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(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2021-22 ONLY)

SUBJECT CODE 21PPS3E5

REG.NO.

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : DECEMBER – 2022

M.Sc. – PHYSICS **MAXIMUM MARKS: 70**

III SEMESTER **TIME : 3 HOURS**

THIN FILM AND NANOSCIENCE

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.
MULTIPLE CHOICE QUESTIONS. (K1)

1. Chemical bath deposition is used to produce……

   a. thin films b. thick c. nano films d. multilayer of films

2. Thickness of thin fims is of the order of ……..

   a. 1A^o to 5000 A^o b. 550A^o c. 100 A^o d. 1000A^o

3. Discrepancies in optical behaviour of films are due to……

   a. inhomogenity b. composition c .inhomogenity and composition d. colour

4. FET stands for ……

   a. fringes of equal thickness b. fringes of equal ratio
   c. field thickness transmission d. field equal thickness

5. The number of transistors on a microchip doubles about every two years is according to……..

   a. Moore's law b. Debye's law c. Hooke's law d. Hawell's law

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2)

6. What are Vanderwall's forces?
7. Give the application of EDAX characterisation method.
8. Mention the significance of sol- gel method
9. How to create the tiny integrated circuits ?
10. What type of spectra is obtained in Q dots?

SECTION – B (5 X 4 = 20 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Discuss different impurities in thin films

(OR)

b) Brief the chemical bath deposition technique

(CONTD……2)

12. a) Explain HALL effect and give its applications

(OR)

b) Write short note on fringes of equal chromatic order <FECO>.

13. a) Give the classification of nanostructures

(OR)

b) List the properties of CNT

14. a) Compare and contrast top down and bottom up approach in nanosynthesis

(OR)

b) Enumerate VLS.

15. a) Discuss the operation of QUANTUM dot laser

(OR)

b) How are nanomaterials used in drug delivery system?

SECTION – C (4 X 10 = 40 MARKS)

ANSWER ANY FOUR OUT OF SIX QUESTIONS
(16th QUESTION IS COMPULSORY AND ANSWER ANY THREE QUESTIONS (FROM Qn. No : 17 to 21)

16. Give an account of chemical and physical vapour deposition techniques
17. Discuss how FET ,FECO and ELLIPSOMETRY are helpful in thin film technology?
18. Explain nanoscale dimensions on structural , thermal, chemical and mechanical properties
19. Describe growth mechanisms of nanoparticles in VLS and VS scale
20. Outline the features of i) Quantum dot sensitised solar cell
    ii) NEMS
21. Enumerate the features of silicon nanowire biosensor and SET

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ETHICAL PAPER