2016/ODD/07/20/BSPP–303/
BSBP–303/455

UG Odd Semester (CBCS) Exam., December—2016

B.Sc. (Honours) B.Ed

(3rd Semester)

Course No. : BSPP–303/BSBP–303

Full Marks : 50
Pass Marks : 20

Time : 2 hours

The figures in the margin indicate full marks for the questions

Candidates are to answer *either* BSPP–303 *or* BSBP–303

PHYSICS

(Pass)

Course No. : BSPP–303

(Mathematical Physics, Mechanics and Electricity)

1. *(a)* Define vector triple products. Write its two properties. 3+2=5

(b) State and prove addition law of matrices. 5

OR

2. *(a)* Define matrices multiplication. 5

(b) Write the important properties of matrix multiplication. 5

3. *(a)* State and prove the theorem of parallel axes for moment of inertia. 5

(b) Find the moment of inertia of a solid cylinder of mass M and radius R about a line parallel to the axis of the cylinder and on the surface of the cylinder. 5

OR

4. *(a)* Define simple harmonic motion with examples. 5

(b) Derive an expression of equation of motion for composition of two simple harmonic motions. 5

5. *(a)* Define elasticity. Derive the relation between elastic constants. 2+3=5

(b) Describe the construction and working of torsional pendulum. 5

OR

6. *(a)* Define viscosity of fluids with examples. 5

(b) State and prove Poiseuille's equation. 5

7. *(a)* Explain the postulates of special theory of relativity. 5

(b) Derive the expression for finite speed of a signal. 5

OR

8. *(a)* Find the expression for Lorentz transformation equation of coordinates. 5

(b) Discuss the case of relativity of simultaneity. 5

9. *(a)* Define electric field with examples. 5

(b) Derive an expression for potential as line integral of electric field. 5

OR

10. *(a)* Derive an expression for potential due to electric dipole. 5

(b) An isolated sphere has a capacitance of 50 pF.

(i) Calculate its radius.

(ii) How much charge should be placed on it to raise its potential to 10^4 V? 5

BOTANY

(Pass)

Course No. : BSBP–303

(Diversity of Microbes, Cryptogams and Angiosperms)

1. *(a)* Explain how Pasteur's experiment disapproved spontaneous generation of microbes. 5

(b) Write a short note on Kotch's postulates. 5

OR

2. *(a)* Describe the fine structure of bacterial cell membrane. 5

(b) Distinguish between prokaryotic cell and eukaryotic cell. 5

3. *(a)* Elaborate the properties and classification of plant viruses. 5

(b) Write a note on TMV. 5

OR

4. *(a)* Discuss the features of host-virus interaction. 5

(b) Write a short note on transduction. 5

5. *(a)* Explain sexual reproduction of Oedogonium. 5

(b) Describe the life cycle of Vaucheria with neat and labelled diagram. 5

OR

6. *(a)* Discuss the haplodiplobiontic-type of life cycle of Saccharomyces. 5

(b) Enumerate the significance of the spores of Ustilago. 5

7. *(a)* Briefly outline the life cycle of Marchantia. 5

(b) Describe the evolutionary perspective of sporophytes in Bryophyta. 5

OR

8. *(a)* Explain the evolution of stelar structure of Pteridophyta. 5

(b) Discuss the life cycle of Marsilea. 5

9. *(a)* Describe the salient feature of Bentham-Hooker classification of angiosperm. 5

(b) Write a note on the life cycle of Pinus. 5

OR

10. *(a)* Draw a floral diagram of Brassicaceae family. 5

(b) Explain the characteristics of Apocynaceae family. 5

★ ★ ★