

Hall Ticket Number :

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R11/R13

Code: 1G585

IV B.Tech. II Semester Advanced Supplementary Examinations June 2017

Non Conventional Sources of Energy

(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

- 1 a) What is a solar constant? What is the difference between extra terrestrial and terrestrial solar radiations? Give reasons for the difference. 6M
- b) Explain the working of any one of the following with the help of a neat sketch
 - i) Pyranometer
 - ii) Pyrheliometer8M
- 2 a) What are the main components of a flat plate collector? Explain. 7M
- b) List different methods of harnessing solar energy. Compare the advantages and disadvantages of concentrating collector over flat plate collector. 7M
- 3 a) What is the heat extraction method in a solar pond? Describe 6M
- b) Describe the principle of solar photovoltaic conversion. Discuss the limitations of solar photovoltaic energy conversion. 8M
- 4 a) Explain the principles of wind power generation by deriving the following Expression, $P = (AV_i^3/2)$ 10M
- b) Explain the problems associated with the wind power. 4M
- 5 a) Explain in detail about anaerobic digestion and the different phases and the processes involved in it. 10M
- b) Explain the gas yield process in the bio gas plant operation. 4M
- 6 a) What are the different types of geothermal resources? How does harnessing of geothermal energy work? Explain. 7M
- b) Explain the importance of earthquakes and volcanoes in the formation of geothermal resources? 7M
- 7 a) With neat schematic explain the working of a wave energy generator. 8M
- b) Discuss the basic concepts of tidal power. 6M
- 8 Write short notes on
 - a) MHD generator
 - b) Polarization in a fuel cell. 14M

Code: 1G581

IV B.Tech. II Semester Advanced Supplementary Examinations June 2017

Production & Operations Management

(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **ONE** question
All Questions carry equal marks

1. a) What is productivity? Explain the ways to improve the productivity? 7M
- b) Describe the factors influencing the design of a product? 7M
2. a) Describe Exponential Smoothing forecasting Method with your own example? 8M
- b) A manufacturer of two wheelers interested to forecast the trend of demand for next year on the basis of past three years sales. Extract the trend component of the time series data and use it for predicting the future demand for two wheelers.

period	Year-1-Q1	Year-1-Q2	Year-1-Q3	Year-1-Q4	Year-2-Q1	Year-2-Q2	Year-2-Q3	Year-2-Q4
Demand	360	438	359	406	393	465	387	464
period	Year-3-Q1	Year-3-Q2	Year-3-Q3	Year-3-Q4				
Demand	505	618	443	540				

3. a) Describe the factors influencing the selection of plant location? 7M
- b) Briefly explain various types of plant layouts? 7M
4. a) What is aggregate planning? Explain the strategies of aggregate planning? 7M
- b) Describe the importance of ABC analysis in inventory control. 7M
5. a) Explain about continuous Review (Q) and Periodic review (P) system of Inventory Control. 10M
- b) Find out EOQ from the following
 Annual usage Rs.1,20,000
 Cost of placing and receiving one order Rs.60
 Annual carrying cost 10% of inventory value 4M

6. a) The processing time and due dates of 5 jobs A,B,C,D and E are given in the table below.

Job	Processing Time (Days)	Due date (Days from Now)
A	10	18
B	8	22
C	6	27
D	12	17
E	7	42

- b) Sequence these jobs according to Earliest Due Date rule and calculate
 - 1) Total Completion time
 - 2) Total flow time
 - 3) Average flow time
 - 4) Average no of jobs in the system
 - 5) Average job lateness
- i. The following 4 jobs A,B,C and D required to operate with the three machines of M1,M2 and M3. Their processing time is as follows.

Job	Processing Time in Hrs on Machines		
	M1	M2	M3
A	12	6	10
B	6	4	8
C	7	5	6
D	8	3	7

Using John's rule find out the optimal sequence.

7. a) What is Enterprise Resource planning (ERP)? Explain the role of ERP In functional areas of business? 8M
- b) Explain the importance of Line of balance? 6M
8. a) What is TQM? Explain the elements of TQM? 7M
- b) Describe the importance of Six Sigma in Quality control. 7M

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R11/R13

Code: 1G582

IV B.Tech. II Semester Advanced Supplementary Examinations June 2017

Power Plant Engineering

(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

1. a) Draw a line diagram of hydraulic ash handling system for modern steam power plant and explain its working. 10M
b) List the factors involved in selection of coal handling system. 4M
2. a) Explain with neat sketch, the working of an electro-static precipitator. 10M
b) Write the advantages of forced draught system over natural draught system. 4M
3. a) Draw the layout of a diesel power plant. 8M
b) List the factors to be considered for selecting a site for diesel power plant. 6M
4. a) Describe the different fuels used in gas turbine power plant. 8M
b) Write the advantages and disadvantages of gas turbine power plant. 6M
5. a) Describe the working of a pumped storage power plant. 10M
b) What is the function of surge tank in hydro electric power plant ? 4M
6. a) Explain the working of H₂-O₂ fuel cell with suitable sketch. 8M
b) List the advantages and disadvantages of tidal power plant. 6M
7. a) Describe with neat sketch, the construction and working of a Pressurized Water Reactor (PWR). 10M
b) List the factors which go in favour of nuclear energy. 4M
8. a) Discuss the requirements of tariff. 6M
b) The annual peak load on a 30 MW power station is 25 MW. The power station supplied loads having maximum demands of 10 MW, 8.5 MW, 5 MW and 4.5 MW. The annual load factor is 45 %. Find
i) Average load
ii) Energy supplied per year
iii) Diversity factor
iv) Demand factor 8M
