		Reg.No.											
INTERNATIONAL CENTRE FOR APPLIED SCIENCES (Manipal University) II SEMESTER B.S. DEGREE EXAMINATION – NOV. / DEC. 2016 SUBJECT: BASIC MECHANICAL ENGINEERING (ME 123) (BRANCH: MECHANICAL) Monday, 12 December 2016													
Time	e: 3 Hours								N	lax. N	Mark	s: 100	_
 ✓ Answer ANY FIVE full Questions. ✓ Use of steam tables is permitted. 													
1A)	Equal quantity of steam is supplied two pipe connections. One boiler boiler supplies superheated steat boilers and in the mixing chamber of the steam in the mixing cham steam as 2.25k l/kg%	ed to a mi supplies am at 308 is 15bar. nber. Ass	xing stear 3ºC. Dete ume	chan m wh The ermin the	nber hich i stea e the spec	from s 9% m pi qua ific h	two 6 we ⁻ ressu lity a leat o	boile t and ire ir nd te of su	rs th I the bot mpei perh	rough othe h the rature eated	n r e e d		
1B)	Explain the functions of an evapo	rator and	a cor	npres	ssor	in a v	vapo	ur co	mpre	ssior	٦		
1C)	With a neat sketch illustrating the of a reaction turbine.	e pressure	e velo	city o	chan	ges,	expla	ain th	ne wo	orkinç	g (1	0+5+	5)
2A)	A gear train consists of 4 gear respectively. Show the arrangement of 2.5.	s A, B, e ent of the	C, D gear	with s for	20, a m	40, axim	80 um s	and peec	100 I redi	teeth uctior	า า		
2B)	Explain the essential properties required for a good refrigerant.												
2C)	Sketch and explain taper turning t	oy swivelir	ng co	mpou	und to	ool re	est m	etho	d.		(8+6+6)
3A) 3B)	Mention any four differences betw with a neat diagram explain the w Draw the neat sketch of a water name the parts.	veen a 4 s vorking of tube boild	troke a sim er, in	engi Iple c dicat	ne a arbu e the	nd a retor e pat	2 stro h of	oke e flue g	engin gase	e and s and	н н с	10+10)
4A)	Explain the defects in castings												
4B)	Explain with a neat sketch, the ste	eps involve	ed in	prepa	aring	(two	box	meth	nod) a	а			
4C)	green sand mould. Explain electric arc welding proce	ss with a r	neat s	sketc	h.	· ·			,		(6+8+6)
5A) 5B)	Justify your answer: (i)An ideal refrigerant should evaporator & condenser pressure (ii)Single stage impulse turbine is iii)Engines operating on constant p Differentiate counter sinking and c	have hig above the suitable o pressure o counter bo	gh la e atm nly fc cycle vring v	atent osph or sm have with r	hea eric p all po a hig neat	at o press ower gher sketo	f ev sure. gene comp ches.	apora eratio press	ation n pla sion r	and Ints. ratio.	t		
5C)	Sketch and explain the arrangeme	ent of fast	and I	oose	pulle	∋y.					(6+8+6)

- 6A) The following data refers to a twin cylinder two stroke engine. Cylinder diameter=200mm Stroke length= 300mm Total revolutions/hour= 18000. Mean effective pressure= 6bar Fuel consumption= 15litres/hour Calorific value of the fuel= 45000kJ/kg Specific gravity of the fuel= 0.8 Determine the indicated thermal efficiency?
 6B) With a neat sketch, explain the working principle of radial drilling machine. (10+10)
- 7A) With a neat sketch explain the splash lubrication system used in IC engines?
- 7B) Differentiate between soldering and brazing.
- 7C) Explain single piece and split patterns used in casting.
- 8A) Explain the specification of lathe with a neat sketch.
- 8B) A compound gear train consists of 4 gear wheels A, B, C & D. A is the driver gear having 40 teeth and meshes with B. Gears B and C are mounted on the same shaft. C has 32 teeth. The speed is reduced from A to D by 93.75%. The speed reduction from A to B is as same as that of speed reduction from C to D. Determine the number of teeth for wheels B and D if gear C meshes with gear D. Sketch the arrangement.
- 8C) Define: a) Dry saturated steam, b) Superheated steam, c) Critical point, d) Latent heat of evaporation.
 (6+10+4)

(6+6+8)