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BMS College of Engineering, Bangalore-560019

(Autonomous Institute, Affiliated to VTU, Belgaum)

January 2017 Semester End Make Up Examinations

Course: **Elements of Mechanical Engineering** Duration: **3 hrs**
Course Code: **14ME1ICEME** Max Marks: **100**

Date: 16.01.2017

Instructions: **1. Answer any five full questions choosing one from each unit.**
2. Assume missing data (if any) suitably

UNIT 1

1	a)	Explain briefly the principle of conversion of solar energy directly into electrical energy in solar cell.	**05**
	b)	Summarize and draw the temperature-enthalpy diagram and explain i) Sensible heat, II) Latent Heat. III) Super heat and IV) Saturation Temperature	**05**
	c)	List Five different Boiler Mounting and accessories and mention their functions.	**05**
	d)	Any five difference b/w Water tube boilers and Fire tube boilers.	**05**

UNIT 2

2	a)	Name different methods of Compounding of steam turbine. Explain Velocity compounding and Pressure compounding.	**06**
	b)	Compare open cycle gas Turbine with closed cycle gas Turbine.	**06**
	c)	With neat sketch show how the Vapour compression Refrigerator works	**08**

UNIT 3

3	a)	With neat sketch Explain the working of Four stroke Diesel Engine	**10**
	b)	The following observations were obtained during a trail on a four-Stroke diesel engine 1) Cylinder Dia 25 cm, 2) Stroke=40cm, 3) Speed=250rpm, 4) Brake load=70kg, 5) Brake drum dia=2m, 6) Pressure=6bar, 7) Diesel oil consumption=0.1m^3/min, 8) Specific gravity of diesel=0.78, 9) Calorific value=43900kJ/kg. Find1) B.P, 2) I.P, 3) F.P, 4) Mechanical efficiency 5) Brake Thermal efficiency 6) Indicated Thermal efficiency	**10**

OR

4	a)	Compare 2-stroke I.C.Engine with 4-stroke I.C.Engine.	**10**
	b)	Show with sketch indicate different flame formation in gas welding.	**06**
	c)	Differentiate between Welding and Soldering.	**04**

UNIT 4

5	a)	Explain with a neat sketch different parts of Lathe	**10**
	b)	Briefly Explain the following operation performed on Drilling Machine with neat sketch. 1) Tapping, 2) Boring, 3) Counter Boring, 4) Counter sinking and5) Spot facing.	**10**

OR

6	a)	With a neat sketch explain horizontal milling Machine.	**08**
	b)	Explain the following operation performed on milling Machine with neat sketch. 1) End milling, 2) Slot milling, 3) plain milling.	**06**
	c)	With a neat sketch explain 1) surface grinding and 2) cylindrical grinding	**06**

UNIT 5

7	a)	An engine shaft running at 100rpm is to drive a parallel shaft at 200 rpm. The pulley on the driving shaft is 35 cm in diameter. Find the diameter of driven pulley and Calculate linear velocity of the belt and the velocity ratio.	**06**
	b)	With a Neat sketch explain Ball Bearing and roller Bearing.	**08**
	c)	Show with a simple block diagram explain open loop and closed loop control system	**06**

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