

## P48/HSC266/EE/20160519

Time : 3 Hours

Marks : 80

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### Instruction :

1. All Questions are Compulsory.
  2. Each Sub-question carry 5 marks.
  3. Each Sub-question should be answered between 75 to 100 words. Write every questions answer on separate page.
  4. Question paper of 80 Marks, it will be converted in to your programme structure marks.
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1. Solve any **four** sub-questions.

- a) What is molecular weight? Write molecular weight of Hydrogen, Sulphur and Carbon. 5
- b) Name a product produced with the corresponding reaction when 5
  - i) Hydrochloric acid reacts with caustic soda
  - ii) Methane reacts with oxygen
  - iii) Benzene reacts with hydrogen
- c) What are the units of measurements of following? 5

i) Power
ii) Pressure
iii) Force
iv) Heat / enthalpy
v) Volume

- d) Give relation between : 5
  - Mole % and mole fraction,
  - Normality and molarity
  - Partial pressure
  - Mole fraction and total pressure?
- e) Give reaction between Sodium Hydroxide and Sulphuric acid with balanced equation and explain. 5

2. Solve any **four** sub-questions.
- a) Write history of Chemical Engineering in brief. 5
  - b) What is dehydration? Explain with example. 5
  - c) Draw a neat flow sheet for manufacture of nitric acid. 5
  - d) What is hydrogenation? Explain with example. 5
  - e) Draw and explain any one level measurement equipment. 5
3. Solve any **four** sub-questions.
- a) Describe scales of industries bases on capital investment? 5
  - b) Describe three modes of Heat transfer with example. 5
  - c) What is chlorination? Explain with example. 5
  - d) Draw a neat flow sheet for manufacture of sulphuric acid. 5
  - e) What is driving force of Heat Transfer, Mass Transfer and Fluid Flow? 5
4. Solve any **four** sub-questions.
- a) Draw process flow sheet symbol of packed column? 5
  - b) Draw process flow sheet symbol of horizontal storage tank? 5
  - c) Which are three type of pressure measurement and manometers? 5
  - d) Draw Bob and tape indicator diagram and label it. 5
  - e) Draw Float level indicator diagram and label it. 5

