Program: BE Mechanical Engineering

Curriculum Scheme: Revised 2012 (CBSGS)

Examination: Third Year Semester VI

Course Code: MEC 604 and Course Name: Thermal and Fluid Power Engineering

Time: 1hour Max. Marks: 50

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Note to the students: - All the Questions are compulsory and carry equal marks.

Q1.	If nozzle angle is 30°, the DE Laval turbine will have a maximum efficiency of
Option A:	0.43
Option B:	0.5
Option C:	0.75
Option D:	0.875
Q2.	For three row velocity compounded wheels, the last row of blades will do only .....of the total work
Option A:	1/4th
Option B:	1/8th
Option C:	1/12th
Option D:	1/16th
Q3.	Which aspect is not true in the control of a reaction turbine?
Option A:	Steam is only partially expanded in the nozzle, the remaining expansion takes place in the rotor blades
Option B:	reaction turbine blades are aero foil section & are asymmetrical
Option C:	different pressures exist on the two sides of the moving blades
Option D:	the number of stages required for a reaction turbine are less than those for an impulse turbine of the same power
Q4.	Which is the false statement in connection with a Parson's reaction turbine?
Option A:	both fixed & moving blades are identical
Option B:	the velocity diagram is symmetrical about a vertical center line
Option C:	the relative velocity of steam either remains constant or reduces slightly when the steam glides over moving blades
Option D:	the turbine has 50% degree of reaction
Q5.	A economizer in a steam generator performs the function of
Option A:	Pre heating the combustion air
Option B:	Pre heating the feeding water
Option C:	Pre heating the input fuel
Option D:	Raising the temperature of the steam

Q6.	Critical pressure ratio for super-heated steam flow through a nozzle is:
Option A:	0.5457
Option B:	0.578
Option C:	0.582
Option D:	0.565
Q7.	Degree of reaction is given by
Option A:	Heat drop in moving blades / total heat drop in the stage
Option B:	Heat drop in fixed blades / total heat drop in the stage
Option C:	Heat drop in moving blades / Heat drop in fixed blades
Option D:	total heat drop in the stage / Heat drop in fixed blades
Q8.	The steam leaves the nozzle at a
Option A:	High pressure and low velocity
Option B:	High-pressure and high velocity
Option C:	Low pressure and low velocity
Option D:	Low pressure and high velocity
Q9.	De-Laval turbine is a
Option A:	Single rotor impulse turbine
Option B:	Multi-rotor impulse turbine
Option C:	Impulse reaction turbine
Option D:	Parson's turbine
Q10.	Reaction turbines are used for
Option A:	low head
Option B:	high head
Option C:	high head and low discharge
Option D:	low head and high discharge
Q11.	Impulse turbine is generally fitted
Option A:	at the level of tail race
Option B:	little above the tail race
Option C:	Slightly below the tail race
Option D:	about 2.5m below the tail race to avoid cavitation
Q12.	Francis, Kaplan & Propeller turbines fall under the category of
Option A:	Impulse turbine
Option B:	Reaction Turbine
Option C:	Axial flow turbine
Option D:	Mixed Flow turbines
Q13.	In axial flow turbine water flows _____ to the axis of the turbine shaft.
Option A:	parallel
Option B:	perpendicular

Option C:	tangential
Option D:	radial
Q14.	Specific Speed for reaction turbine ranges from
Option A:	0 to 4.5
Option B:	10 to 100
Option C:	80 to 200
Option D:	250 to 300
Q15.	Which place in hydraulic turbine is most susceptible for cavitation
Option A:	inlet of draft tube
Option B:	blade inlet
Option C:	guide blade
Option D:	penstock
Q16.	Governing mechanism used in case of Pelton wheel turbine is _____
Option A:	guide vane
Option B:	nozzle needle
Option C:	control valve
Option D:	dam gates
Q17.	The cavitation in a hydraulic machine is mainly due to
Option A:	Low velocity
Option B:	High velocity
Option C:	Low pressure
Option D:	High pressure
Q18.	Which of the following is not an effect of Cavitation in a hydraulic machine?
Option A:	Causes noise & vibration of various parts
Option B:	reduces the discharge of a turbine
Option C:	Causes sudden drop in power
Option D:	Suction pressure decreases
Q19.	A gas turbine plant working on Joule cycle produces 4000 kW of power. If its work ratio is 40%, what is the power consumed by the compressor?
Option A:	2000 kW
Option B:	4000 kW
Option C:	6000 kW
Option D:	8000 kW
Q20.	"In a single-stage open-cycle gas turbine, the mass flow through the turbine is higher than the mass flow through compressor, because "
Option A:	The specific volume of air increases by use of intercooler
Option B:	The temperature of air increases in the reheater
Option C:	The combustion of fuel takes place in the combustion chamber

Option D:	The specific heats at constant pressure for incoming air and exhaust gases are equal
Q21.	Which of the following is a type of Gas Turbine Plant?
Option A:	Single Acting
Option B:	Double Acting
Option C:	Open
Option D:	Closed
Q22.	For air standard Brayton cycle, increase in the maximum temperature of the cycle, while keeping the pressure ratio the same would result in
Option A:	Increase in air standard efficiency
Option B:	Decrease in air standard efficiency
Option C:	No change in air standard efficiency
Option D:	Increase in the efficiency but reduction in net work
Q23.	Thrust power is defined as product of _____
Option A:	propulsive power and exit gas velocity
Option B:	thrust and aircraft velocity
Option C:	Thrust and exit gas velocity
Option D:	propulsive power and aircraft velocity
Q24.	The nozzle in jet propulsion engine is used to _____
Option A:	increase the outlet pressure
Option B:	increase the exit gas temperature
Option C:	increase the exit gas velocity
Option D:	atomization
Q25.	Which one these is not an advantage of Jet propulsion system
Option A:	No unbalanced force
Option B:	high speed
Option C:	high specific weight
Option D:	high efficiency