

Question Booklet Series Code : **D**Question Book Serial No : **200048**

Time Allowed : 02.00 hours

RDG-2020

Maximum Marks : 100

ନିର୍ଦ୍ଧାରିତ ସମୟ : 02.00 ଘଣ୍ଟା

ସର୍ବାଧିକ ମାର୍କ : 100

Read the following instructions carefully before you begin to answer the questions.

This Booklet contains 100 objective type questions with multiple choice answers in three Parts.

Each question carries one mark.

There shall be negative marking @0.25 mark per question for wrong/multiple answers.

Part-I contains 10 questions on Arithmetic which are available in both English and Odia version. In the case of discrepancy in meaning, the English version will prevail.**Part-II** contains 05 questions on English.**Part-III** contains 85 questions on **Medical Radiation Technology** which includes questions based on practical skill to assess the practical skill of the candidates.**All questions are compulsory.**

ପ୍ରଶ୍ନଗୁଡ଼ିକର ଉତ୍ତର କରିବାପୂର୍ବରୁ ନିମ୍ନ ପ୍ରଦତ୍ତ ନିର୍ଦ୍ଦେଶାବଳୀ ଯତ୍ନସହକାରେ ପଢନ୍ତୁ । ଏହି ପୁସ୍ତିକାରେ ତିନିଗୋଟି ଭାଗରେ 100ଟି ବିବିଧ ଉତ୍ତର ଯୁକ୍ତ ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ରହିଛି । ପ୍ରତ୍ୟେକ ପ୍ରଶ୍ନର ସଠିକ ଉତ୍ତର ପାଇଁ ଏକ ମାର୍କ ରହିଛି ।

ଭୁଲ ଉତ୍ତର ଏବଂ ଏକାଧିକ ଉତ୍ତର ପାଇଁ ପ୍ରଶ୍ନ ପିଛା 0.25 ମାର୍କ ଲେଖାଏଁ ବିୟୋଗ କରାଯିବ ।

ପ୍ରଥମ ଭାଗରେ ଗଣିତର 10ଟି ପ୍ରଶ୍ନ ରହିଛି ଯେଉଁଥିରେ ଇଂରାଜୀ ରୁ ଓଡ଼ିଆକୁ ଭାଷାନ୍ତର ଉପଲବ୍ଧ । ଅର୍ଥବୋଧରେ କିଛି ତାରତମ୍ୟ ଥିଲେ ଇଂରାଜୀ ଭାଷା ବଳବତ୍ତର ରହିବ ।

ଦ୍ୱିତୀୟ ଭାଗରେ ଇଂରାଜୀରେ 05ଟି ପ୍ରଶ୍ନ ରହିଛି ।

ତୃତୀୟ ଭାଗରେ **Medical Radiation Technology** ବିଷୟରେ (practical skill based ପ୍ରଶ୍ନ ସହିତ) 85ଟି ପ୍ରଶ୍ନ ରହିଛି ।

ସମସ୍ତ ପ୍ରଶ୍ନ ବାଧ୍ୟତାମୂଳକ ।

INSTRUCTIONS FOR CANDIDATES	ପ୍ରାର୍ଥୀମାନଙ୍କ ପାଇଁ ନିର୍ଦ୍ଦେଶାବଳୀ
<ol style="list-style-type: none"> Before answering any question, check the Booklet and ensure that it contains 16 pages and no page is missing, mutilated or repeated. In case of any such defect, get it replaced immediately. The Invigilator shall supply you the blank Two Part carbonless OMR Answer Sheet separately. Enter your Roll Number, Question Booklet Serial Number and Question Booklet Series Code and darken the corresponding circle/oval provided on the Answer Sheet at the appropriate space carefully by using only black/blue ball point pen. You must write the name, date and centre of examination and put your full signature in the appropriate space provided therein before answering any question. A machine will read the coded information furnished by you in the OMR Answer Sheet. If the information so furnished by you are incomplete or different from what you have given in the application form, you shall be awarded Zero mark. Answer must be given by completely blackening one of the four circles/ovals representing the most appropriate answer given on the Answer Sheet corresponding to the relevant question by using only Black/Blue ball point pen. Answers not shown by properly darkening in black/blue ball point pen, no marks shall be awarded. No Rough work should be done on the OMR Answer Sheet. Space for rough work has been provided in the Question Booklet itself. Correcting fluid, eraser, blade, books, textual material, scripts, notes/loose paper, calculator, docupen, slide rules, log tables, electronic watches, smart watch, cell phone, pager, other electrical/electronic devices etc. are not allowed inside the examination hall. In case the candidate is found to be in possession of any of the above, he/she shall be expelled from the examination without any enquiry as to whether the same was/were used by the candidate or not. These instructions must be complied with fully, failing which your Answer Sheet shall not be evaluated and Zero marks will be awarded. After the examination is over, candidates must ensure to fold the OMR Answer Sheet at the perforation and separate the Original Copy and Candidate's Copy of the Two Part OMR Answer Sheet in the presence of the Invigilator and handover the Original Copy to the Invigilator. The Candidate's Copy of the OMR Answer sheet may be taken by the candidate. Failure to hand over the original copy of the OMR Answer Sheet to the Invigilator before leaving the examination hall/room shall make the candidate liable for penal action. Failure to comply with any of the above instructions shall be considered as adopting unfair means and action as deemed proper shall be taken. 	<ol style="list-style-type: none"> କୌଣସି ପ୍ରଶ୍ନର ଉତ୍ତରଦେବା ପୂର୍ବରୁ ପୁସ୍ତିକାଟିକୁ ଚନଷ୍ଟ ଦେଖନ୍ତୁ କି ଏଥିରେ ୧୬ ପୃଷ୍ଠା ଅଛି ଓ କୌଣସି ପୃଷ୍ଠା ନଷ୍ଟ, ପୁନରାବୃତ୍ତି କିମ୍ବା ଛାଡି ହୋଇନାହିଁ । କୌଣସି ତ୍ରୁଟିଥିଲେ ତାକୁ ତୁରନ୍ତ ବଦଳ କରାଇନିଅନ୍ତୁ । ନିରୀକ୍ଷକ ଆପଣଙ୍କୁ ପୃଥକକରି ଦେବେ ଓଏମ୍ଆର୍ ଉତ୍ତରପତ୍ର (Two Part carbonless OMR Answer Sheet) ଦେବେ । ଉତ୍ତରପତ୍ରର ଯଥା ସ୍ଥାନରେ ଆପଣଙ୍କ ରୋଲନମ୍ବର, ପ୍ରଶ୍ନପୁସ୍ତିକା କ୍ରମିକନମ୍ବର ଏବଂ ପ୍ରଶ୍ନପୁସ୍ତିକା ସିରିଜ କୋଡ୍ ଉଲ୍ଲେଖ କରନ୍ତୁ ଏବଂ ତା ପାଇଁ ଉଦ୍ଦିଷ୍ଟ ବୃତ୍ତ / ଅଣ୍ଡାକୃତିକୁ କେବଳ କଳା / ନୀଳ କାଳିର ବଲପଏଣ୍ଟ କଲମ ହାରା କାଳି କରନ୍ତୁ । ସେଠାରେ ପ୍ରଦତ୍ତ ନିର୍ଦ୍ଦିଷ୍ଟ ସ୍ଥାନରେ ପରୀକ୍ଷାର ନାମ, ତାରିଖ ଓ ପରୀକ୍ଷା କେନ୍ଦ୍ରର ନାମ ନିଶ୍ଚିତ ଭାବେ ଲେଖନ୍ତୁ ଏବଂ କୌଣସି ପ୍ରଶ୍ନର ଉତ୍ତରଦେବା ଆଗରୁ ଯଥାସ୍ଥାନରେ ଆପଣଙ୍କ ପୁରା ଦସ୍ତଖତ କରନ୍ତୁ । ଓଏମ୍ଆର୍ ଉତ୍ତରପତ୍ରରେ ଆପଣ ଉଲ୍ଲେଖ କରିଥିବା ସାଙ୍କେତିକ ତଥ୍ୟକୁ ଗୋଟିଏ ଯନ୍ତ୍ର ପଢିବ । ତେଣୁ ଆପଣଙ୍କର ଏହି ପ୍ରଦତ୍ତ ତଥ୍ୟ ଯଦି ଦରଖାସ୍ତ ପର୍ଯ୍ୟନ୍ତ ଦିଆଯାଇଥିବା ତଥ୍ୟଠାରୁ ପୃଥକ କିମ୍ବା ଅସମ୍ପୂର୍ଣ୍ଣ ହୁଏ, ଆପଣଙ୍କୁ ଶୂନ୍ୟ ମାର୍କ ପ୍ରଦାନ କରାଯିବ । ଉତ୍ତରପତ୍ରରେ ଥିବା ସମ୍ପୂର୍ଣ୍ଣ ପ୍ରଶ୍ନର ସଠିକ ଉତ୍ତର ପାଇଁ ଉଦ୍ଦିଷ୍ଟ ବୃତ୍ତ / ଅଣ୍ଡାକୃତିକୁ କେବଳ କଳା / ନୀଳ କାଳିର ବଲପଏଣ୍ଟ କଲମ ହାରା କାଳିକରି ଉତ୍ତର ଦିଅନ୍ତୁ । କଳା / ନୀଳବଲ ପଏଣ୍ଟ କଲମ ହାରା ସଠିକ ଭାବେ କାଳି କରାଯାଇନଥିବା ଉତ୍ତର ପାଇଁ କୌଣସି ମାର୍କ ଦିଆଯିବ ନାହିଁ । ଓଏମ୍ଆର୍ ଉତ୍ତରପତ୍ରରେ ରପ୍ତ କାମ କରନ୍ତୁ ନାହିଁ । ପ୍ରଶ୍ନପୁସ୍ତିକାରେ ରପ୍ତ କାମପାଇଁ ଖାଲିଜାଗା ଦିଆଯାଇଅଛି । କୌଣସି ଧଉଳାଭବା ରଙ୍ଗ, ରବର, ଟ୍ରେଡ୍, ବହି, ଛାପା / ହାତଲେଖାକାଗଜ, କାଲକୁଲେଟର, ଡକ୍ୟୁମେଣ୍ଟ, ସ୍କାଇଟ ରୁଲ, ଲଗ ଟେବୁଲ, ଇଲେକଟ୍ରୋନିକ ଘଣ୍ଟା, ସ୍ମାର୍ଟ ଘଣ୍ଟା, ମୋବାଇଲ ଫୋନ୍, ପେଜର, ଅନ୍ୟ ବିଦ୍ୟୁତିକ/ଇଲେକଟ୍ରୋନିକ ଉପକରଣାଦିକୁ ଆପଣ ପରୀକ୍ଷା ହଲ / କୋଠରୀ ଭିତରକୁ ନେଇ ପାରିବେ ନାହିଁ । ଯଦି ଉପରୋକ୍ତ କୌଣସି ଉପକରଣ ଆପଣଙ୍କ ପାଖରୁ ଉଦ୍ଧାର କରାଯାଏ, ବ୍ୟବହାର କରିଥାନ୍ତୁ ବା ନ କରିଥାନ୍ତୁ, ବିନା ତଦନ୍ତରେ ଆପଣଙ୍କୁ ତୁରନ୍ତ ପରୀକ୍ଷାରୁ ବାସସ୍ଥ କରାଯିବ । ଏହି ନିର୍ଦ୍ଦେଶାବଳୀକୁ ସଂପୂର୍ଣ୍ଣଭାବେ ନିଶ୍ଚିତ ପାଳନକରନ୍ତୁ, ଅନ୍ୟଥା ଆପଣଙ୍କ ଉତ୍ତରପତ୍ରର ମୂଲ୍ୟାୟନ କରାଯିବ ନାହିଁ ଏବଂ ଶୂନ୍ୟ ମାର୍କ ପ୍ରଦାନ କରାଯିବ । ପରୀକ୍ଷା ସରିବା ପରେ ପରୀକ୍ଷା ହଲ ଛାଡିବା ପୂର୍ବରୁ ଆପଣଙ୍କ Two Part carbonless OMR Answer Sheet ଉତ୍ତରପତ୍ରର Original Copy ଓ Candidate's Copy ନିରୀକ୍ଷକଙ୍କ ଉପସ୍ଥିତିରେ ଚିହ୍ନ ଥିବା ସ୍ଥାନରେ ସଠିକ ଭାବେ ଭାଙ୍ଗ କରି ଚିରି ପୃଥକ କରନ୍ତୁ ଓ Original Copyଟିକୁ ନିରୀକ୍ଷକଙ୍କୁ ହସ୍ତାନ୍ତର କରନ୍ତୁ । ଅନ୍ୟଥା ପରୀକ୍ଷାର୍ଥୀ ଆଇନାନୁଯାୟୀ ଦଣ୍ଡନୀୟ ହେବେ । ଓଏମ୍ଆର୍ ଉତ୍ତରପତ୍ରର ପ୍ରାର୍ଥୀଙ୍କ ପାଇଁ ଉଦ୍ଦିଷ୍ଟ କପିଟିକୁ (Candidate's Copy) ପରୀକ୍ଷାର୍ଥୀ ନେଇଯିବେ । ଉପରୋକ୍ତ ନିର୍ଦ୍ଦେଶାବଳୀରୁ କୌଣସି ନିର୍ଦ୍ଦେଶର ଅନୁପାଳନରେ ଖୁଲାପକଲେ ଏହାକୁ ଅସତ୍ତ ଉପାୟ ଅବଲମ୍ବନ କରିଛନ୍ତି ବୋଲି ବିବେଚନା କରାଯିବ ଏବଂ ପରୀକ୍ଷାର୍ଥୀଙ୍କ ବିରୁଦ୍ଧରେ ଯଥୋଚିତ କାର୍ଯ୍ୟାନୁଷ୍ଠାନ ଗ୍ରହଣ କରାଯିବ ।

Part-I
ARITHMETIC : 10 Marks

*Instructions : Each question under this section carries **One** mark. Please read the instructions carefully and answer the questions by selecting the most appropriate answer out of the multiple answers given below each as A, B, C and D.*

There shall be negative marking @ 0.25 mark per question for wrong/multiple answers.

1. The average of five consecutive numbers is 97. What is the smallest of these numbers?

ପାଞ୍ଚୋଟି କ୍ରମାଗତ ସଂଖ୍ୟାର ହାରାହାରି 97 ଅଟେ, ତେବେ ସ୍ଥୁତତମ ସଂଖ୍ୟାଟି କେତେ ଅଟେ ?

(A) 95 (B) 96 (C) 98 (D) 99

2. Find the value of $\sqrt[3]{9801}$?

$\sqrt[3]{9801}$ ର ମୂଲ୍ୟ କେତେ ?

(A) 69 (B) 79 (C) 89 (D) 99

3. A sum of Rs 5000 becomes to Rs 7000 in four years at simple interest. What is the rate of interest per annum?

5000 ଟଙ୍କା ସରଳ ସୁଧ ହାରରେ ଚାରି ବର୍ଷରେ 7000 ଟଙ୍କା ହୁଏ, ତେବେ ବାର୍ଷିକ ସରଳ ସୁଧର ହାର କେତେ ?

(A) 5% (B) 7.5% (C) 10% (D) 15%

4. A sum of money is to be divided among X, Y and Z in the ratio of 4 : 5 : 6. If Y gets Rs 1500, then what is Z's share?

କୌଣସି ମୂଳଧନ X, Y ଓ Z ମଧ୍ୟରେ 4 : 5 : 6 ଅନୁପାତରେ ଭାଗ କରିବାକୁ ଅଛି । ଯଦି Y 1500 ଟଙ୍କା ପାଏ ତେବେ Z ର ଭାଗ କେତେ ହେବ ?

(A) Rs 4500 (B) Rs 1800 (C) Rs 1500 (D) Rs 1200

5. $40 \div 2 \sqrt{5} = ?$

$40 \div 2 \sqrt{5}$ ର ମୂଲ୍ୟ କେତେ ?

(A) $2 \sqrt{5}$ (B) $4 \sqrt{5}$ (C) $5 \sqrt{2}$ (D) $5 \sqrt{5}$

6. A cycle is bought for Rs 900 and sold for Rs 1200. Find the gain percent?

ଯଦି ଏକ ସାଇକେଲ୍ 900 ଟଙ୍କାରେ କିଣାଯାଇ 1200 ଟଙ୍କାରେ ବିକ୍ରି କରାଯାଏ, ତେବେ ଶତକଡ଼ା କେତେ ଲାଭ ହେବ ?

(A) 30% (B) $30\frac{1}{3}\%$ (C) 33% (D) $33\frac{1}{3}\%$

7. The greatest 3 digit number which is divisible by 10, 12 and 15 ?

କେଉଁ 3 ଅଙ୍କ ବିଶିଷ୍ଟ ବୃହତ୍ତମ ସଂଖ୍ୟା 10, 12 ଓ 15 ଦ୍ୱାରା ବିଭାଜ୍ୟ ଅଟେ ?

(A) 900 (B) 960 (C) 990 (D) 999

8. What is the area of a circle whose circumference is 44 cm? (Use $\pi = \frac{22}{7}$).

ଯଦି ଏକ ବୃତ୍ତର ପରିଧି 44 cm ହୁଏ, ତେବେ ଏହାର କ୍ଷେତ୍ରଫଳ କେତେ ?

(A) 44 cm^2 (B) 88 cm^2 (C) 154 cm^2 (D) 616 cm^2

9. If $a : b = 3 : 4$ and $b : c = 5 : 6$ then find $a : c$?

ଯଦି $a : b = 3 : 4$ ଓ $b : c = 5 : 6$ ହୁଏ, ତେବେ $a : c$ କେତେ ?

(A) 3 : 6

(B) 4 : 5

(C) 5 : 8

(D) 8 : 5

10. Which of the following is not a perfect cube of even numbers?

ନିମ୍ନଲିଖିତ ସଂଖ୍ୟା ମଧ୍ୟରୁ କେଉଁ ସଂଖ୍ୟାଟି ଯୁଗ୍ମ ସଂଖ୍ୟାର ପୂର୍ଣ୍ଣଘନ ସଂଖ୍ୟା ନୁହେଁ ?

(A) 343

(B) 512

(C) 1000

(D) 1728

Part-II

ENGLISH : 05 Marks

*Instructions : Each question under this section carries **One** mark. Please read the instructions carefully and answer the questions by selecting the most appropriate answer out of the multiple answers given below each as A, B, C and D.*

There shall be negative marking @ 0.25 mark per question for wrong/multiple answers.

11. A fair little girl sat under the banyan tree.

(Choose the correct part of speech of the underlined word)

(A) verb

(B) adverb

(C) adjective

(D) preposition

12. Two _____ lines can never meet each other.

(Fill in the blank with correct spelling of the word)

(A) paralel

(B) parrallel

(C) parallel

(D) paralell

13. What is the plural of 'calf' ?

(A) calfs

(B) calfes

(C) calves

(D) calvs

14. I called _____ him at his office.

(Fill in the blank with appropriate preposition)

(A) at

(B) on

(C) in

(D) after

15. The chief guest distributed the prizes to the winners.

(Find out the correct phrasal verb of the underlined word)

(A) gave up

(B) gave away

(C) gave in

(D) gave off

Part-III
Medical Radiation Technology : 85 Marks

*Instructions : Each question under this section carries **One** mark. Please read the instructions carefully and answer the questions by selecting the most appropriate answer out of the multiple answers given below each as A, B, C and D.*

There shall be negative marking @ 0.25 mark per question for wrong/multiple answers.

16. Why is contrast used in CT scan?

- | | |
|--|------------------------------------|
| (A) To suppress particular tissues | (B) To enhance a particular tissue |
| (C) To ensure correct tissue is being imaged | (D) To reduce bone interference |

17. Which of the following agents should not be used as an agent for fluoroscopy?

- | | | | |
|------------|-------------|------------|--------------|
| (A) Silver | (B) Bismuth | (C) Thoria | (D) Tungsten |
|------------|-------------|------------|--------------|

18. Which of the following indicates a partial obstruction of the larynx or trachea and demands immediate attention?

- | | | | |
|-------------|-----------------|-------------|------------------------|
| (A) rhonchi | (B) pleural rub | (C) stridor | (D) mediastinal crunch |
|-------------|-----------------|-------------|------------------------|

19. Best mode of imaging for suspected uric acid calculi is

- | | |
|-----------------------------|---------------------|
| (A) Plain film of abdomen | (B) Ultrasonography |
| (C) Intravenous pyelography | (D) Radionuclides. |

20. Threshold radiation dose for haematological syndrome is?

- | | | | |
|----------|----------|-----------|----------|
| (A) 1 Gy | (B) 5 Gy | (C) 20 Gy | (D) 1 Gy |
|----------|----------|-----------|----------|

21. Radiation treatment is given for the following non-malignant brain condition

- | | | | |
|-----------------|------------------|------------------|-----------------------|
| (A) Astrocytoma | (B) Encephalitis | (C) Glioblastoma | (D) Craniopharyngioma |
|-----------------|------------------|------------------|-----------------------|

22. Laminated appearance of X-ray is suggestive of

- | | | | |
|---------------------|---------------------|-------------------|----------------------|
| (A) Ewing's sarcoma | (B) Osteoid osteoma | (C) Osteoclastoma | (D) Multiple myeloma |
|---------------------|---------------------|-------------------|----------------------|

23. For which of these areas can the ultrasound be taken for an infant but not for an adult?

- | | | | |
|-------------|-----------|----------|----------|
| (A) Cranium | (B) Chest | (C) Arms | (D) Legs |
|-------------|-----------|----------|----------|

24. What part of the body mostly scanned by fMRI?

- | | | | |
|-----------|-----------|-----------|-------------|
| (A) Brain | (B) Heart | (C) Liver | (D) Kidneys |
|-----------|-----------|-----------|-------------|

25. What is the frequency range of the sound used for ultrasound diathermy?
- (A) 0.1 – 0.7 MHz (B) 0.7 – 3.3 MHz (C) 3.3 – 5 MHz (D) 5 – 15 MHz
26. What makes PET and SPECT so unique when it comes to nuclear imaging?
- (A) Do not require dyes (B) Do not require X-Rays
(C) They show the metabolic functions (D) They give more details about the imaged organ/tissue
27. How much of the generated energy actually utilized for taking an X-Ray?
- (A) 0.1% (B) 1% (C) 10% (D) 100%
28. Pulmonary embolism is best diagnosed by
- (A) X-ray chest (B) Enzyme estimation (C) Radionucleus (D) Blood gas analysis
29. The probe used for imaging the heart is _____
- (A) Linear Probe (B) Curvilinear Probe (C) Phase Array Probe (D) Endocavitary Probe
30. Which of the following pair of scattering is important for therapeutic purposes?
- (A) Coherent and Pair Production (B) Photoelectric and Disintegration
(C) Compton and Photoelectric (D) Pair Production and Disintegration
31. Regulation of normal activities of the human heart takes place
- (A) by the autonomic nervous system (B) intrinsically
(C) by the diencephalon (D) by the brain stem
32. A noninvasive method of evaluating blood flow is
- (A) Doppler ultrasonography. (B) venography.
(C) angiography. (D) cardiac catheterization.
33. Obliteration of Left heart border in PA Chest X-ray is suggestive of
- (A) Lingular pathology (B) Left upper lobe lesion (C) Left hilar lymph nodes (D) Left lower lobe lesion
34. Which is the most common site for the appendix found at appendectomy?
- (A) retro-ileal (B) reto-caecal
(C) pelvic (D) anterior to terminal ileum

35. Gating is a newer technique used in the treatment of
 (A) Ca rectum (B) Ca tongue (C) Ca lung (D) Ca ovary
36. Radiation treatment is given for the following non-malignant brain condition
 (A) Astrocytoma (B) Encephalitis (C) Glioblastoma (D) Craniopharyngioma
37. Frontotemporal Dementia brain scan shows a _____
 (A) growing brain (B) shrinking brain (C) brain with lesions (D) brain with a tumour
38. The maximum volume of air contained in the lung by a full forced inhalation is called _____
 (A) Tidal volume (B) Vital capacity (C) Ventilation rate (D) Total lung capacity
39. 'H' shaped vertebra is seen in
 (A) Phenylketonuria (B) Sickle cell anemia (C) Hemangioma (D) Osteoporosis
40. Which interaction of X-rays is the basis of radiographic contrast between bone and soft tissues?
 (A) Photoelectric effect (B) Contrast scattering (C) Compton scattering (D) Pair production
41. Which of the following substances is activated by passage through the pulmonary circulation?
 (A) Bradykinin (B) Serotonin (C) Noradrenaline (D) Angiotensin 1
42. Bone marrow transplant recipient patient developed chest infection. ON chest Xray Tree on Bud appearance. The cause of this is
 (A) klebsiella (B) pneumocystis (C) TB (D) PB
43. The ureter passes deep to the:
 (A) femoral nerve (B) gonadal artery (C) psoas muscle (D) genitofemoral nerve
44. A piezoelectric crystal is used to produce the ultrasound waves. What kind of ultrasound is produced?
 (A) Pressure wave ultrasound (B) Electrical wave ultrasound
 (C) Sound wave ultrasound (D) Simple ultrasound
45. Sequestration lung is best diagnosed by
 (A) C.T. Scan (B) M.R.I. (C) Barium swallow (D) Angiography

46. In a postero-anterior view (PA view) of chest
- (A) Cardiac shadow is magnified
 - (B) Scapula is projected over upper lobes
 - (C) Appears more diffusely opaque if overpenetrated
 - (D) Is adequate if 8-10 posterior ribs are seen above diaphragm
47. In Cobalt-60 machine, which ray is used for external beam radiotherapy?
- (A) Alpha ray
 - (B) Beta ray
 - (C) Gamma ray
 - (D) Protons
48. Most common histopathology in head and neck carcinoma is
- (A) Squamous cell carcinoma
 - (B) Adenocarcinoma
 - (C) Lymphoma
 - (D) Melanoma
49. Half-life of Cobalt-60 is
- (A) 6.26 years
 - (B) 5.67 years
 - (C) 5.26 years
 - (D) 6.67 years
50. Which of the following is FALSE concerning chemoreceptor input to the respiratory centers?
- (A) CSF is a poor buffer and a drop in PCO_2 produces a large change in pH initiating a change in respiration.
 - (B) The body can adjust to chronic hypercapnea by using an active HCO_3^- -transport process in the choroid plexus.
 - (C) The carotid and aortic bodies detect increases in PaCO_2 and pH, and decreases in PaO_2 .
 - (D) 75% of ventilator response is regulated by chemoreceptors in the CSF and 25% by the carotid and aortic bodies.
51. In Urinary tract tuberculosis, frequent finding on plain film of abdomen is
- (A) Mass
 - (B) Ileus
 - (C) Calcification
 - (D) Psoas abscess
52. The smallest unit in the reconstruction/projection of an MRI image is called as _____
- (A) pixel
 - (B) voxel
 - (C) binary unit
 - (D) dot
53. Which of the following factors decreases the heart rate?
- (A) parasympathetic stimulation
 - (B) increase level of Na and K^+ ions
 - (C) release of acetyl - choline
 - (D) all of the above
54. The X-Ray is recorded on a plate coated with
- (A) Gold Halide
 - (B) Silver Halide
 - (C) Copper Halide
 - (D) Iron Halide
55. Which of the following radiations are used for imaging purposes?
- (A) alpha
 - (B) beta
 - (C) gamma
 - (D) delta

56. A patient presents with a deep stab wound high up in the costovertebral angle beneath the 12th rib on the left side. The most likely internal injury is?
- (A) laceration of the infra-renal aorta
(B) laceration of the right renal vascular pedicle
(C) puncture of the 3rd part of the duodenum
(D) pneumothorax of the left lung
57. When bones show a 'Bone within bone' appearance this is indicative of
- (A) Sickle cell anemia
(B) Bone infarction
(C) Osteopetrosis
(D) Chronic myelogenous leukaemia
58. Orthopantomogram is taken to rule out lesion in
- (A) Mandible
(B) Maxilla
(C) Facial bone
(D) Skull
59. During angiocardiology the mitral valve is best visualized in the
- (A) Frontal view
(B) Lateral view
(C) Right anterior oblique view
(D) None of the above.
60. Which of the following is not a sesamoid bone
- (A) Fabella
(B) os trigonum
(C) Patella
(D) Pisiform
61. When an abdominal ultrasound is done, why is it advised to have a full bladder?
- (A) To have a good acoustic window
(B) To increase the water content
(C) To lower impedance
(D) to allow for better propagation of waves
62. In order to visualize the flow of blood in the renal arteries, what process is done with CT?
- (A) CT Angioplasty
(B) CT Angiography
(C) Simple CT
(D) CT Cardiography
63. The following radiation fields are used in the treatment of lymphoma EXCEPT
- (A) Mantle field
(B) Inverted Y field
(C) Dog leg field
(D) Pencil beam field
64. Pericardial calcification is caused by all except
- (A) Radiotherapy to the mediastinum
(B) Methysergide therapy
(C) Anticoagulant therapy
(D) Dermatomyositis
65. What is the oxygen effect?
- (A) Detrimental effect of oxygen in presence of therapeutic radiations
(B) A positive effect of oxygen in absence of therapeutic radiations
(C) Enhancement effect of oxygen in presence of therapeutic radiation
(D) Presence of oxygen during radiation treatment

66. Which mode is used for cardiac imaging?

- (A) A - Mode (B) B - Mode (C) M - Mode (D) 3D - Mode

67. Which of the following cells have a low resistance to radiations?

- (A) Lymphocytes, Spermatogonia, Erythroblasts, Intestinal crypt cells
 (B) Megakaryocytes, embryo, pancreatic cells, Intestinal crypt cells
 (C) Lymphocytes, Spermatogonia, hepatic cells, nephrons
 (D) Megakaryocytes, neurons, cardiac cells, Intestinal crypt cells

68. Spirometry can measure all except

- (A) IC (B) ERV (C) FRC (D) TV

69. The underlying principle of fMRI is that _____

- (A) cerebral blood flow and neuronal activity are not connected
 (B) cerebral blood flow and neuronal activity are connected
 (C) certain parts of the brain receive more blood
 (D) certain parts of the brain are more active than other parts

70. Investigation of choice in Traumatic paraplegia is

- (A) MRI (B) CT Scan (C) Myelography (D) Spine X-ray

71. In the cardiovascular system, which is more affected by the radiations?

- (A) Capillaries (B) Artery (C) Vein (D) Cardiac Muscles

72. Beyond what dose is the cerebral system shows signs of failure?

- (A) 25 – 200 rad (B) 200 – 600 rad (C) 600 – 1000 rad (D) > 1000 rad

73. Best imaging modality to diagnose liver mass is

- (A) Plain film (B) Angiography (C) C. T. Scan (D) Nuclear Scan

74. Regarding ventilation

- (A) Normal FEV1 is 70% of FVC
 (B) FEV1 is decreased much more than FVC in patients with lung fibrosis
 (C) FEV1 is dependent on expiratory effort
 (D) FEV1 is about 42% of FVC in a patient with obstructive lung disease

75. The total number of alveoli present in the human lungs is estimated to be around _____

- (A) 1 billion (B) 800 million (C) 500 million (D) 1500 million

76. Up to what intensity of radiation is used for mammography?
- (A) <10keV (B) <20keV (C) <30keV (D) <40keV
77. Which of the following needs the longest exposure for an X-Ray image?
- (A) Thoracic (B) Abdomen (C) Spine (D) Pelvis
78. All the following are veins which drain the stomach EXCEPT:
- (A) Gastroepiploic (B) Gastroduodenal (C) Right gastric (D) Left gastric
79. The detector of PET is made of _____
- (A) Silver (B) Gadolinium (C) Tungsten (D) Lead
80. Gas in biliary tract is not due to
- (A) Perforated gastric ulcer (B) Necrotizing enterocolitis
(C) Biliary surgery (D) Post-gastrectomy
81. The umbilical cord contains:
- (A) 2 arteries and 2 veins (B) 1 artery and 2 veins (C) 1 artery and 1 vein (D) 2 arteries and 1 vein
82. Aorta pierces the diaphragm at the level of
- (A) T8 (B) T12 (C) T10 (D) C6
83. The phenomenon in which light continues to emit for sometime even after the radiation exposure has ended is called
- (A) Fluorescence (B) Quantum mottle (C) Phosphorescence (D) None
84. The wave velocity of ultrasound in soft tissues is 1540m/s and the impedance offered by it is $1.63 \times 10^6 \text{ kg/m}^2\text{s}$. What is the density of the soft tissue?
- (A) 0.1058441 kg/m^3 (B) 10.58441 kg/m^3 (C) 1058.441 kg/m^3 (D) 105844.1 kg/m^3
85. Saw tooth appearance on abdominal X-ray is seen in
- (A) Prediverticular state (B) Multiple polyposis (C) Spastic colon (D) Ischemic enteritis
86. Which of the following machines is often placed together with an X-Ray machine?
- (A) Endoscopy (B) Ultrasound (C) Fluoroscopy (D) C - Arm

87. What radiations occur when the electrons are used in radio therapy?
- (A) Ionizing Radiations (B) Gamma Rays
(C) Bremsstrahlung Radiation (D) Infrared Rays
88. Widening of the C loop in X-ray is diagnostic of
- (A) Chronic pancreatitis (B) Carcinoma head of pancreas
(C) Periapillary carcinoma (D) Calculi in the ampulla of Vater
89. Uterus and fallopian tubes are assessed by
- (A) Micturating cystourethrography (B) Intravenous urethrography
(C) Hysterosalpingography (D) Myelography
90. Electronic Portal Imaging Device (EPID) in radiotherapy is used for
- (A) Treatment planning (B) Treatment verification (C) CT simulation (D) Conversional simulation
91. What is the main function of myoglobin?
- (A) extensibility (B) elasticity (C) binds O₂ together (D) both (A) and (C)
92. Echoencephalography is most useful for detecting
- (A) Ventricular dilatation (B) Midline shift (C) Epilepsy (D) Vascular lesions
93. Alveolar ventilation in a male with a respiratory rate of 10/min and tidal volume of 600 ml is
- (A) 1000ml (B) 1750ml (C) 3000ml (D) 4500ml
94. SI unit of dose equivalent is
- (A) Roentgens (B) Gray (C) Rad (D) Sievert
95. A muscle with double innervation among the following is
- (A) Flexor digitorum profundus (B) Flexor pollicis longus
(C) Pronator quadratus (D) Palmaris longus
96. What surgical functions are performed by the diathermy machine?
- (A) cutting, coagulation, fulguration (B) cutting, fulguration
(C) cutting, coagulation (D) coagulation, fulguration

97. What property of sound waves acts like the principle of ultrasound?
- (A) Reflection and Refraction
(C) Refraction only
- (B) Reflection only
(D) Propagation
98. What is the main mode of heat transfer in rotating anode X-ray tube?
- (A) Conduction
(B) Convection
(C) Radiation
(D) All the above
99. A patient with high fever will most likely demonstrate the sign of
- (A) Decreased sweating
(B) Increased pulse rate
(C) Increased urinary output
(D) Increased appetite
100. Where are the lungs located?
- (A) Inferior to the trachea
(C) anterior to the esophagus
- (B) Mediastinum of thoracic cavity
(D) Abdominal region

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