

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER- V (New) EXAMINATION – WINTER 2019

Subject Code: 2152307

Date: 29/11/2019

Subject Name: Plastic Extrusion Technology

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

MARKS

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|------------|-----|--|-----------|
| Q.1 | (a) | Fill in the blanks: | 03 |
| | | 1. Extruder suitable for processing UHMWPE is _____ | |
| | | 2. Die used for films is _____ | |
| | | 3. Function of Thrust bearing block is _____ | |
| | (b) | Define : Breaker plate , Reduction Gear Box, Extrusion , L/D ratio | 04 |
| | (c) | Differentiate between Single and Twin Screw Extruders in detail. | 07 |
| Q.2 | (a) | Why is hopper cooling necessary in hopper throat? | 03 |
| | (b) | Estimate the B-10 life of a thrust bearing given that:
P = 45 MPa N = 125 rpm K = 10/3
B-10 std = 1,00,000 hrs | 04 |
| | (c) | Discuss various types of heating systems in screw extruders in detail. | 07 |
| | | OR | |
| | (c) | What is Devolatilization? Discuss in detail with diagrams | 07 |
| Q.3 | (a) | Discuss manufacture of suction hoses with neat line diagram. | 03 |
| | (b) | Discuss Screw terminology like helix angle, pitch, flight depth, flight land , L/D ratio and Compression Ratio. Also mention significance. | 04 |
| | (c) | With a neat line diagram, discuss manufacture of Monofilaments . | 07 |
| | | OR | |
| Q.3 | (a) | What is the role of reduction gear box? How many types of reduction gear boxes are available in market? Give differences. | 03 |
| | (b) | Differentiate between corotating and counter rotating twin screw extruder | 04 |
| | (c) | With a neat line diagram, discuss manufacture of wires and cables | 07 |
| Q.4 | (a) | Differentiate between screen pack and breaker plate. | 03 |
| | (b) | Differentiate between AC and DC motors | 04 |
| | (c) | With a neat line diagram, discuss manufacture of LDPE films. | 07 |
| | | OR | |
| Q.4 | (a) | Discuss about mixing screws with diagrams. | 03 |
| | (b) | Discuss in detail, grooved barrel technology. | 04 |
| | (c) | With a neat line diagram, discuss manufacture of HDPE Pipes. | 07 |
| Q.5 | (a) | What are the key features of an extrusion line manufacturing HMHDPE films.? | 03 |
| | (b) | What is IBC? Explain with advantages and disadvantages | 04 |

- (c) With a neat line diagram, discuss manufacture of biaxially oriented films. **07**

OR

- Q.5** (a) Discuss thrust bearing block of twin screw extruders **03**
(b) Discuss the process of nitriding in detail. **04**
(c) Discuss raw material selection criteria for extrusion in detail. **07**

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