	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE **Summer Examination – 2023** **Course: B. Tech. Branch: Mechanical Engg. Semester: VIII** **Subject Code & Name: BTMEC801A Fundamentals of Automotive Systems** **Max Marks: 60 Date: Duration: 3 Hr.**		
	Instructions to the Students: *1. All the questions are compulsory.* *2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.* *3. Use of non-programmable scientific calculators is allowed.* *4. Assume suitable data wherever necessary and mention it clearly.*		
		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	Give the classification of IC engine.	**CO1**	**6**
B)	Define following terms. 1) Indicated Power 2) Friction Power 3) Brake Power	**CO1**	**6**
C)	Explain stages of combustion SI engine.	**CO1**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	Explain factors affecting Carburetion.	**CO2**	**6**
B)	Explain emission control systems used in IC engine.	**CO2**	**6**
C)	What are the requirements of an automotive Power train?	**CO1**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	Explain function of Cushion spring, Anti rattle spring, Torsion spring.	**CO1**	**6**
B)	Write various requirements of an automobile clutch.	**CO1**	**6**
C)	Explain necessity of transmission in automobile.	**CO1**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	Explain with neat sketch Anti-Lock Brake system.	**CO1**	**6**
B)	Explain desirable properties of Brake fluid.	**CO2**	**6**
C)	Explain following terms 1) Caster angle 2) Toe-In & Toe-out 3) Camber angle	**CO1**	**6**
Q. 5	**Solve Any Two of the following.**		**12**
A)	Explain following terms 1) Sprung mass 2)Un sprung mass 3) Loosely Sprung mass	**CO1**	**6**
B)	Give classification of Electrified Power Train.	**CO1**	**6**

C)	Explain terms related to tyre 1) Tyre aspect ratio 2) Tyre specification	**CO1**	**6**
	***** End *****		

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	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE **Summer Examination – 2023** **Course: B. Tech. Branch :Mechanical Semester :VIII** **Subject Code & Name: BTMEC801F / NON CONVENTIONAL ENERGY RESOURCES** **Max Marks: 60 Date: Duration: 3 Hr.**		
	Instructions to the Students: *1. All the questions are compulsory.* *2. Draw neat sketches wherever necessary.*		
		(Level/CO)	Marks
1.	**Solve any one of the following questions**		
A.	i. What are non- conventional energy sources? ii. Differentiate conventional and non-conventional energy resources. iii. Write down at least 3 methods by which energy crisis can be addressed.		12
B.	Write a note on national energy strategies and national energy plan.		12
2.	**Solve any 2 of the following questions**		
A.	Explain Solar Budget.		6
B.	Define i. Solar Constant ii. Solar Spectrum iii. Day length hours		6
C.	What is Solar cell? Explain its construction and working.		6
3.	**Solve any 2 of the following questions**		
A.	Explain with a neat sketch solar flat plate collector as solar air heater.		6
B.	Explain the consequences of energy consumption with few examples.		6
C.	Name the types of rotors in wind mill. Draw a neat labeled sketch of Propeller type of wind turbine and explain.		6
4	**Solve any one of the following questions**		
A	Explain with neat sketches, working of i) Ocean thermal energy conversion power plant. ii) Geothermal energy power plant.		12
B	With the help of a simple diagram explain the basic working of a Battery. Why are Lithium-ion batteries more suitable for Electrical Vehicle? Explain in detail its construction and working.		12
5	**Solve any 2 of the following question**		
A	Explain with neat sketches, the principle and working of the following i. Fuel cell ii. Magneto Hydrodynamic Power Plant		6
B	Explain the role of Flywheel and Supercapacitors in Energy Storage Technology.		6
C	What is Polarization Curve? Explain its application.		6
	***** End *****		

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch: Mechanical Engineering Semester: VIII

Subject Code & Name: BTMEC801A Fundamentals of Automotive Systems

Max Marks: 60 Date:04/07/2022 Duration: 3.45 Hr.

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	What are the limitations of the supercharging in an IC engine?		06
B)	Briefly explain the following: (i) time loss factor (ii) heat loss factor (iii) exhaust blowdown factor.		06
C)	Explain the loop scavenging process in two-stroke engine with neat schematic diagram.		06
Q.2	**Solve Any Two the following.**		
A)	Explain the stages of combustion in CI engine?		06
B)	Briefly discuss the air--fuel ratio of a petrol engine from no load to full load.		06
C)	Explain the exhaust gas recirculation (EGR) method for controlling the emissions from the engine.		06
Q. 3	**Solve Any Two of the following.**		
A)	Explain the engine power-torque vs speed characteristics for actual internal combustion engine with suitable performance curve.		06
B)	Explain the working of clutch in automotive with suitable layout.		06
C)	Describe the working of multi speed gear box		06
Q.4	**Solve the following.**		
A)	Explain the hydraulic braking system.		06
B)	What is antilock braking system? Explain with suitable diagram.		06
Q. 5	**Solve Any Two of the following.**		
A)	Explain the hydraulic power steering system with suitable schematic diagram.		06
B)	Describe the various types of front suspension systems.		06
C)	What are the causes of tyre heat and how can it be reduced?		06

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. **Branch: Automobile/ Production/Mechanical Engineering.**

Semester : VIII **Subject Code: BTMEC801F/ BTAMC801F**

Subject Name: Non-Conventional Energy Resources

Max Marks: 60 **Date: 07/07/2022** **Duration: 3.45 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	What is fossil fuel? What are different alternatives for fossil fuel?		6
B)	Explain national energy strategies and National energy plan		6
C)	Explain energy consumption as a measure of prosperity and world energy future.		6
Q.2	**Solve Any Two of the following.**		
A)	Explain solar energy as alternative energy source.		6
B)	Explain solar energy conversion systems and their applications.		6
C)	Explain with neat sketch solar flat plate collector as solar air heater.		6
Q. 3	**Solve Any Two of the following.**		
A)	Explain the following terms 1. Solar constant. 2. Solar spectrum. 3. Clarity Index. 4. Declination angle. 5. Zenith angle. 6. Day length hours.		6
B)	Explain principle of working of a solar cell.		6
C)	Explain various types of commercial solar cells.		6
Q.4	**Solve Any Two of the following.**		
A)	What is wind data and energy estimation in wind energy?		6
B)	What are various types of rotors in wind mill? Draw a neat labelled sketch of propeller type of wind machine.		6
C)	What is principle of OTEC? Draw neat labelled sketch of open cycle OTEC power plant.		6
Q. 5	**Solve Any Two of the following.**		
A)	Explain principle of MHD power generation.		6
B)	Write design and principle of operation of a fuel cell.		6
C)	Explain with neat sketch working of Lithium ion Batteries.		6

***** End *****