

SIXTH SEMESTER B Sc DEGREE EXAMINATION, MARCH 2014
(UG - CCSS)
Microbiology

MB 6B 17 – INDUSTRIAL MICROBIOLOGY

Time: Three hours

Maximum: 30 Weightage

Section A

Answer all twelve questions.

1. Bacteria that can be used for alcohol fermentation

| | |
|------------------------------------|--------------------------------|
| (a) <i>Sacharomyces cerevisiae</i> | (b) <i>Bacillus subtilis</i> . |
| (c) <i>Escherichia coli</i> . | (d) <i>Zymomonas mobilis</i> . |
2. Phenyl acetic acid derivatives are added to fermentation media of penicillin which act as

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|--------------------|----------------------|
| (a) Carbon source. | (b) Nitrogen source. |
| (c) Precursor. | (d) Promoter. |
3. For the fermentative production of Lactic acid is used as a nitrogen source.

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|--------------|----------------------------------|
| (a) Lactose. | (b) Ammonium hydrogen phosphate. |
| (c) CSL. | (d) Both b and c. |
4. *Propionibacterium freudenreichii* is used for the fermentative production of

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|---------------|-----------------|
| (a) Vitamin A | (b) Vitamin B12 |
| (c) Vitamin C | (d) Vitamin B2 |
5. is an example of SCP produced from *Actinomycetes*

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|-------------------------------|---------------------------------|
| (a) <i>Spirulina emegrece</i> | (b) <i>Nodularia spumigena</i> |
| (c) <i>Trichoderma viride</i> | (d) <i>Nocardia paraffinica</i> |
6. Crystal toxin proteins of *B. thuringiensis* get activated in the mid gut fluid of susceptible insect larvae due to its

| | |
|-----------------|-----------------------|
| (a) Acidity. | (b) Neutrality. |
| (c) Alkalinity. | (d) None of the above |
7. Amylase is an enzyme commercially used by the industry

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|-----------------------------|-------------------------------|
| (a) Brewery | (b) Meat processing industry. |
| (c) Pharmaceutical industry | (d) Fruits and pulp industry. |
8. Electrostatic precipitation is a method used for

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|-----------------------------|--------------------------|
| (a) Air sterilization. | (b) Media sterilization. |
| (c) Fermenter sterilization | (d) Inoculum preparation |
9. Roquefort cheese is ripened by

| | |
|------------------------------------|------------------------------------|
| (a) <i>Penicillium roquefortii</i> | (b) <i>Penicillium camembertii</i> |
| (c) <i>Aspergillus roquefortii</i> | (d) <i>Aspergillus niger</i> . |
10. In fermentation process seed means :

| | |
|---|---|
| (a) Culture to preserve. | (b) Culture for inoculation in to seed tank |
| (c) Culture for the inoculation of fermenter. | (d) Culture for strain improvement. |

11. Solvent extraction is a method used in
 (a) Upstream process. (b) Downstream process.
 (c) Fermentation process. (d) Both b. and c.
12. Acetic acid produced by fermentation is :
 (a) Aerobic process. (b) Anaerobic process.
 (c) Fermentative process. (d) None of this.

(12 x $\frac{1}{4}$ = 3 Weightage)**Section B***Answer all.*

13. Cone steep liquor.
 14. Batch fermenter.
 15. *Clostridium acetobutylicum*.
 16. Pectinase.
 17. Yoghurt.
 18. 'Must'
 19. Dough rising.
 20. Black strap molasses.
 21. Penicillinase.

(9 X 1 = 9 Weightage)

Section C*Answer any five out of seven*

22. Discuss briefly about bio-fertilisers and its significance in modern agriculture.
 23. Discuss the precautionary considerations for inoculum preparation and seeding for Acetone Butanol fermentation using *Clostridium acetobutylicum*.
 24. Discuss briefly about the foam control in CST reactors.
 25. What is Active dry yeast? How is it produced? What is its importance?
 26. Give an outline of Wine fermentation.
 27. Differentiate the dough rising in bread and idli batter
 28. Give an account of general methods of media sterilization.

(5 x 2 = 10 Weightage)

Section D*Answer any two.*

29. Discuss briefly about the industrial media used in fermentation industry. Give an account of media components with its importance.
 30. What do you mean by downstream process? Give an account of important steps involved with techniques.
 31. Discuss about the formation of biogas in a biogas plant. Give a brief account of its designs

(2 x 4 = 8 Weightage)