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ME14/24

First/Second Semester B.E. Degree Examination, Dec.2010/Jan.2020 **Elements of Mechanical Engineering**

	Tin	ne: 3 ł	nrs. Max. M	Aarks: 100
		Not	e: Answer any FIVE full questions, choosing ONE full question from each mod	ule.
cd <u>CL</u>				
E			Module-1	
	1	a. Ex	plain with a neat sketch the working of a nuclear power plant.	(10 Marks)
+)	-	b. Di	stinguish between renewable and non-renewable source of energy with suitable	examples.
l.)				(06 Marks)
U , 0 ct _		ł	Explain higher calorific value and lower calorific value.	(04 Marks)
			OR	
to li	2	a. Ex	plain the formation of steam at constant pressure, with suitable sketches.	(10 Marks)
E ,J, T "1-		b. W	ith a neat sketch, explain the working of a Bobcock and Wilcox boiler, show	v the path of
,i,		f	lue gases.	(10 Marks)
co =				
a i: 0:			Module-2	
αv,	3	a. Ex	plain the principle of working of impulse and reaction t ubbine .	(10 Marks)
0		b. 1	Differentiate between open and closed cycle gas turbine.	(05 Marks)
		с.	With a neat sketch, explain the working of Pelton wheel.	(05 Marks)
$7\underline{t}1 \underline{0}$			- CIT	
			OR OR	
	4	a.	With the help of a PV diagram, explain the working of a four stroke diesel engine	e.
-0 c		አ ጥኑ	a following observations were obtained during a trial on a' four stroke discal or	(10 Marks)
<u>ο</u> Ω		0.11	-25 cm -25 cm	igine.
··")··"⊪ i E	Stre		-25 m	
т <i>L</i> .	Suc		C_{rank} shaft speed -250 rpm	
			Brake load -70 kg	
. 4,,:-4			Brake drum diameter $= 2m$	
c, -5			Mean effective pressure $= 6bar$	
. 72			Diesel oil consumption $= 0. \lim^{a} / \min$	
trl 0 atO			Specific gravity of diesel $= 0.78$	
_E =			Calorific value of diesel = $4390010/\text{kg}$	
Ρt			Find:	
" →,			i) Brake power	
; r.i			ii) Indicated power	
1 '			iii) Frictional power	
ī			iv) Mechanical efficiency	
			v) Brake thermal efficiency	
0			vi) Indicated thermal efficiency.	(10 Marks)
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Module-3

5	a.	Explain the taper turning by swiveling of the compound rest, with a neat sketch.	(10 Marks)
	b.	Explain Boring operation on a drilling machine with simple sketch.	(06 Marks)
	c.	List out the various operations that can be performed on a milling machine.	(04 Marks)
		OR	
6	a.	With the help of simple diagrams, explain various types of Robot joints.	(10 Marks)
	b.	Define automation. Explain different types of automation.	(10 Marks)
		Module-4	

7	a. F	How do you classify engineering materials?	(05 Marks)
	b.	Define composite material. Explain metal matrix composite and polymer matrix	composite.
			(10 Marks)
	c.	State the various applications of composite materials.	(05 Marks)
		OP	

OR

8	a. E	Explain the principle of arc welding, with a neat sketch.	(10 Marks)
	b.	What are the applications of welding?	(04 Marks
	c.	Differentiate between soldering and brazing.	(06 Marks)

Module-5

9	a. I	Describe with a neat sketch the working of a vapour absorption refrigerator.	(10 Marks)
	b.	Explain the basic concepts of refrigeration.	(06 Marks)
	c.	Name the refrigerants that are commonly used.	(04 Marks)
		C S	
		OR •	

10	a. Draw a neat sketch of a room air conditioner and explain its working principle.	(10 Marks)
	b. What are the properties of a good refrigerant? Explain.	(10 Marks)

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