

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular/Backlog), April-May 2015

B. Tech in Electrical Engineering, Semester VI



Roll No.....

COURSE: EE 601 Generation of Electrical Power

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.

Q.1	Objective type multiple choice questions (10 questions @ 1 mark)	10
i.	Which of following power plants will take long period in erection and installation? (a) gas turbine. (b) thermal. (c) hydro. (d) nuclear.	
ii.	To improve the efficiency of thermal power plant _____ is placed between boiler and turbine. (a) ash handling point (b) air preheater. (c) economizer. (d) superheater.	
iii.	Which of the following is not base load power plant? (a) pump storage. (b) run water. (c) diesel. (d) nuclear.	
iv.	Calorific value of solid fuel is expressed as (a) KCal / gm (b) Cal / gm. (c) KCal / lt. (d) Cal / lt.	
v.	Pelton wheel turbine is a: (a) high head turbine. (b) medium head turbine. (c) low head turbine. (d) none of above.	
vi	A hydraulic turbine having rated speed of 250 rpm is connected to a synchronous generator. In order to produce power at 50 Hz, the numbers of pole are required in the generator (a) 24 (b) 16 (c) 12 (d) 6	
vii	Among the following which is not non-conventional energy? (a) wind. (b) nuclear. (c) tidal. (d) geothermal.	
viii	The function of moderator in a nuclear reactor is to (a) stop chain reaction. (b) absorb neutrons. (c) reduce the speed of neutrons. (d) reduce temperature.	
ix	With reference to hydrometer station, the graphical representation of the discharge as function of time is known as (a) hectograph. (b) hydro-graph. (c) load duration curve. (d) monograph.	

x	In a thermal power station which of the following is not a fixed cost? (a) insurance changes. (b) salary of high officials. (c) interest on capital cost of land buildings. (d) fuel and lubricating oil cost.	
Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
i	What is the effect of load factor on unit generation cost?	
ii	What is tariff? What are its objective?	
iii	What factor influence the selection of hydro power plant?	
iv	Differentiate between fertile and fissile material.	
Q.3A	Discuss the comparative study of all conventional power plants.	05
Q.3B	Write short note on spot pricing and size of generating unit.	05
Q.4A	How can hydro plant s be classified according to : (a) water flow regulation (b) Head (c) Load	05
Q.4B	Discuss in brief on operating cost of hydroelectric station.	05
Q.5A	Discuss why? (a) Nuclear power plants are used only as base load plants. (b) A nuclear reactor needs a moderator material.	05
Q.5B	Write the advantages and disadvantages of nuclear power generation.	05
Q.6A	Write short note on steam plant instrumentation.	05
Q.6B	Discuss the advantages and disadvantages of using pulverized coal in steam power plant.	05
	OR	
Q.6B	What consideration have to be kept in view in siting nuclear power plant.	05
Q.7A	Differentiate between fixed and operating cost of power plants. List the items which constitute the fixed and operating costs.	05
Q.7B	Compare the advantages and disadvantages of using synchronous condenser and a capacitor for power factor improvement.	05
	OR	
Q.7B	A large industrial undertaking has a maximum demand of 50 MW at a load factor of 0.5. It has the option of getting supply from a utility or of installing its own steam plant. The cost are as under: Public supply tariff = Rs. 600 per kW of maximum demand per year + Rs. 2.50 per kWh Private steam plant Reserve capacity = 20 MW Capital Investment = Rs. 30,000 per kW Interest and depreciation = 15% fuel consumption = 0.6 per kWh Fuel cost = Rs. 1400 per 1000 kg Wages, repair and other operating expenses = Rs. 0.80 per kWh Find out the cheaper alternative.	05

Q.8	With suitable diagram explain boiling water reactor and pressurized water reactor.	10
Q.9	Draw a typical layout of gas power plant and explain its main parts.	10
Q.10	Draw and explain for a thermal plant. (a) Flue gas flow diagram (b) Water flow diagram	10
OR		
Q.10	A load of 500 kW at 0.8 pf lagging is taken by industrial concern. The tariff is Rs. 400 per KVA of maximum demand per year +100 paisa per kWh. The cost of installation of capacitor bank is Rs. 600 per year and the interest and depreciation is 11%. Find (a) The most economical power factor (b) Rating of capacitor bank to improve the power factor to this value.	10

