**Cell Continuity**

**Q 2016 6**

(a) What term is used to describe the long stage of the cell cycle when cell division is not occurring?

(b) Name two types of biomolecule that are produced in the cell during this stage of the cell cycle.

(c) Name one organelle that is replicated at this stage of the cell cycle.

(d) Give any two other changes which will have occurred in the cell by the end of this stage of the cell cycle.

(e) Suggest why mature human red blood cells do not undergo cell division.

**MS 2016 Q 6**

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| --- | --- | --- |
| **6.** |  | **2(5) + 5(2)** |
| (a) | *Long stage of cell cycle:* Interphase | |
| (b) | (i) | (ii) *Biomolecule types produced:* |
|  |  | Nucleic acid (or DNA or RNA)/ protein/ fat/ carbohydrate *Any two* |
| (c) | *Organelle replicated:* Mitochondrion **or** chloroplast **or** ribosomes **or** centriole | |
| (d) | *Two other changes:* Condensed (short or thick or coiled) chromosomes or chromosomes visible (under | |
| microscope)/ disappearance of nuclear membrane/ formation of spindle/ chromosomes duplicated | | |
| or DNA replicated ***Any two*** | | |
| (e) | *Why no division of red blood cells:* No nucleus | |

**Q 2015 4**

Indicate whether the following statements are true or false by placing a tick (P) in the appropriate box in

**each** case.

( a) Meiosis is an important source of variation.

(b) Mitosis occurs in mature red blood cells in humans.

(c) During mitosis the nuclear membrane temporarily disappears.

(d) Meiosis gives rise to the haploid condition.

|  |  |
| --- | --- |
| (a) | T |
| (b) | F |
| (c) | T |
| (d) | T |
| (e) | T |
| (f) | T |
| (g) | F |

( e) In multicellular organisms mitosis functions primarily in growth.

(f) In plants, a cell plate forms during telophase of mitosis.

(g) The human zygote divides by meiosis.

**MS 2015 Q 4**

**Q 2014 5**

1. Indicate whether the following statements are true (T) or false (F) by placing a tick () in the appropriate box in **each** case.

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* 1. Single-celled organisms use meiosis for asexual reproduction.
  2. In telophase of mitosis, a cleavage furrow forms in plant cells.
  3. When a cell is not dividing it is said to be in prophase.
  4. The nuclear membrane disappears in the early part of mitosis.
  5. Centromeres give rise to the nuclear spindle.
  6. Mitosis is a source of variation.
  7. In multicellular organisms mitosis is primarily used for growth.

**MS 2014 5**

|  |  |
| --- | --- |
| **5.** | **8 + 7 + 5(1)** |
|  | **F** |
|  | **F** |
|  | **F** |
|  | **T** |
|  | **F** |
|  | **F** |
|  | **T** |

**Q 2013 11 (c)**

Answer the following questions, which relate to events in the cell cycle.

* 1. What name is applied to the period of the cell cycle in which division is **not** taking place?
  2. Give a cellular process that occurs during this period in which the nucleus is not dividing.
  3. Draw a labelled diagram to show the position of the chromosomes during metaphase of mitosis in a nucleus in which 2n = 6.
  4. 1. State a function of one of the structures, other than chromosomes, that you have labelled in your diagram of metaphase.

2. How does the structure carry out this function?

* 1. What term is used for the group of disorders in which control has been lost over the rate of mitosis?

**MS 2013 11 (c)**

1. (i) \*Interphase
   1. Replication **or** growth **or** protein synthesis **or** respiration

**or** photosynthesis

* 1. *Diagram:*

spindle (or outline of cell) + chromosomes on equator

+ 6 double chromosomes

*Labels:*

Chromosome(s) / spindle / centromere(s) / cell membrane

* 1. 1. Function

2. How function is carried out

(v) Cancer

**Q 2011 2.**

Use your knowledge of mitosis to answer the following questions:

(a) What is the role of mitosis in single-celled organisms?

(b) What medical term is used for the group of disorders in which certain cells lose normal control of mitosis?

(c) Suggest a possible cause of one of the group of disorders referred to in (b).

(d) Name the stage of mitosis in which the chromosomes are located at the equator of the cell and before they begin to separate.

(e) To what are the chromosomes attached in the stage of mitosis referred to in (d)?

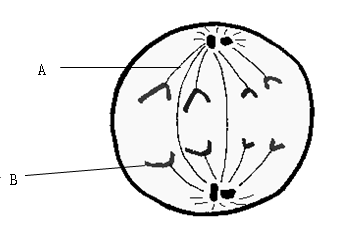
(f) Towards the end of mitosis, in what type of cell does a cell plate form?

(g) Give one way in which mitosis differs from meiosis.

**MS 2011 12**

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| --- | --- | --- |
| **2. 6(3) + 2** | | |
|  | (a) | Reproduction |
|  | (b) | Cancer |
|  | (c) | Named carcinogen |
|  | (d) | Metaphase |
|  | (e) | Spindle |
|  | (f) | Plant (cell) **or** named example |
|  | (g) | Two (daughter) cells **or** identical (daughter) cells **or** (daughter cells) same chromosome number (as mother cell) **or** can occur in haploid cells |

**Q 2009 5**



(a) Name this stage of mitosis.

(b) Give a feature from the diagram which allowed you to identify this stage.

(c) Name the parts of the diagram labelled A and B.

(d) What is the function of mitosis in single-celled organisms?

(e) Give one function of mitosis in multicellular organisms.

(f) Give one location where mitosis occurs in flowering plants.

**MS 2009 5**

|  |  |  |  |
| --- | --- | --- | --- |
| **5.** |  | **6(3) + 2** |  |
|  | (a) | Anaphase |  |
|  | (b) | Chromosomes separated **or** chromosomes near poles |  |
|  | (c) | A = Spindle (fibre) B = Chromosome |  |
|  | (d) | Reproduction |  |
|  | (e) | Growth **or** (cell) replacement **or** repair **or** renewal **or** spore formation |  |
|  | (f) | Meristematic tissue **or** root tips **or** shoot tips **or** buds **or** ovule **or** embryo sac **or** pollen |  |

**Q 2008 2**

1. What stage of the cycle is represented by X?
2. Give the names of the two processes involving DNA which take place during stage X
3. For convenience of study, mitosis is divided into four stages. List these in order starting at A.

(d)In which of the stages of mitosis that you have listed in (c) would you expect to see the spindle fibres contracting?

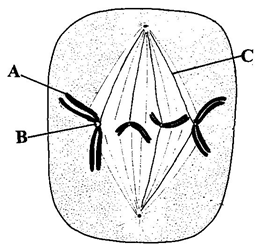
(e)Explain the term diploid number

(f)What term is used to describe a group of disorders of the body in which cells lose the normal regulation of mitosis?

**MS 2008 2**

|  |  |  |  |
| --- | --- | --- | --- |
| **2.** | (a) | Interphase | **2** |
|  | (b) | uncoiling / transcription / replication **or** duplication | **2(2)** |
|  | (c) | Prophase / metaphase / anaphase/ telophase correct order showing all four | **4(1)**  **4** |
|  | (d) | anaphase **or** 3rd stage | **2** |
|  | (e) | Chromosomes in pairs (two sets of chromosomes) | **2** |
|  | (f) | Cancer **or** named group of cancers **or** tumour | **2** |

**Q 2007 Q 3**

(a) Name A, B and C.

(b) What stage of mitosis is shown?

Give a reason for your answer.

© What is the diploid number of this nucleus which is undergoing mitosis? ……………………………

(d) Give a role of structure A.

(e) Some cells in the human body undergo meiosis. Give one function of meiosis

**MS 2007 Q 3**

**Q 3. (a)**A = chromosome [accept chromatid] B = centromereC = spindle **3(2)**

1. *Stage:* metaphase **2**

*Reason:* chromosomes on equator **3**

1. four **3**
2. comment on inheritance e.g. to carry genes, genetic code, code for protein **3**
3. to produce gametes **or** to reduce **or** to halve chromosome number [*allow* variation] **3**

**Q 2005 5**

1. In the space below draw a diagram of a nucleus during metaphase of mitosis where 2n = 6.

Label the spindle and a centromere in your diagram.

1. State a function of mitosis in a single-celled organism.
2. State a function of mitosis in a multicellular organism.
3. State one way in which mitosis differs from meiosis.

(d) When the normal control of mitosis in a cell is lost, cancer may result.

( e) Suggest two possible causes of cancer.

**MS 2005 5**

5. Diagram (6, 0) + 7(2)

(a) Diagram Diag 6,0

Labels – spindle- centromere

(b) Reproduction

(c) Growth/ repair/ reproduction (only if development of macrospore/microspore is given)

(d) No reduction in chromosomes/ no homologous pairing during process/ resulting nuclei identical/ two cells

(e) Carcinogen /mutation / mutagen / example 1 / example 2 / radiation or named / virus

any two