



# Sanjay Ghodawat University, Kolhapur

2017-18

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

FY B Tech

School of Technology

Semester I

FYT 105

Elements of Mechanical Engineering

Max Marks: 100

~~Nov~~ 2017

End Semester Examination (ESE)

Time: 3 Hrs

8DEC

- Instructions for Students:** 1) Use of non-programmable calculator is allowed  
2) All questions are compulsory

		Marks	COs
<b>Q1</b>	a) 12 kg of air per minute is delivered by a centrifugal air compressor. At inlet the velocity is 12m/s, pressure is 1 bar and specific volume is 0.5m <sup>3</sup> /Kg. The outlet conditions are 90 m/s, 8 bar and 0.14 m <sup>3</sup> /Kg. The increase in enthalpy of air passing through compressor is 150 KJ/Kg and heat loss to surrounding is 700 KJ/min. Find the motor power required to drive the compressor in KW.	06	CO1
	b) Solve any Two		
	i) Explain types of thermodynamic system with an engineering examples of each.	05	CO1
	ii) State Similarities between Heat & Work	05	CO1
	iii) Write statements of second law of thermodynamics.	05	CO1
<b>Q2</b>	Solve any Two		
	a) Explain with neat sketch vapour compression refrigeration system.	08	CO3
	b) Explain construction of winter air condition system. State the function of each element used in it.	08	CO3
	c) Compare vapour compression refrigeration system & vapour absorption refrigeration system	08	CO3

<b>Q3</b>	Write short notes on <b>any Three</b>	18	
a)	Classification of IC engine	06	CO2
b)	Working two stroke petrol engine	06	CO2
c)	Four stroke Diesel engine	06	CO2
d)	Comparison of SI & CI engine	06	CO2
		<b>Marks</b>	<b>COs</b>
<b>Q4</b>	a) Give classification of manufacturing process	06	CO6
	b) Solve <b>any Two</b>		
	i) Draw neat sketch of any four operations performed on lathe	05	CO6
	ii) Explain with neat sketch rolling process.	05	CO6
	iii) Compare hot working & cold working process	05	CO6
<b>Q5</b>	Solve <b>any Two</b>		
a)	Derive an expression for length of belt for open belt drive system	08	CO5
b)	Explain with neat sketch types of gear trains	08	CO5
c)	Explain with neat sketch working of double acting reciprocating compressor	08	CO5
<b>Q6</b>	Write short notes on <b>any Three</b>	18	
a)	Hydropower plant	06	CO4
b)	Nuclear Power plant	06	CO4
c)	Classification of energy sources	06	CO4
d)	Applications of solar energy	06	CO4

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