltage of a DC motor is increased?

GROUP –B
(**Short Answer Type Questions**)
Answer *any three* of the following

3x5 = 15

2. What are the advantages of Electric Drives?

3. A 220 Volt, 200 Amp, 800 rpm DC separately excited motor has an armature of 0.06 Ohm. The motor armature is fed from a variable voltage source with an internal resistance of 0.04 Ohm. Calculate internal voltage of the variable voltage source when the motor is operating in regenerative braking at 80% of the rated motor torque and 600rpm.

4. State and explain the important features of various braking methods of DC motors.
5. Explain the operating characteristics of an induction motor.

GROUP –C
(**Long Answer Type Questions**)
Answer *any two* of the following

2x10 = 20

6. Explain the operation of single phase full controlled rectifier control of DC separately excited motor.
7. Explain different speed control methods in DC motor drives.

8. The power input to a three phase induction motor is 60 kW. The stator losses total 1kW. Find the total mechanical power developed and the rotor copper loss per phase if the motor is running with slip of 3%.

(END)

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: B. Tech Semester: VI
Stream: ME
PAPER TITLE: Thermal Engineering PAPER CODE: EME43102
Maximum Marks: 40 Time duration: 3 hours
Total No of questions: 08 Total No of Pages: 02

Instruction for the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

Answer all the Groups

Group A

Answer all the questions of the following $5 \times 1 = 5$

1. a) Define Brake Power and Indicated Power

b) State the factors which influence the speed of flame propagation

c) Define dew point temperature

d) Why multistage compression is used for higher pressure output?

e) Illustrate Dual cycle in P-V and T-S plots

GROUP –B

(Short Answer Type Questions)

Answer *any three* of the following $3 \times 5 = 15$

2. Write short notes on SI and CI engine fuels rating parameter

3. Derive an expression for Otto Cycle efficiency.

4. State the differences between carburetors and fuel injection system

5. Write a short note on Stages of combustion in CI engine

GROUP –C
(**Long Answer Type Questions**)

Answer *any two* of the following $\mathbf{2 \times 10 = 20}$

6. i) State the advantages of multistage air compression.
ii) Prove that work-done by single acting compressor without clearance volume is given by [3+7]

$$\mathbf{WD} = \frac{n}{n-1} p_1 v_1 \left[\left(\frac{p_2}{p_1} \right)^{\frac{n-1}{n}} - 1 \right]$$

7. i) Explain standard VCRS system and outline the differences with Carnot Refrigeration cycle.
ii) With neat sketches, explain the working principle of Vapour absorption refrigeration systems. [5+5]

8. i) The volumetric analysis of a gas CO_2=14%, CO=1%, O_2=5%, N_2=80%. Calculate the Fuel gas composition by mass.
ii) A 4 cylinder 4 stroke spark ignition engine has a displacement volume of 300cc per cylinder, the compression ratio of engine is10 and operates at a speed of 3000 rpm. The engine is required to develop an output of 40 kW at this speed. Calculate the cycle efficiency, the rate of heat addition, the mean effective pressure, max. Temperature of the cycle, assume the engine operates on Otto cycle and pressure & temperature at inlet are 1 bar and 27˚C. If the above engine is a CI engine operating on diesel cycle, and receiving heat at same rate. Calculate efficiency, max. Temperature, power output and mean effective pressure. [4+6]

ADAMAS UNIVERSITY
END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: B. Tech
Stream: ME
Semester: VI

PAPER TITLE: MACHINE TOOLS AND MACHINING
PAPER CODE: EME43104

Maximum Marks: 40
Time duration: 3 Hours

Total No of questions: 08
Total No of Pages: 01

Instruction to the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

Answer all the Groups

Group A

Answer all the questions of the following $5 \times 1 = 5$

1. **a)** what is shear plane in orthogonal metal cutting
b) Represent hobbing operation in Generatrix and Directrix (G/D) method.
c) How many motions are provided to the tool and job together in gear shaping machine?
d) The cutting tool is reciprocated in shaping machine by which mechanism?
e) Which mechanism is used for changing feed in center lathe?

GROUP –B
(Short Answer Type Questions)

Answer *any three* of the following $3 \times 5 = 15$

2. Differentiate between shaping, planning and slotting as regards to relative tool and work motion.
3. Discuss working principles of the cylindrical grinding process. In what way centreless process is more advantageous than cylindrical grinding process? 3+2
4. A grey cast iron shaft is machined in a center lathe in 1 min with a single cut. The shaft is 100 mm long and 75 mm in diameter. If the feed used is 0.30 mm/revolution, what was the cutting speed used? Assume over run = 2 mm.
5. If the point angle of a twist drill is unsymmetrical with the axis, then what type of a hole profile can be generated? Draw the picture of imagined profile.

GROUP –C
(Long Answer Type Questions)

Answer *any two* of the following $2 \times 10 = 20$

6. Define cutting speed, feed and depth of cut as applied to drilling operations. What are the major factors on which these three factors depend? 5+5
7. Write various gear production methods. Explain any two of them with neat sketches. 4+6
8. What are Write a typical nomenclature of a single point cutting tool.

ADAMAS UNIVERSITY
END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: B. Tech
Stream: ME PAPER TITLE: **Computational Fluid Dynamics**
Maximum Marks: 40
Total No of questions: 08

Semester: VI
PAPER CODE: EME43106
Time duration: 3 Hours
Total No of Pages: 02

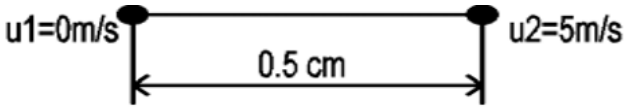
Instruction to the Candidate:
1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

Answer all the Groups

Group A

Answer all the questions of the following $5 \times 1 = 5$

1. **a)** The fluid is subdivided into fluid parcels and every fluid parcel is followed as it moves through space and time. Which kind of formulation is this?
b) Write down the independent variables in the Navier-Stokes equations?
c) An extra grid is used before the physical boundary. What is the use of this grid?
d) What is the method used in CFD to solve partial differential equations?
e) Find out du/dr of this given problem using Finite Difference Method.



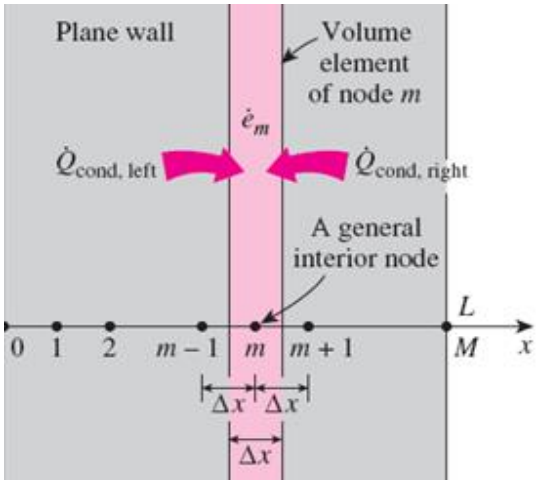
GROUP –B
(Short Answer Type Questions)
Answer *any three* of the following $3 \times 5 = 15$

2. Derive FTCS scheme of 1D heat equation having Dirichlet BC. [5]

3. Classify PDEs. Show the conditions when a PDE can be elliptic, parabolic and hyperbolic. [1+4]

4. Write down the criteria of getting convergence and stability of a PDE. Elaborate with example. [3+2]

5. Formulate the equation for the node 'm' using FDM of this given problem.



GROUP –C
(Long Answer Type Questions)

Answer *any two* of the following $2 \times 10 = 20$

6. Find out u (0.25, 0.25) for the given problem using FTCS scheme. [10]

$$\frac{\partial^2 u(x,t)}{\partial^2 x} - \frac{\partial u(x,t)}{\partial t} = 0$$

$$u(0,t) = u(1,t) = 0$$

$$u(x,0) = \sin(\pi x)$$

Use $h = 0.25,\ \ k = 0.25$ to find $u(x,t)$ for $x \in [0,1], t \in [0,1]$

7. Solve the heat equation by using explicit method. [10]

8. Give and explain the five errors in CFD and give examples. How can they be determined and reduced? [10]

ADAMAS UNIVERSITY
School of Engineering and Technology
END-TERM EXAMINATION (July 2020)
Department of CSE/ME/ECE/EE
B. Tech
3rd Year
Semester – VI

Maximum Marks: 40 **Times:** 3 Hours
Name of Paper: Management I **Paper Code:** MBA43144
Total No. of Questions: 14 **Total No. of Pages:** 1

Section A

Write Short Notes on the followings: **5 x 2 Marks = 10 Marks**

1. Management 2. Directing 3. Efficiency
4. Forecasting 5. Six Sigma

Section B

Answer any Five **5 x 4 Marks = 20 Marks**

6. What do you mean by Planning? Discuss in brief different types of plans.
7. Explain the concept of Management by Objectives (MBO).
8. What do you mean by Control? Discuss in brief the control process.
9. Explain the concept of Total Quality Management.
10. What do you mean by Material Management? Discuss in brief the objectives of Material Management.
11. Discuss in brief the motivation theory of X and Y.
12. From the below information calculate Re-Order Level, Minimum Level and Minimum Level:

	A	**B**
Maximum Consumption per week (in units)	250	250
Average Consumption per week (in Units)	175	175
Minimum Consumption per week (in units)	100	100
Re-order period in weeks	8 to 12	4 to 8
Re-order qty (in units)	300	500

Section C

Answer any One **1 x 10 Marks = 10 marks**

13. What do you mean by Scientific Management? Discuss the principles of Scientific Management. Also discuss in brief the different experiments conducted by the initial authors in this school of thoughts.

14. Describe the concept of Industrial Management. Also discuss the importance and problems of Industrial Management.