Name: Enrolment No:	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

Online End Semester Examination, December 2020

Program Name : M.Tech. – Energy System+ Renewable Energy Engg **Semester : III**
Course Name : Project & Financial Management in Energy Sector **Time : 03 hrs.**
Course Code : EPEC 8010 **Max. Marks : 100**

SECTION A

1. **Each question carry 5 marks**
2. **Instructions : Complete the statement / Select the correct answer(s)**

	Question	CO
Q 1	Project is (Select all the correct statements) a) Temporary b) Continuous c) Unique d) Time bound	CO1
Q 2	Risk Assessment includes (Select all the correct statements) a) Risk Identification b) Risk Analysis c) Risk Prioritization d) Emergency preparedness	CO1
Q 3	Good Project Manager should be (Select all the correct statements) a) Motivator b) Arrogant c) Designer d) Negotiator	CO2
Q 4	The tools used for project scheduling are (Select all the correct statements): a) WBS b) GANTT chart c) CPM d) PERT	CO2
Q 5	Solar PV plant projects are preferred to be executed in (Select all the correct statements) a) Self Capital investment b) RESCO mode c) BOOT model d) Unsecured loans	CO4

<table>
<tr><td>Q 6</td><td>Energy Performance Contract may be made with (Select all the correct statements)
a) Guaranteed Saving b) Shared Saving
c) PDC for Fixed EMI d) Cash Down payment</td><td>CO4</td></tr>
<tr><td colspan="3">SECTION B</td></tr>
<tr><td colspan="3">1. Each question carry 10 marks
2. Instructions : Write short / brief notes</td></tr>
<tr><td>Q 7</td><td>Illustrate the Skills required in a good Project Manager.</td><td>CO1</td></tr>
<tr><td>Q 8</td><td>Draw PERT Chart for the following task, duration and dependency given below.
And Find out:
A) Critical Path
B) Expected project duration
<table><tr><th>Task</th><th>Predecessors Tasks (Dependencies)</th><th>Time (Weeks)</th></tr><tr><td>A</td><td>-</td><td>3</td></tr><tr><td>B</td><td>-</td><td>5</td></tr><tr><td>C</td><td>-</td><td>7</td></tr><tr><td>D</td><td>A</td><td>8</td></tr><tr><td>E</td><td>B</td><td>5</td></tr><tr><td>F</td><td>C</td><td>5</td></tr><tr><td>G</td><td>E</td><td>4</td></tr><tr><td>H</td><td>F</td><td>5</td></tr><tr><td>I</td><td>D</td><td>6</td></tr><tr><td>J</td><td>G - H</td><td>4</td></tr></table></td><td>CO2</td></tr>
<tr><td>Q 9</td><td>An agency is implementing Energy efficiency measures in municipal water pumping under ESCO route. The investment is Rs. 6 crores. Present annual bill is Rs. 4 Crores. The expected savings are 20%. (Cost of power = Rs.4/kwh, Annual maintenance cost -10% of investment) The expected CDM revenues would be Rs. 50 Lakhs/year. Calculate IRR for this project after including the CDM benefit</td><td>CO3</td></tr>
<tr><td>Q 10</td><td>a) Explain the functioning of an ESCO in performance contracting.
b) Briefly describe three kind of Performance Contracting in ESCO.</td><td>CO4</td></tr>
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Q 11	Explain the requirements of a project Closure Report.	CO5
	SECTION-C	
	1. Question carries 20 Marks. **2. Instruction: Write long answer.**	
Q 12	100 numbers of fused 60 Watt incandescent light bulbs (ILB) are replaced by same numbers of 12 Watt CFL instead of new ILB. Considering life of ILB and CFL as 1000 hours and 4000 hours respectively. Calculate the following for 4000 hours of operation per year. **(i)** The annual "kWh saved" **(ii)** The annual "kVAh saved" if the power factor of the CFL is 0.6. **(iii)** The annual reduction in electricity costs if Rs. 4 per kWh is the energy charge and Rs. 250 per kVA per month is the demand charge. **(iv)** The simple payback period if the ILB costs Rs. 10 and the CFL costs Rs. 100 **OR** Two energy conservation projects have been proposed. For the first project, a capital investment of Rs.1,15,000/- is required and the net annual saving is Rs. 20,000/- for 10 years. Salvage value at the end of 10 years is Rs. 10000/=. For the second project, a capital investment of Rs. 1,50,000/- produces a savings of Rs. 20,000/- for first 3 years and Rs. 25,000/- for next 7 years. Salvage value at the end of 10 years for the second project is Rs. 12,000/-. **A)** Determine the NPV for both the projects with a discount factor of 9%. **B)** Which project is more financially attractive?	CO3