Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem Examination May-2023

ME3CO15 I. C. Engines

Programme: B.Tech. Branch/Specialisation: ME

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. A stoichiometric air fuel ratio is _____. **1**

(a) Chemically correct mixture (b) Lean mixture

(c) Rich mixture for idling (d) Rich mixture for overloads

ii. The theoretically correct air fuel ratio for petrol engine is of the order of _____. **1**

(a) 6:1 (b) 9:1 (c) 12:1 (d) 15:1

iii. What is the combustion in spark ignition engine? **1**

(a) Heterogeneous (b) Laminar

(c) Homogeneous (d) None of these

iv. Which of the following does not relate to BS-III spark ignition engine? **1**

(a) Spark plug (b) Carburetor (c) Fuel injector (d) Ignition coil

v. The combustion in compression ignition engine is _____. **1**

(a) Homogeneous (b) Heterogeneous

(c) Laminar (d) None of these

vi. In a diesel engine, the fuel is ignited by _____. **1**

(a) Spark

(b) Injected fuel

(c) Heat resulting from compressing the air that is supplied for combustion

(d) Combustion chamber

vii. What is volumetric efficiency? **1**

(a) A measure of the power of the engine

(b) A measure of the speed of the engine

(c) A measure of pressure rise in the cylinder

(d) A measure of breathing capacity of the engine

P.T.O.

viii. _____ is the difference between indicated and brake power of an engine. **1**

(a) Air flow (b) Emissions
(c) Friction power (d) None of these

ix. How does the supercharger increase power output? **1**

(a) By increasing the charge pressure
(b) By increasing the charge temperature
(c) By increasing the speed of the engine
(d) By increasing the quantity of fuel admitted

x. Which type of supercharger is used at low speeds? **1**

(a) Centrifugal type supercharger
(b) Vane type supercharger
(c) Root's supercharger
(d) Twin-screw supercharger

Q.2 i. Write any four performance parameters of an I. C. Engine. **4**

ii. Compare with at least six point the air standard and actual cycles. **6**

OR iii. Discuss the effect of variable specific heats and dissociation losses on performance of fuel air cycle. **6**

Q.3 i. Discuss in brief the different types of combustion chambers for S. I. Engine. **4**

ii. Discuss the stages of combustion in detail with the help of diagram. **6**

OR iii. Explain the effect of any six engine variables on flame front propagation for S. I. Engine. **6**

Q.4 i. What are different types of combustion chambers for C. I. Engine? **4**

ii. Explain the effect of any six engine variables on delay period for C. I. Engine. **6**

OR iii. Compare with at least six points the knocking in petrol and detonation in diesel engine. **6**

Q.5 i. Explain the Morse test in detail. **4**

ii. Write different methods for measurement of indicated power of an I. C. engine and explain any one in detail with diagram. **6**

OR iii. Explain the measurement of frictional power by Willan's line method with the help of diagram. **6**

Q.6 i. Explain need and effect of supercharging in brief. **4**

ii. Draw the main four types of arrangement of supercharging and explain any one of them. **6**

OR iii. Write any three limitations of supercharging and any three advantages of turbocharging. **6**

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Marking Scheme
ME3CO15 (T) I. C. Engines

Q.1	i)	A stoichiometric air fuel ratio is _____. **(a) Chemically correct mixture**	**1**
	ii)	The theoretically correct air fuel ratio for petrol engine is of the order of _____. **(d) 15:1**	**1**
	iii)	What is the combustion in spark ignition engine? **(c) Homogeneous**	**1**
	iv)	Which of the following does not relate to spark ignition engine? **(c) Fuel injector**	**1**
	v)	The combustion in compression ignition engine is _____. **(b) Heterogeneous**	**1**
	vi)	In a diesel engine, the fuel is ignited by _____. **(c) Heat resulting from compressing the air that is supplied for combustion**	**1**
	vii)	What is volumetric efficiency? **(d) A measure of breathing capacity of the engine**	**1**
	viii)	_____ is the difference between indicated and brake power of an engine. **(c) Friction power**	**1**
	ix)	How does the supercharger increase power output? **(a) By increasing the charge pressure**	**1**
	x)	Which type of supercharger is used at low speeds? **(a) Centrifugal type supercharger**	**1**
Q.2	i.	Write any four performance parameters of an I. C. Engine.	**1*4**
	ii.	Compare with at least six point the air standard and actual cycles.	**1*6**
OR	iii.	Discuss the effect of variable specific heats and dissociation losses on performance of fuel air cycle.	**3+3**

Q.3	i.	Discuss in brief the different types of combustion chambers for S. I. Engine.	**1*4**
	ii.	Discuss the stages of combustion in detail with the help of diagram.	**(1.5*3) + (1.5-Dig.)**
OR	iii.	Explain the effect of any six engine variables on flame front propagation for S. I. Engine.	**1*6**
Q.4	i.	What audiflent types of combention chamber for C.I Engine	**2+2**
	ii.	Explain the effect of any six engine variables on delay period for C. I. Engine.	**1*6**
OR	iii.	Compare with at least six points the knocking in petrol and detonation in diesel engine.	**1*6**
Q.5	i.	Explain the Morse test in detail.	**4**
	ii.	Write different methods for measurement of indicated power of an I. C. engine and explain any one in detail with diagram.	**2+4**
OR	iii.	Explain the measurement of frictional power by Willan's line method with the help of diagram.	**4 + (2-Dig.)**
Q.6	i.	Explain need and effect of supercharging in brief.	**2+2**
	ii.	Draw the main four types of arrangement of supercharging and explain any one of them.	**4+2**
	iii.	Write any three limitations of supercharging and any three advantages of turbocharging.	**3+3**

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