

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, November 2016
B. Tech. in Mechanical Engineering, Semester VII

Roll No.....

ME 703/728: Power Plant Engineering

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

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| Q.1A | Objective type multiple choice questions (10 questions @ 1 mark) | 10 |
| i. | The commercial sources of energy are: (a) solar, wind and biomass (b) fossil fuels, hydropower and nuclear energy (c) wood, animal wastes and agricultural wastes (d) None of the above | |
| ii. | Rankine cycle efficiency of a good steam power plant may be in the range of: (a) 15 - 20 percent (b) 35 - 45 percent (c) 70 - 80 percent (d) 90 - 95 percent | |
| iii. | For steam power plant the most suitable fuel form for coal based plant is: (a) Big size coal lump (b) Small size coal lump (c) Pulverized form of coal (d) All of them | |
| iv. | Solar thermal power generation can be achieved by: (a) using focusing collector or heliostats (b) using flat plate collectors (c) using a solar pond (d) any of the above system | |
| v. | A steam power station requires space: (a) equal to diesel power station (b) more than diesel power station (c) less than diesel power station. | |
| vi. | Mechanical efficiency of a gas turbine as compared to internal combustion reciprocating engine is : (a) Same (b) lower (c) Higher (d) None of the these | |
| vii. | The function of control rods in nuclear plants is to: (a) Control temperature (b) Control radioactive pollution (c) Control absorption of neutron (d) Control fuel consumption | |
| viii. | A pressurized water reactor employs pressurizer for the following application : (a) To maintain constant pressure in primary circuit under varying load (b) To supply high pressure steam (c) To increase pressure of water in primary circuit (d) To provide subcooled water at high pressure | |
| ix. | More efficient plants are generally used as: (a) base load plant (b) peak load plant (c) no such restriction (d) None of the above | |
| x. | If the load factor on the power station is higher: (a) Cost/unit power is less (b) Cost/unit power is more (c) Has no bearing on cost (d) None of the above | |
| Q.2 | Short answer type questions (4 questions @ 2.5 marks) | 10 |
| i. | What is the function of a cooling tower in a steam power plant? | |
| ii. | Explain in brief the spray type condenser. | |

iii.	Define Head race and tail race related to hydroelectric power plant.	
iv.	What do you understand by nuclear fission?	
Q.3A	Explain the factors to be considered while selecting the site for a hydroelectric power plant.	05
Q.3B	Differentiate between forced draught and induced draught system.	05
Q.4A	Explain the governing of Impulse turbine with a neat sketch.	05
Q.4B	List the essential components of diesel engine power plant.	05
Q.5A	Explain the working principle of an Ocean Thermal Energy Conversion (OTEC) plant.	05
Q.5B	What is meant by pump storage plant?	05
Q.6A	How cycle efficiency can be increased in combined power cycles?	05
Q.6B	Explain the characteristics of an ideal working fluid in a power cycle.	05
	OR	
Q.6B	What are the flaws of steam as working fluid in power cycle?	05
Q.7A	What do you mean by pulverized coal firing system?	05
Q.7B	Explain with a sketch, the difference between open and closed cycle gas turbine.	05
	OR	
Q.7B	List the advantages of gas turbines over I.C. engines and steam turbines.	05
Q.8	Explain the working of Dual fuel engines.	10
Q.9	Explain the operation of a travelling grate stoker with the help of neat sketch.	10
Q.10	Write a short note on economics of various power plant operations.	10
	OR	
Q.10	Explain any three types of tariffs for electrical energy.	10

-----ALL THE BEST-----