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SEAT No. _____

No. of printed pages: 2

SARDAR PATEL UNIVERSITY

M.Sc. (Polymer Science & Technology) Semester-IV Examination-2019

Monday, 18th March - 2019

2:00 P.M. to 5:00 P.M.

PS04CPST21: RUBBER TECHNOLOGY

Total Marks: 70

- Note: (1) Attempt all questions.
(2) Figures to the right indicate marks.

Q. 1 Answer the following multiple choice questions.

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- (1) Rubber is highly impermeable to _____.
(i) water (ii) air (iii) both i & ii (iv) none of above.
- (2) The most important source of natural rubber is from _____ tree.
(i) Hevea brasiliences (ii) Parthenium argentatum (iii) Castilla elastica
(iv) Funtumia elastica.
- (3) Rubber is planted at a typical density of _____ trees per km².
(i) 4500-5000 (ii) 400-500 (iii) 450-500 (iv) 500-600.
- (4) _____ mixing require high shear forces to bring physical change.
(i) Distributive (ii) Dispersive (iii) Extensive (iv) All of above.
- (5) Dibenzoyl peroxide used as a _____.
(i) pigment (ii) vulcanizing agent (iii) antioxidant (iv) accelerators.
- (6) _____ rubber obtain from wild trees by leaf digestion method.
(i) Gutta percha (ii) Balata (iii) Guayule (iv) Both i & ii.
- (7) 2, 6-di- t-butyl p- cresol use as a _____.
(i) retardants (ii) inhibitors (iii) antioxidants (iv) activators.
- (8) The major compounding ingredient is _____ in rubber compounding.
(i) filler (ii) antidegradent (iii) pigment (iv) plasticizer.

Q. 2 Attempt any seven of the following.

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- (1) How is levulinic aldehyde formed from rubber hydrocarbon?
- (2) Explain guayule rubber and balata.
- (3) How acetylene black is produced? Explain.
- (4) Enlist various drawbacks of raw rubber.
- (5) What do you mean by oil extended and epoxidised natural rubber? Explain.

- (6) Explain the role of antidegradant in rubber compounding.
- (7) Explain role of silane coupling agent in rubber compounding.
- (8) Write in brief about microcellular sols.
- (9) Write a note on properties of carbon black.
- Q. 3 (a) Explain following. 06
1. Cultivation.
 2. Preservation and coagulation of latex.
- (b) Write a note on following. 06
1. Chlorinated Rubber.
 2. Cyclized Rubber.

OR

- (b) Give an account on technically specified rubbers (TSR). 06
- Q. 4 (a) Discuss in detail about Styrene-butadiene rubber (SBR). 06
- (b) Describe following. 06
1. EPDM rubber.
 2. Butyl and halobutyl rubbers.

OR

- (b) Explain following. 06
1. Chloroprene Rubber (CR).
 2. Fluorocarbon elastomers.
- Q. 5 (a) Write a note on rubber compounding. 06
- (b) Describe in detail two roll mill and banbury mill in detail. 06

OR

- (b) Write a note on theory of sulphur vulcanization and accelerator action. 06
- Q. 6 (a) Write a detail note on tyre manufacturing. 06
- (b) Describe in detail about channel black method for carbon black manufacturing. 06

OR

- (b) Write a note on belting and hoses. 06

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