BCA-104

B.C.A. (First Year) Examination, 2019

BASIC PHYSICS

Paper–IV

Time Allowed : Three Hours

Maximum Marks : 100

PART–A   [Marks : 20

Answer all questions (50 words each).

All questions carry equal marks.

PART–B   [Marks : 50

Answer **five** questions (250 words each), selecting **one** question from each Unit. All questions carry equal marks.

PART–C   [Marks : 30

Answer any **two** questions (300 words each).

All questions carry equal marks.

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PART–A

1. Answer the following questions :

   (i) What do you understand by Moment of Inertia ?

   (ii) What is the sensitivity of Eye ?

   (iii) State the Gauss's law.

   (iv) State the Thevenin theorem.

   (v) What do you understand by Thermo-electric effect ?

   (vi) What is the difference between potential and e.m.f. ?

   (vii) What are the differences between self and mutual inductances ?

   (viii) What is the Resonance ?

   (ix) What is Zener effect ?

   (x) State the Kirchhoff's law.

PART–B

UNIT–I

2. (a) Discuss the role of physics in ICT.   4

    (b) Describe the conservation of energy and momentum.   6

3. What is Telescope ? Discuss the various types of Telescopes. Derive the expression for angular magnification.   10

UNIT–II

4. (a) Derive the expression for energy store in the condenser.   4

    (b) Explain the series and parallel combination of Condensers.   6

5. (a) Explain the colour coding in resistance.   4

    (b) State and prove the maximum power transfer theorem.   6

UNIT–III

6. (a) How to convert the galvanometer into ammeter and voltmeter ? Explain.   6

   (b) What is Thermistor ? Discuss its construction and working.   4

7. (a) What is Thermocouple ? How it works ? Discuss its uses.   5

   (b) Discuss the construction and working of LDR's.   5

UNIT–IV

8. (a) Discuss the construction and working of Photodiode.   5

   (b) Discuss the construction and working of LCD.   5

9. (a) Why the good earthing is so important ? Explain.   4

(b) Determine the Peak and rms voltage and current for AC circuit.   6

UNIT-V

10. Write the short notes on the following :

    (a) Cascading amplifiers.   5

    (b) Integrated circuits (IC's).   5

11. (a) Discuss the working and application of Optical fibers.   4

    (b) Discuss the working principles of LCD and Plasma device.   6

PART-C

12. (a) Discuss the Newton's three laws of Motion with examples.   6

    (b) Discuss the defects of Vision.   4

    (c) How to measure the length using Vernier Caliper ?   5

13. Calculate the capacity of parallel plate condenser. What wil be the capacity if the space between the plates is partially filled with a slab of thickness 't' and dielectric constant 'k' ? 15

14. Discuss the principle, construction and working of Moving Coil Galvanometer. 15

15. Discuss the behaviour of a series LCR circuit for the case when $X_C > X_L$ and $X_C < X_L$. Discuss the phenomenon of resonance in LCR series circuit. What is the difference between parallel and antiparallel resonance. 15

16. Explain the principles, construction and working of Semiconductor caser. 15