

UG Even Semester (CBCS) Exam., May—2017

(4th Semester)

Course No. : BSED-402

Full Marks : 50

Pass Marks : 20

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

Physics Pass students will answer BSPP-402 and
Botany Pass students will answer BSBP-402

PHYSICS

(PASS)

Course No. : BSPP-402

(Magnetism, Heat and Thermodynamics)

UNIT—I

1. (a) Define magnetic dipole. Find the
expression for its field. 7
- (b) Write the properties of ferromagnetic
materials. 3

J7/1965

(Turn Over)

OR

2. (a) State Kirchhoff's law. Discuss sensitivity
of Wheatstone bridge. 2+5=7
- (b) Write the uses of Wheatstone bridge. 3

UNIT—II

3. (a) What is solenoid? Find the expression for
current-carrying solenoid. 2+5=7
- (b) Define magnetic shell. 3

OR

4. (a) Write the construction and working of
ballistic galvanometer. 7
- (b) Explain the figure of merit of ballistic
galvanometer. 3

UNIT—III

5. (a) Define mutual inductance. 3
- (b) Find the expression for mutual
inductance between two coils. 7

OR

6. (a) Define reactance of AC circuit. 3
- (b) Derive the equation for power consumed
in AC circuit. 7

J7/1965

(Continued)

(3)

UNIT—IV

7. (a) State Maxwell's law of distribution of velocities. Explain its experimental verification. 3+4=7
- (b) What is Brownian motion of particle? 3

OR

8. (a) Define Avogadro's number. 3
- (b) One mole of an ideal gas expands against a constant external pressure of 1 atm from a volume of 10 dm³ to 30 dm³. Calculate the work done by the gas during this expansion. 7

UNIT—V

9. (a) Define entropy. Write its properties. 3+4=7
- (b) Write the applications of second law of thermodynamics. 3

OR

10. (a) What is black-body radiation? 3
- (b) Deduce Planck's formula for black-body radiation. 7

J7/1965

(Turn Over)

(4)

BOTANY

(PASS)

Course No. : BSBP-402

(**Cytogenetics**)

1. (a) Describe the structure and chemical composition of cell wall in higher plants. 5
- (b) Draw a fine diagram and explain the ultrastructure of nuclear membrane. 5

OR

2. (a) Draw and describe the protein lipid bilayer protein model of plasma membrane. 5
- (b) Discuss the structure and function of different components of nucleus. 5
3. (a) Write a short note on satellite DNA. 5
- (b) Explain the Meselson and Stahl's experiment demonstrating semi-conservative replication of DNA. 5

OR

4. (a) Write a short note on genetic code. 5
- (b) Describe the structure and functions of endoplasmic reticulum. 5

J7/1965

(Continued)

5. (a) What is centromere? Explain the different types of chromosomes with a fine diagram. 5
(b) Give an account of structural aberration of chromosome. 5

OR

6. (a) Write short notes on euploidy and aneuploidy. 5
(b) "Non-disjunction causes abnormalities." Justify. 5
7. (a) Explain the lac operon in bacterium. 5
(b) Write a short note on Bt cotton. 5

OR

8. (a) Explain the role of molecular scissors in formation of rDNA. 5
(b) Discuss the basic aspects of plant tissue culture. 5
9. (a) What is mutation? Write short notes on induced and spontaneous mutations. 5
(b) Write a short note on linkage analysis. 5

OR

10. (a) Explain the law of independent assortment. 5
(b) Write notes on DNA damage and DNA repair. 5

★ ★ ★