AQ – 2721

Fourth Semester M. E. (Production Tech. and Management) (P. T. and CGS) Examination

PROCESS ENGINEERING

Paper – 4 SPTM 1

P. Pages : 3

Time : Three Hours] [Max. Marks : 80

Note : (1) Separate answer book must be used for each section in the subject Geology, Engineering material of civil branch and Separate answer book must be used for Section A and B in Pharmacy and Cosmetic Tech.
(2) Answer **Three** questions from Section A and **Three** questions from Section B.
(3) Assume suitable data wherever necessary.
(4) Illustrate your answer wherever necessary with the help of neat sketches.
(5) Use of Drawing instrument is permitted.
(6) Use pen of Blue/Black ink/refill only for writing the answer book.

SECTION A

1. (a) What are the product critical areas or functional surfaces of the workpiece ? How are they identified ? 7

   (b) What are tolerance stacks and limit stacks ? 7

2. (a) Discuss the role of process engineer and why the process engineer is called 'hub' of an organization. What information a process engineer should get from a product engineer ? 8

   (b) Why is it necessary to know the producing accuracy of the process before the arbitrary selection of tolerances ? 5

3. (a) Show with neat sketches the arrangement of locators for achieving the good geometrical control in the following :—

   (i) Short square pyramid (ii) Long cylinder. 8

(b) What is meant by surface finish ? How is it represented on part print ? 5

4. (a) How does the term straightness apply to cylinder ? What problems arise in measuring straightness as it is defined ? 7

(b) What is preliminary part print analysis ? How is it done ? 6

5. (a) What are mechanical control rules for combating tool forces ? Explain with suitable examples. 7

(b) What is the impact of part configuration (Shape and size) on manufacturing the part ? 6

SECTION B

6. (a) What is basic process operations ? Why are they normally not performed in fabricating plant ? 7

(b) Explain the engineering approach for selection and planning of process. 7

7. (a) What is the relation between process selection and machine selection ? What are the various sources of information available to the process engineer to assist him in making a machine selection ? 7

(b) Explain why the flow line through the major process area leads out of this areas to auxiliary operations but remains unbroken for supporting operations ? 6

8. (a) What are the three product acceptability criteria which must be considered during process planning ? 6

(b) What is generally achieved by combining operations ? What are the disadvantages of combining ? Explain with a typical example. 7

9. (a) What is the difference between GPM and SPM ? What conditions should prevail before SPM can be justified ? 7

(b) How are the toolings used in industry classified ? Which type of tooling are advantageous ? Why ? 6

10. (a) What is an operation routing ? Prepare a operation routing for 'valve rocker lever'. 13