Register Number:……..

KUMARAGURU
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B.TECH DEGREE EXAMINATIONS: MAY 2018

(Regulation 2015)

Sixth Semester

BIOTECHNOLOGY

U15BTE204 **:** Cancer Biology

COURSE OUTCOMES

CO1: Understand the mechanism of proto-oncogene and oncogene and apoptosis

CO2: Describe the mechanism of cell cycle regulation in cancer

CO3: Attain the knowledge in the fundamentals of carcinogenesis and its role in cancer

CO4: Illustrate the mechanism of cancer metastasis

CO5: Comprehend the basis of cancer diagnosis and therapy

CO6: Apply techniques in the field of cancer diagnosis

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Match the following: CO1 [K_1]

Oncogenic virus	**Viral specification**
A. RSV	i. weakly transforming virus.
B. ALV	ii. Hepetocellular carcinoma
C. EBV	iii. acute transforming virus
D. HCV	iv. Herpesviridae

A B C D

a) ii iii iv i

b) iii iv iii ii

c) iii i iv ii

d) i iii ii iv

2. Which of the following is NOT correct statement for PDGF…….. CO1 [K_1]

   i. promotes proliferation of connective tissue, glial and smooth muscle cells
   ii. two different protein chains form 3 distinct dimer forms; AA, AB and BB
   iii. platelets, endothelial cells, placenta are sources of PDGF
   iv. kinase activity stimulated by PDGF

   a) i and ii
   b) i and iii
   c) ii and iii
   d) iv only

3. Which one the following is not a cellular response activated by p53……. CO2 [K_1]

   a) DNA repair
   b) Altered secretion of growth factors (particularly of angiogenic factors)
   c) Cell cycle arrest
   d) Formation new blood vessel

4. In MPF - regulatory sub unit molecular weight around ……..kDa CO2 [K_2]

   a) 32
   b) 25
   c) 45
   d) 35

5. The ratio of dose of two different types of radiation needed to produce same biological effect – this effect generally called as…….. CO3 [K_2]

   a) Linear energy effect
   b) Random biological effect
   c) Relative biological effect
   d) Linear biological effect

6. Which one of the following is not a direct acting carcinogen CO3 [K_1]

   a) Nitrogen mustard
   b) Benzopyrene
   c) Nitrosomethylurea
   d) Benzyl chloride

7. **Assertion (A):** In oral cancer: Poor oral health can interfere with vital functions such as breathing, eating, swallowing and speaking and significantly diminishes the quality of life CO4 [K_3]

   Reason (R): It is due to Chronic oral possible associations between chronic oral infections such as Diabetes and /or Heart and lung disease

   a) Both A and R true R is the correct explanation for A
   b) Both A and B are true but R not correct explaination for A
   c) R is true but A is false
   d) A false but R true

8. In Non- small cell lung cancer- which one the following stage is indicating spreading of cancer cells in entire lung tissue and lymph nodes outside of the lung CO4 [K_2]

   a) Stage I
   b) Stage II
   c) Stage III
   d) Stage IV

9. Find out correct order of procedure for Clinical breast examination CO5 [K_4]

1. Performing the position 2. Preparation for examination

3. Lymph Node Exam 4. Breast Palpation 5. Visual Inspection of the Breasts

a) 3-2-5-4-1 b) 2-1-5-3-4

c) 1-3-4-2-5 d) 3-2-1-5-4

10. Which one of the following is not a tissue specific tumor marker? CO5 [K_2]

a) PSA b) β-HCG

c) Thyroglobulin d) α-Fetoprotein

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11. List any two tools for identification of oncogenes. CO1 [K_2]

12. Differentiate intrinsic and extrinsic pathways in apoptosis. CO1 [K_3]

13. List out 3 Pathways involved in p53 activation. CO2 [K_2]

14. Draw the Cell cycle check points. CO2 [K_3]

15. Write the flow chart for CYP450 reductase mechanism. CO3 [K_2]

16. Differentiate direct and indirect acting carcinogens. CO3 [K_3]

17. Mention three step theory of invasion of cancer cells. CO4 [K_2]

18. How will you distinguish sporadic cancer with familial Cancer? CO4 [K_2]

19. Immunotherapy is a Modern tool to diagnosing cancers – Justify. CO5 [K_4]

20. List any two tumor markers in diagnosing cancers. CO6 [K_1]

Answer any FIVE Questions:-

PART C (5 x 14 = 70 Marks)

(Answer not more than 300 words)

Q. No. 21 is Compulsory

21. Compare and analysis of any FOUR techniques, that commonly practiced to detection of oncogenes in human cancer cells and briefly explain with suitable example (with neat sketch). CO1 [K_4]

22. How will you compare specification of EGF and PDGF and their role in RTKs stimulation and activation? CO1 [K_2]

23.	(i) Discuss any two main significance of cell cycle (each) regulations *of S. pombe*, *S. cerevesiae* and mammalian system. (ii) How are these cell cycle regulation and check points support to understand cancer cell cycle?	(7) (7)	CO2	[K_3]
24.	Discuss the different molecular tools used in early diagnosis of cancer.		CO6	[K_2]
25.	How will you distinguish Ionizing radiation with non-ionizing radiation and list out different types of Ionizing radiation and their signs and symptoms of ionizing and non-ionizing radiation?		CO3	[K_4]
26.	(i) List any five MMPs and their role in ECM disruption. (ii) How are these MMPs involved in basement membrane disruption?	(4) (10)	CO4	[K_3]
27.	Explain any two forms of cancer and chemotherapeutic drugs with their mechanism of action.		CO5	[K_3]

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