

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Backlog), April-May 2018

B. Tech in Electrical Engineering, Semester IV

Roll No.....

EE403: Conventional Energy Sources

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	True/False type questions (10 questions @ 1 mark)	10
i.	The classical unit of measuring radiation is Raditon.	
ii.	AGR uses Nickel dioxide as a fuel.	
iii.	The starting time of pumped storage plant is higher than thermal plant.	
iv.	Bulb turbines are suitable for large hydro plants.	
v.	The efficiency of modern steam turbines is about 50%.	
vi.	Modern thermal power plants use very few instruments.	
vii.	The efficiency of modern gas turbine plants is less than 50%.	
viii.	Diesel plants use only 4-stroke engines.	
ix.	For setting up additional generation capacity, short term load forecast is used.	
x.	As the size of the plant increases, investment cost per kW of installed capacity increases.	
Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
i.	Name some moderate materials.	
ii.	Name the types of dam.	
iii.	How are boilers classified?	
iv.	Which fuels are used in diesel electric plants?	
Q.3A	How are nuclear reactors controlled?	05
Q.3B	An isotope has a half-life of 41 days	2.5
	a) find the decay constant and average life	+
	b) what percentage of atoms initially present will decay in a period of 100 days.	2.5
Q.4A	Differentiate between the operation of a Pelton turbine and Francis turbine.	05
Q.4B	What civil engineering works are necessary for a hydroelectric project? What are their functions?	05
Q.5A	What is fluidised bed combustion? What are its advantages?	05
Q.5B	Draw a typical layout of a steam plant. Explain the main features of the layout.	05

Q.6A	Briefly discuss the fuel storage and fuel admission system of diesel electric plants.	05
Q.6B	Draw and explain the layout of medium size diesel electric plant.	05
OR		
Q.6B	Draw and explain the layout of medium size gas turbine plant.	05
Q.7A	The size of power plant is continuously increasing for the past many years. Why?	05
Q.7B	What considerations govern the selection of plant size?	05
OR		
Q.7B	How does the plant location affect the reliability of electric supply?	05
Q.8A	A 125 kVA transformer with a copper loss of 1.4 kW at full load and iron loss of 1.2 kW has the following operating schedule during the year: Full load at power factor 0.8 for 2000 hours Half load at power factor 0.8 for 2500 hours No load for the remaining hours. Find the total yearly electricity bill for the above operation at a flat rate of Rs. 2.4 per kWh.	10
Q.9A	A steam plant having an installed capacity of 200 MW is to be set up. The investment on the plant is Rs. 29000 per kW of installed capacity. The useful life of the plant may be taken as 20 years and salvage value of the plant is 25% of initial cost. Find the annual depreciation reserve by (a) straight line method (b) sinking fund method if interest rate is 7%.	05 + 05
Q.9B	Explain Indian Electricity Act 2003 in detail.	10
OR		
Q.9B	Explain Indian Electricity Grid Code in detail.	10